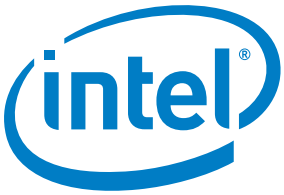


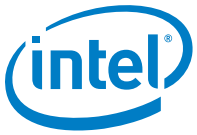
Intel® Rack Scale Design (RSD) Pooled System Management Engine (PSME) Representational State Transfer (REST)

API Specification
Software v2.5

July 2019

Revision 001

Document Number: 613325-001



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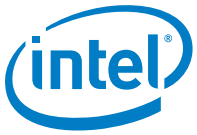
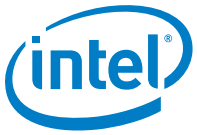
Contents

1.0 Introduction 13
1.1 Scope 13
1.2 Intended Audience 13
1.3 Conventions 13
1.4 Notes and Symbol Convention 13
1.5 Terminology 14
1.6 References and Resources 15
2.0 PSME API 17
2.1 PSME API Structure and Relations 17
2.1.1 PSME Compute API Resource Hierarchy 18
2.1.2 PSME Network API Resource Hierarchy 19
2.1.3 PSME PNC API Resource Hierarchy 20
2.1.4 PSME FPGA-Over-Fabrics (oF) API Resource Hierarchy 21
2.2 Resources and URIs 22
3.0 REST API Error Codes 26
3.1 API Error Responses 26
3.1.1 Message Object 26
3.1.2 Error Message Definitions 26
3.1.3 Intel RackScale Message Registry 27
3.1.4 Example Error JSON Object 27
3.2 API Error Codes 28
3.2.1 General Error Codes 28
3.2.2 PATCH Method Error Codes 29
4.0 PSME REST API Definition 30
4.1 Odata* Support 30
4.2 Asynchronous Operations 30
4.3 Protocol Version 30
4.3.1 Operations 31
4.4 OData* Service Document 31
4.4.1 Operations 31
4.5 Intel® Rackscale Design OEM Extensions 33
4.6 Service Root 33
4.6.1 Intel® RSD OEM extensions: 35
4.6.2 Operations 36
4.7 Chassis Collection 37
4.7.1 Operations 37
4.8 Chassis 39
4.8.1 Operations 44
4.9 NetworkAdapterCollection 46
4.9.1 Operations 46
4.10 Network Adapter 47
4.10.1 Operations 48
4.11 Network Device Function Collection 49
4.11.1 Operations 49
4.12 Network Device Function 50
4.12.1 Operations 51



4.13 Computer System Collection 56
4.13.1 Operations 56
4.14 Computer Systems 57
4.14.1 Operations 62
4.15 Computer System Metrics 72
4.15.1 Operations 73
4.16 BIOS 74
4.16.1 Operations 74
4.17 BIOS Settings 76
4.17.1 Operations 76
4.18 Processor Collection 77
4.18.1 Operations 77
4.19 Processor 78
4.19.1 Operations 85
4.20 Processor Metrics 89
4.20.1 Operations 91
4.21 Memory Collection 91
4.22 Memory 93
4.22.1 Operations 97
4.23 Memory Metrics 101
4.23.1 Operations 104
4.24 Storage Collection 107
4.24.1 Operations 107
4.25 Storage 108
4.25.1 Operations 108
4.26 Volume Collection 110
4.26.1 Operations 110
4.27 Drive 111
4.27.1 Operations 113
4.28 System Network Interface 116
4.28.1 Intel® RSD OEM Extensions 120
4.28.2 Intel® RSD OEM Links extensions 120
4.28.3 Operations 120
4.29 Manager Collection 122
4.29.1 Operations 123
4.30 Manager 123
4.30.1 Intel® RSD OEM extensions 127
4.30.2 Operations 127
4.31 Network Protocol 129
4.31.1 Operations 131
4.31.2 Accessing the Graphical Console 134
4.32 Log Service Collection 134
4.32.1 Operations 134
4.33 LogService 135
4.33.1 Operations 137
4.34 Log Entry Collection 138
4.34.1 Operations 138
4.35 Log Entry 139
4.36 Ethernet Switch Collection 143

4.36.1 Operations 144
4.37 Ethernet Switch 144
4.37.1 Operations 147
4.38 Ethernet Switch Metrics 151
4.38.1 Operations 151
4.39 Ethernet Switch Port Collection 152
4.39.1 Operations 152
4.40 Ethernet Switch Port 153
4.40.1 Operations 155
4.41 Ethernet Switch Port Metrics 159
4.41.1 Operations 159
4.42 Ethernet Switch ACL Collection 160
4.42.1 Operations 161
4.43 Ethernet Switch ACL 162
4.43.1 Operations 162
4.44 Ethernet Switch ACL Rule Collection 164
4.44.1 Operations 164
4.45 Ethernet Switch ACL Rule 166
4.45.1 Operations 167
4.46 Ethernet Switch Port Static MAC Collection 170
4.46.1 Operations 170
4.47 Ethernet Switch Port Static MAC 171
4.47.1 Operations 171
4.48 Ethernet Interface Collection 173
4.48.1 Operations 173
4.49 Ethernet Interface 174
4.50 VLAN Network Interface Collection 174
4.50.1 Operations 174
4.51 VLAN Network Interface 176
4.51.1 Operations 176
4.52 Event Service 178
4.52.1 Operations 180
4.53 Event Subscription Collection 181
4.53.1 Operations 182
4.54 Event Subscription 183
4.54.1 Metadata 186
4.54.2 Operations 186
4.55 Event Array 187
4.55.1 Metadata 188
4.55.2 Operations 188
4.56 Fabric Collection 189
4.56.1 Operations 189
4.57 Fabric 190
4.57.1 Intel® RSD OEM Extensions 191
4.57.2 Operations 191
4.58 Switch Collection 192
4.58.1 Operations 193
4.59 Switch 193
4.59.1 Operations 195

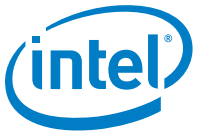


4.60 Collection ... 196
4.60.1 Operations ... 197
4.61 Port ... 197
4.61.1 Operations ... 199
4.61.2 DELETE ... 201
4.62 Port Metrics ... 201
4.62.1 Operations ... 201
4.63 Zone Collection ... 202
4.63.1 Operations ... 202
4.64 Zone ... 204
4.64.1 Operations ... 204
4.65 Endpoint Collection ... 207
4.65.1 Operations ... 207
4.66 Endpoint ... 213
4.66.1 Intel® RSD OEM extensions: ... 214
4.66.2 Operations ... 214
4.67 PCIe* Device ... 221
4.67.1 Operations ... 223
4.68 PCIe* Device Function ... 224
4.68.1 Operations ... 225
4.69 Task Service ... 227
4.69.1 Operations ... 228
4.70 Task Collection ... 228
4.70.1 Operations ... 229
4.71 Task ... 229
4.71.1 Operations ... 231
4.72 Account Service ... 232
4.72.1 Operations ... 235
4.73 Manager Account Collection ... 236
4.73.1 Operations ... 236
4.74 Manager Account ... 237
4.74.1 Operations ... 238
4.75 Role Collection ... 239
4.75.1 Operations ... 239
4.76 Role ... 240
4.76.1 Operations ... 240
4.77 Session Service ... 242
4.77.1 Operations ... 243
4.78 Session Collection ... 245
4.78.1 Operations ... 245
4.79 Session ... 247
4.79.1 Operations ... 247
4.80 Registries (MessageRegistryFileCollection) ... 249
4.80.1 Operations ... 249
4.81 Message Registry File ... 250
4.81.1 Operations ... 250
4.82 Telemetry Service ... 252
4.82.1 Operations ... 253
4.83 Metric Definition Collection ... 253

4.83.1 Operations 253
4.84 Metric Definition 254
4.84.1 Operations 258
4.85 Metric Report Definition Collection 260
4.85.1 Operations 261
4.86 Metric Report Definition 262
4.86.1 Operations 265
4.87 Metric Report 266
4.87.1 Operations 267
4.88 Triggers Collection 267
4.88.1 Operations 267
4.89 Triggers 270
4.89.1 Operations 271
4.90 Power 275
4.90.1 Operations 283
4.91 Thermal 285
4.91.1 Operations 296
4.92 Update Service 298
4.92.1 Operations 300
4.92.2 SW/FW Update Configuration 302
4.92.3 Intel RackScale Actions Extensions to Update Service 303
4.93 Firmware Inventory Collection 303
4.93.1 Operations 303
4.94 Firmware Inventory 304
4.94.1 Operations 306
4.95 Software Inventory Collection 307
4.95.1 Operations 307
4.96 Software Inventory 308
4.96.1 Operations 309
4.97 Network Interface Collection 310
4.97.1 Operations 310
4.98 Network Interface 311
4.98.1 Operations 312
5.0 Required Resources Per Service Type 313
6.0 Common Property Description 316
6.1 Status 316
6.2 Status->State 316
6.3 Status->Health 316
6.4 ComputerSystem.Reset 316
6.5 BootSourceOverrideTarget/Supported 317

Figures

Figure 1. Common Resource Hierarchy 17
Figure 2. PSME REST API Hierarchy for PSME Compute Resources 18
Figure 3. PSME REST API Hierarchy for PSME Network Resources 19
Figure 4. PSME REST API hierarchy for PSME PNC resources 20
Figure 5. PSME REST API hierarchy for PSME FPGA-oF resources 21



Tables

Table 1. Terminology 14
Table 2. Reference Documents and Resources 15
Table 3. Resources and Uniform Resource Identifiers (URIs) 22
Table 4. API Error Response Attributes 26
Table 5. Message Object Attributes 26
Table 6. HTTP Error Status Codes 28
Table 7. PATCH Method Error Codes 29
Table 8. ServiceRoot Attributes 33
Table 9. ServiceRoot Attributes 35
Table 10. ChassisCollection Attributes 37
Table 11. Chassis Type Attributes 39
Table 12. Chassis Attributes 39
Table 13. Location Attributes 42
Table 14. Links Attributes 42
Table 15. Intel® RSD OEM extensions: ChassisLinks Attributes 43
Table 16. Chassis Attributes 44
Table 17. NetworkAdapterCollection Attributes 46
Table 18. NetworkAdapter Attributes 47
Table 19. NetworkDeviceFunctionCollection Attributes 49
Table 20. NetworkDeviceFunction Attributes 50
Table 21. NetworkDeviceFunction Attributes 52
Table 22. Ethernet Attributes 52
Table 23. iSCSIBoot Attributes 53
Table 24. ComputerSystemCollection Attributes 56
Table 25. Computer System Attributes 57
Table 26. ComputerSystem Attributes 61
Table 27. ComputerSystem Attributes 67
Table 28. ComputerSystem Attributes 68
Table 29. Boot Attributes 68
Table 30. SystemCpuPerformanceConfiguration Attributes 69
Table 31. Attributes of Action for Changing TPM State 71
Table 32. Attributes of Action for Clearing Optane Memory Modules 72
Table 33. ComputerSystemMetrics Attributes 72
Table 34. BIOS Attributes 74
Table 35. BIOS Attributes 77
Table 36. ProcessorCollection Attributes 77
Table 37. Processor Attributes 78
Table 38. Links Attributes 80
Table 39. Processor Attributes 81
Table 40. Procssor Attributes 82
Table 41. FPGA Attributes 83
Table 42. FPGA Attributes 88
Table 43. ProcessorMetrics Attributes 89
Table 44. ProcessorMetrics Attributes 90
Table 45. MemoryCollection Attributes 92
Table 46. Memory Attributes 93

Table 47. MemoryLocation Attributes 96
Table 48. RegionSet Attributes 96
Table 49. PowerManagementPolicy Attributes 97
Table 50. SecurityCapabilities Attributes 97
Table 51. Memory Attributes 97
Table 52. MemoryMetrics Attributes 101
Table 53. CurrentPeriod Attributes 101
Table 54. LifeTime Attributes 102
Table 55. HealthData Attributes 102
Table 56. MemoryMetrics Attributes 102
Table 57. MemoryMetricsCurrentPeriod Attributes 103
Table 58. MemoryMetricsLifeTime Attributes 104
Table 59. Storage Collection Attributes 107
Table 60. Storage Attributes 108
Table 61 VolumeCollection Attributes 110
Table 62. Drive Attributes 111
Table 63. Drive Attributes 114
Table 64. Drive Attributes 115
Table 65. Storage Collection Attributes 116
Table 66. EthernetInterface Attributes 120
Table 67. EthernetInterfaceLinks Attributes 120
Table 68. ManagerCollection Attributes 122
Table 69. Manager Attributes 124
Table 70. Links Attributes 126
Table 71. ManagerLinks Attributes 127
Table 72. ManagerNetworkProtocol Attributes 129
Table 73. LogServiceCollection Attributes 134
Table 74. LogService Attributes 135
Table 75. LogEntryCollection Attributes 138
Table 76. LogEntry Attributes 139
Table 77. EthernetSwitchCollection Attributes 143
Table 78. EthernetSwitch Attributes 144
Table 79. DCBXConfig Attributes 146
Table 80. ApplicationProtocolType Attributes 146
Table 81. ProtocolType Attributes 147
Table 82. PriorityClassMapping Attributes 147
Table 83 BandwidthMapping Attributes 147
Table 84. EthernetSwitch Attributes 149
Table 85. EthernetSwitchMetrics Attributes 151
Table 86. EthernetSwitchPortCollection Attributes 152
Table 87. EthernetSwitchPort Attributes 153
Table 88. OperationalState Attributes 154
Table 89. AdministrativeState Attributes 154
Table 90. PortClass Attributes 154
Table 91. PortMode Attributes 154
Table 92. PFC Attributes 155
Table 93. DCBXStateType Attributes 155
Table 94. EthernetSwitchPort Attributes 157

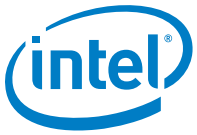
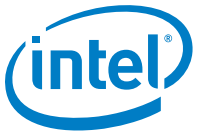


Table 95. EthernetSwitchPort Link attributes 157
Table 96. EthernetSwitchPortMetrics Attributes 159
Table 97. EthernetSwitchACLCollection Attributes 161
Table 98. EthernetSwitchACL Attributes 162
Table 99. Ethernet Switch ACL POST Attributes 163
Table 100. EthernetSwitchACLRuleCollection Attributes 164
Table 101. EthernetSwitchACLRule Attributes 165
Table 102. ConditionType Attributes 166
Table 103. EthernetSwitchACLRule Attributes 166
Table 104. EthernetSwitchACLRule Attributes 168
Table 105. ConditionType Attributes 168
Table 106. EthernetSwitchACLRuleCollection Attributes 170
Table 107. Attributes of POST action to create new static MAC entry 171
Table 108. EthernetSwitchStaticMAC Attributes 171
Table 109. StaticMac Attributes 172
Table 110. EthernetInterfaceCollection Attributes 173
Table 111. VLanNetworkInterfaceCollection Attributes 174
Table 112. Attributes of POST Action to Create VLAN Network Interface 175
Table 113. VLANNetworkInterface Attributes 176
Table 114. EventService Attributes 178
Table 115. EventDestinationCollection Attributes 182
Table 116. EventDestination Attributes 183
Table 117. EventType Attributes 186
Table 118. Event Attributes 187
Table 119. FabricCollection Attributes 189
Table 120. Fabric Attributes 190
Table 121. Fabric Attributes 191
Table 122. FabricLinks Attributes 191
Table 123. SwitchCollection Attributes 192
Table 124. Switch Attributes 193
Table 125. PortCollection Attributes 197
Table 126. Port Attributes 198
Table 127. Port Attributes 198
Table 128. PortMetrics Attributes 201
Table 129. Zone Attributes 204
Table 130. Links Attributes 205
Table 131. EndpointCollection Attributes 207
Table 132. Endpoint Attributes 208
Table 133. Identifier Attributes 209
Table 134. ConnectedEntity Attributes 209
Table 135. IPTransportDetails Attributes 210
Table 136. DurableNameFormat Attributes 210
Table 137. EntityRole Attributes 210
Table 138. Endpoint Attributes 213
Table 139. Endpoint Attributes 214
Table 140. PCIeDevice Attributes 222
Table 141. PCIeDevice Attributes 224
Table 142. PCIeFunction Attributes 224
Table 143. TaskService Attributes 227

Table 144. TaskCollection Attributes 229
Table 145. Task Attributes 230
Table 146. AccountService Attributes 232
Table 147. ManagerAccountCollection Attributes 236
Table 148. ManagerAccount Attributes 237
Table 149. RoleCollection Attributes 239
Table 150. Role Attributes 240
Table 151. Role Attributes 241
Table 152. SessionService Attributes 242
Table 153. SessionService Attributes 244
Table 154. SessionCollection Attributes 245
Table 155. Session Attributes 246
Table 156. Session Attributes 247
Table 157. MessageRegistryFileCollection Attributes 249
Table 158. MessageRegistryFile Attributes 250
Table 159. TelemetryService Attributes 252
Table 160. MetricDefinitionCollection Attributes 253
Table 161. MetricDefinition Attributes 255
Table 162. MetricDefinition attributes extending the WIP model 258
Table 163. MetricReportDefinitionCollection Attributes 261
Table 164. MetricReportDefinition Attributes 263
Table 165. MetricReport Attributes 266
Table 166. TriggersCollection Attributes 267
Table 167. Triggers Attributes 270
Table 168. Power Attributes 275
Table 169. PowerControl Attributes 275
Table 170. Voltage Attributes 277
Table 171. PowerSupply Attributes 279
Table 172. Redundancy Attributes 282
Table 173. Thermal Attributes 285
Table 174. Temperature Attributes 286
Table 175. Fan Attributes 290
Table 176. Redundancy Attributes 294
Table 177. UpdateService Attributes 298
Table 178. SoftwareInventoryCollection Attributes 303
Table 179. SoftwareInventory Attributes 304
Table 180. SoftwareInventoryCollection Attributes 307
Table 181. SoftwareInventory Attributes 308
Table 182. NetworkInterfaceCollection Attributes 310
Table 183. NetworkInterface Attributes 311
Table 184. Required Resources 313
Table 185. Status Attributes 316
Table 186. State Attributes 316
Table 187. Health Attributes 316
Table 188. ResetType Attributes 317



Revision History

Revision	Description	Date
001	Initial release for Intel® RSD software v2.5	July2019

§

1.0 Introduction

This specification defines the interface to the Pooled System Management Engine (PSME) module to support Intel® Rack Scale Design (RSD) drawers, which cover the functionality designed and implemented in Intel® Rack Scale Design Software v2.5.

1.1 Scope

The interface is based on the Distributed Management Task Force's (DMTF*) Redfish* Interface Specification v1.6.1*, and *Redfish* v2018.3* (refer to Table 2). The exceptions are as follows:

For the location and titles of documents mentioned, refer to Table 2.

1.2 Intended Audience

The intended audience for this document includes:

- Software vendors (for example, independent software vendors (ISV's) of POD management applications that make use of the PSME API to discover, compose, and manage Intel® RSD drawers (regardless of the hardware vendor).
- Hardware vendors (for example, OEMs) of PSME firmware that implements PSME firmware for Intel® RSD compliant systems.

1.3 Conventions

The key words/phrases "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in *Keywords for Use in RFCs to Indicate Requirement Levels* (refer to Table 2).

1.4 Notes and Symbol Convention

Symbol and note convention are similar to typographical conventions used in the *Cloud Infrastructure Management Interface (CIMI) Model and Representational State Transfer (REST) HTTP-based Protocol Specifications* (refer to Table 2).

The notation used in JSON* serialization description:

- Mandatory in italics indicate data types instead of literal Mandatory.
- Characters are appended to items to indicate cardinality:
  - "?" (0 or 1)
  - "" (0 or more)
  - "+" (1 or more)
- Vertical bars, "|", denote choice. For example, "a|b" means a choice between "a" and "b".
- Parentheses, "(" and ")", are used to indicate the scope of the operators "?", "", "+" and "|".
- Ellipses (for example, "...") indicate points of extensibility.

Note: The lack of eclipses does not mean no extensibility point exists; rather it is just not explicitly called out.

1.5 Terminology

Table 1. Terminology

Term	Definition
ACL	Access Control List
API	Application Program Interface
BMC	Baseboard Management controller
CIMI	Cloud Infrastructure Management Interface
DCB	Data Center Bridging
DIMM	Dual Inline Memory Module
DST	Daylight Savings Time
ETS	Enhanced Transmission Selection
HTTP	Hypertext Transfer Protocol
Intel® RSD	Intel® Rack Scale Design
ISV	Independent Software Vendor
JSON*	JavaScript object notation*
KVM	Keyboard, Video, Mouse
NIC	Network interface card
NVMe*	Non-Volatile Memory express*
OData*	Open Data Protocol
OEM	Original Equipment Manufacturer
PDU	Protocol Data Unit
PFC	Priority Flow Control
PNC	Pooled Node Controller
PODM	POD Manager
PSME	Pooled System Management Engine
PXE	Preboot Execution
REST	Representational state transfer
SKU	Stock Keeping Unit
SMFP	Scalable Platforms Management Forum
TPM	Trusted Platform Module
URI	Uniform resource identifier
UUID	Universally unique identifier
ISV	Software Vendors
VLAN	Virtual Local Area Network

1.6 References and Resources

Table 2. Reference Documents and Resources

Doc ID	Title	Location
613314	*Intel® Rack Scale Design (Intel® RSD) Pooled System Management Engine (PSME) User Guide Software v2.5*	Note: *https://www.intel.com/content/www/us/en/architecture-and-technology/rack-scale-design/rack-scale-design-resources.html*
613315	*Intel® Rack Scale Design (Intel® RSD) Software Functionality Conformance Reference kit Getting Started Guide v2.5.*	
613316	*Intel® Rack Scale Design (Intel® RSD) POD Manager (PODM) Release Notes Software v2.5*	
613317	*Intel® Rack Scale Design (Intel® RSD) POD Manager (PODM) User Guide Software v2.5*	
613318	*Intel® Rack Scale Design (Intel® RSD) Pooled System Management (PSME) Release Notes Software v2.5*	
613319	*Intel® Rack Scale Design (Intel® RSD) Architecture Specification Software v2.5*	
613320	*Intel® Rack Scale Design (Intel® RSD) Pod Manager (PODM) Representational State Transfer (REST) API Specification Software v2.5*	
613321	*Intel® Rack Scale Design (Intel® RSD) Rack Management Module (RMM) Representational State Transfer (REST) API Specification Software v2.5*	
613324	*Intel® Rack Scale Design (Intel® RSD) Generic Assets Management Interface (GAMI) API Specification v2.5*	
613329	*Intel® Rack Scale Design Storage Services API Specification Software v2.5*	***See Note***
608298	Field Programmable Gate Array (FPGA) over Fabric Protocol Architecture Specification	*https://cdrdv2.intel.com/v1/dl/getContent/608298*
596167	Intel® Rack Scale Design (Intel® RSD) for Cascade Lake Platform Firmware Extension Specification	*https://cdrdv2.intel.com/v1/dl/getContent/596167*
DSP0263	*Cloud Infrastructure Management Interface (CIMI) specification*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP0263_1.0.1.pdf*
DSP2064	*Redfish* Resource and Schema Guide*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP2046_2018.3.pdf*
DSP0266	*Redfish* Scalable Platforms Management API Specification v2.0.0*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP0263_2.0.0.pdf*
DSP8010	*Redfish* Schema v2018.3*	*https://www.dmtf.org/sites/default/files/standards/documents/DSP8010_2018.3.zip*
RFC2119	*Key Words for Use in RFCs to Indicate Requirement Levels, March 1997*	*https://ietf.org/rfc/rfc2119*
RFC2616	*Hypertext Transfer Protocol - HTTP/1.1*	*https://tools.ietf.org/html/rfc2616*
RFC3270	*Internet Small Computer Systems Interface (iSCSI)*	*https://tools.ietf.org/html/rfc3270*
RFC3271	*Internet Small Computer Systems Interface (iSCSI) Naming and Discovery*	*https://tools.ietf.org/html/rfc3271*
RFC5646	*Tags for Identifying Languages*	*https://tools.ietf.org/html/rfc5646*
RFC5789	*PATCH Method for HTTP*	*https://www.ietf.org/mail-archive/web/ietf-announce/current/msg07238.html*

Doc ID	Title	Location
T11/16-291v0	*Fibre Channel Framing and Signaling - 4 (FC-FS-4)*	*https://standards.incits.org/apps/group_public/download.php/81969/T11-2016-291v0.pdf*
N/A	*IANA Assigned Internet Protocol Numbers*	*https://www.iana.org/assignments/protocol-numbers/protocol-numbers.xhtml*

Note: Documents referenced in this table which have a Document ID, but cannot be accessed, can be obtained by calling 1-800-548-4725 or by visiting *www.intel.com/design/literature.htm* obtain a copy.

§

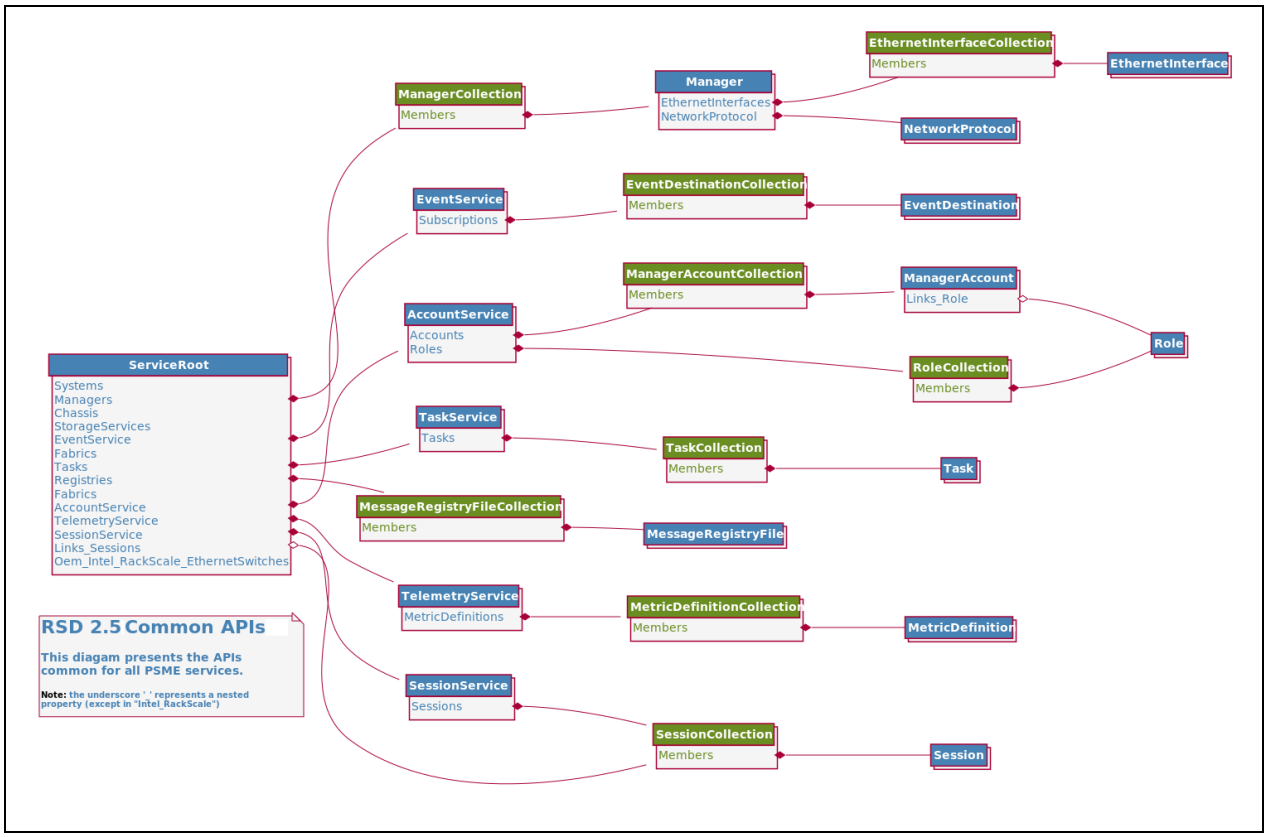
2.0 PSME API

2.1 PSME API Structure and Relations

The PSME REST API provides the REST-based interface that allows full management of the PSME, including asset discovery and configuration.

Figure 1 shows the hierarchy of resources shared between RSD PSME Services.

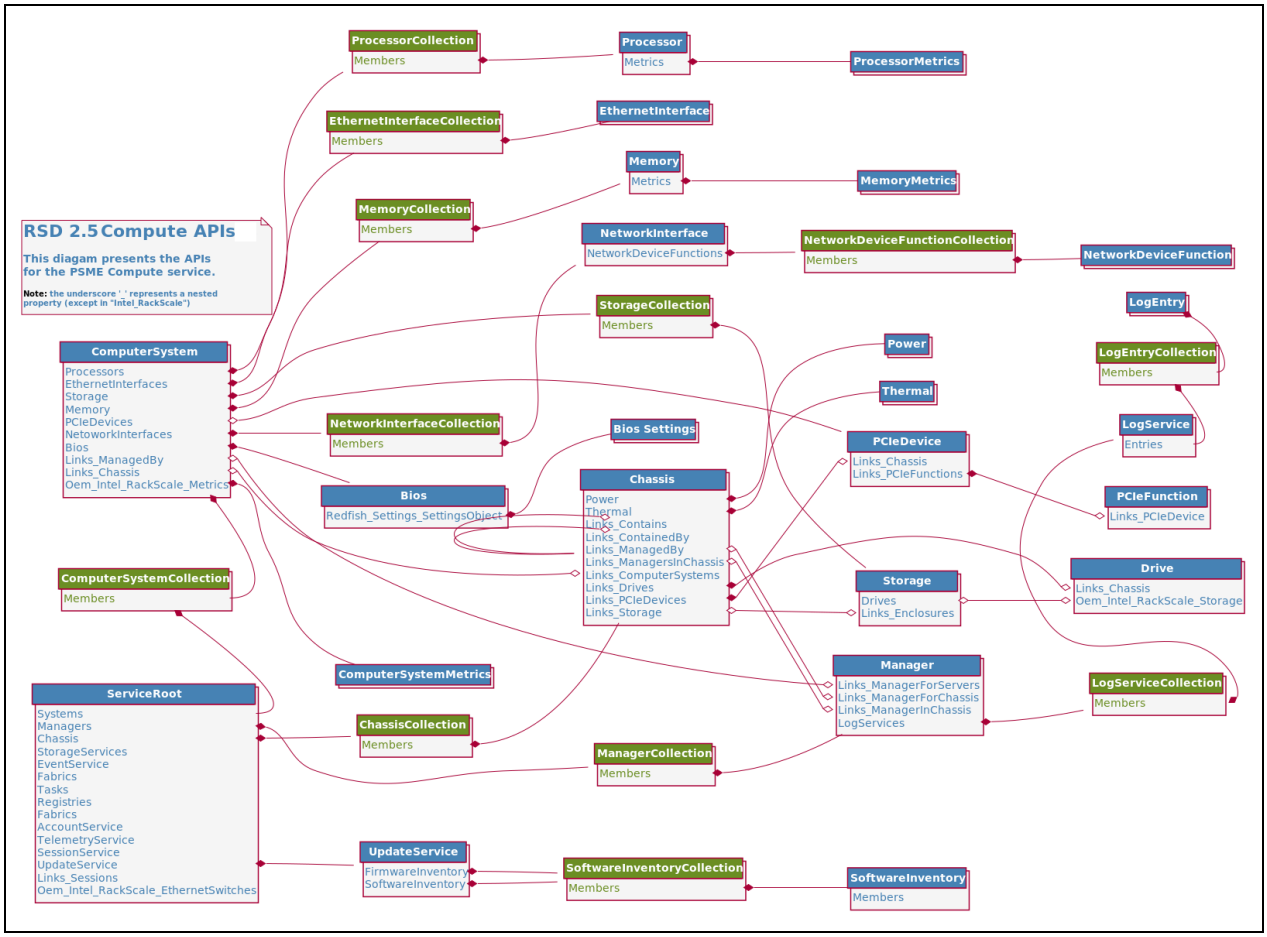
Figure 1. Common Resource Hierarchy



2.1.1 PSME Compute API Resource Hierarchy

Figure 2 represents the hierarchy of the PSME Compute resources.

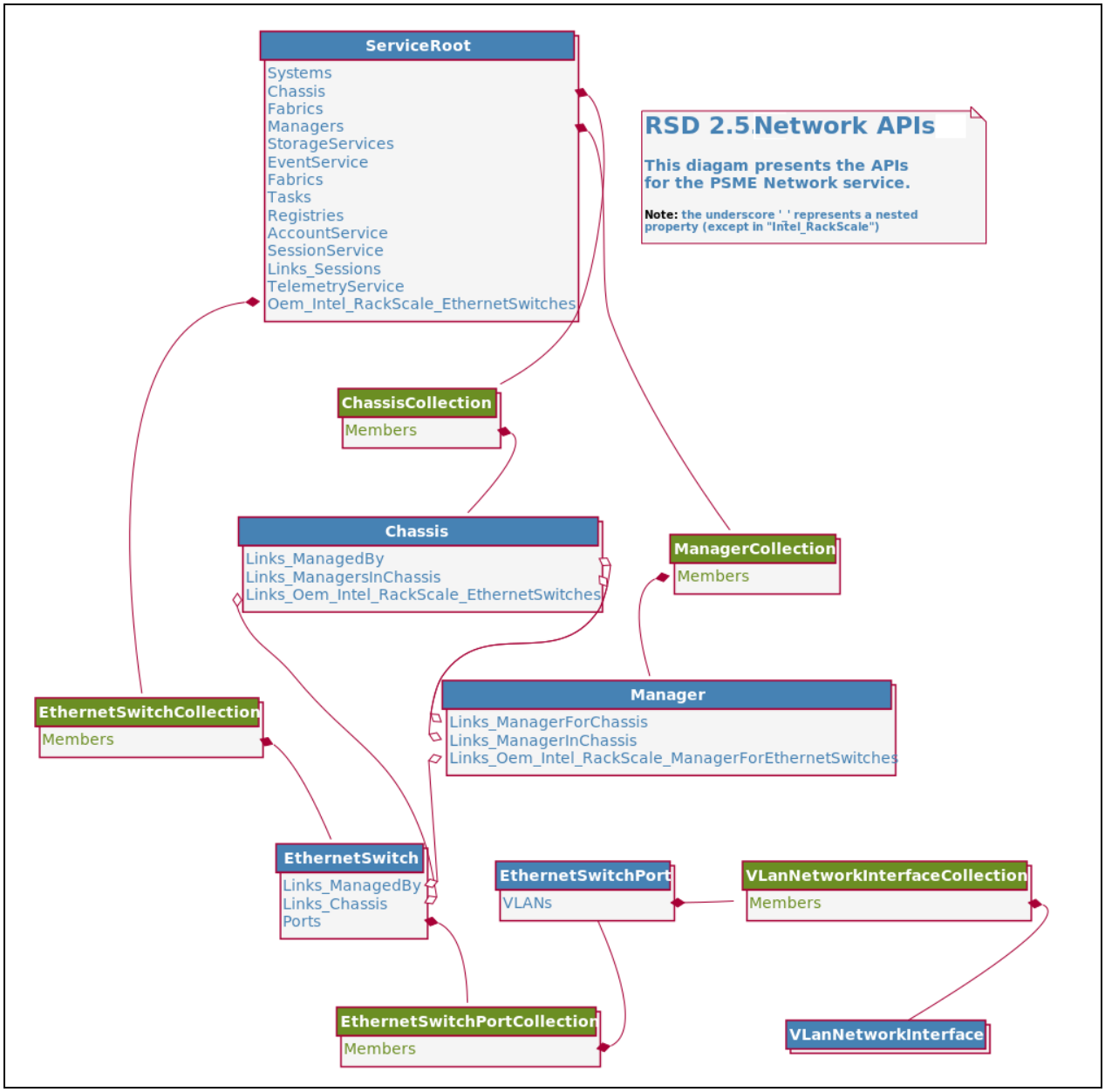
Figure 2. PSME REST API Hierarchy for PSME Compute Resources



2.1.2 PSME Network API Resource Hierarchy

Figure 3 represents the hierarchy of the PSME Network resources.

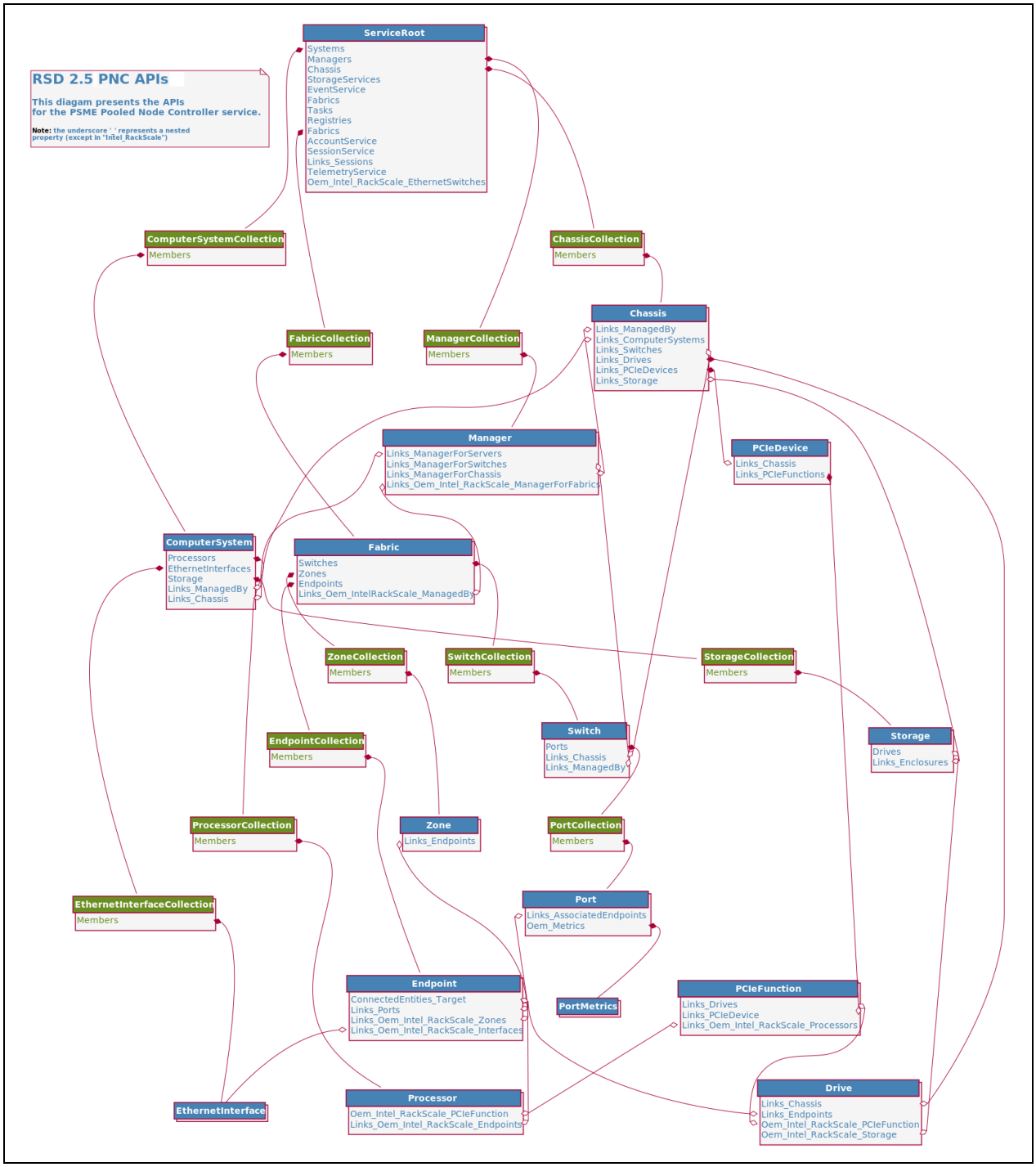
Figure 3. PSME REST API Hierarchy for PSME Network Resources



2.1.3 PSME PNC API Resource Hierarchy

Figure 4 represents the hierarchy of PSME PNC resources.

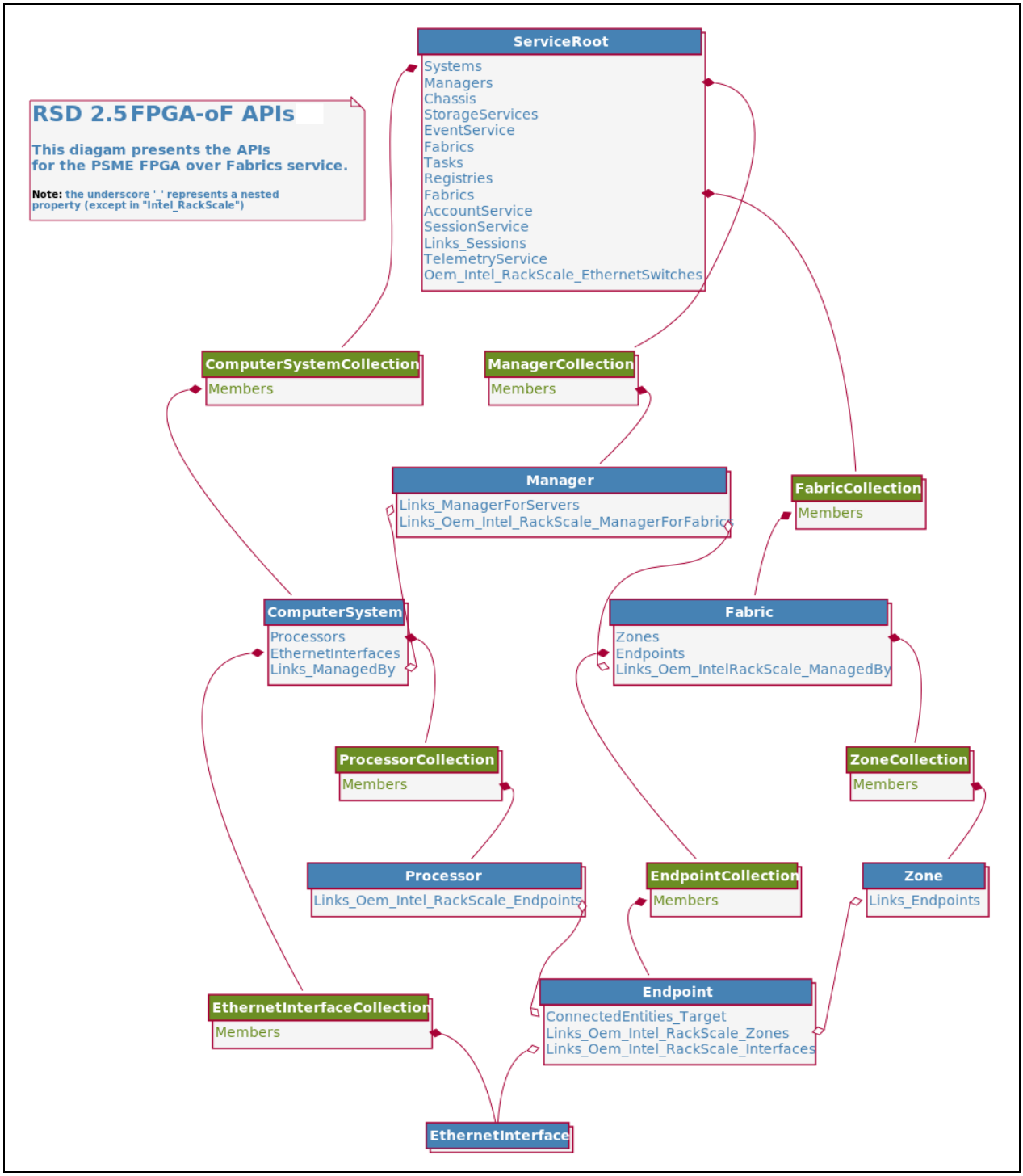
Figure 4. PSME REST API hierarchy for PSME PNC resources



2.1.4 PSME FPGA-Over-Fabrics (oF) API Resource Hierarchy

Figure 5 represents the hierarchy of PSME FPGA-oF resources.

Figure 5. PSME REST API hierarchy for PSME FPGA-oF resources



2.2 Resources and URIs

Table 3. Resources and Uniform Resource Identifiers (URIs)

Resource	Schema version	OEM Extended?	URI
Service Root	v1_5_0	Yes	/redfish/v1
Chassis Collection		No	/redfish/v1/Chassis
Chassis	V1_7_0	Yes	/redfish/v1/Chassis/{chassisID}
Computer System Collection		No	/redfish/v1/Systems
Computer System	V1_5_0	Yes	/redfish/v1/Systems/{systemID}
Computer System Metrics	OEM v1_0_0	Yes	/redfish/v1/Systems/{systemID}/Metrics
Processors Collection		No	/redfish/v1/Systems/{systemID}/Processors
Processor	V1_4_0	Yes	/redfish/v1/Systems/{systemID}/Processors/{processorID}
Processor Metrics	v1_1_4	Yes	/redfish/v1/Systems/{systemID}/Processors/{processorID}/Metrics
Memory Collection			/redfish/v1/Systems/{systemID}/Memory
Memory	V1_7_0	Yes	/redfish/v1/Systems/{systemID}/Memory/{memoryID}
Memory Metrics	V1_1_4	Yes	/redfish/v1/Systems/{systemID}/Memory/{memoryID}/Metrics
Storage Subsystem Collection			/redfish/v1/Systems/{systemID}/Storage
Storage Subsystem	V1_2_0	No	/redfish/v1/Systems/{systemID}/Storage/{storageID}
Drive	V1_5_1	Yes	/redfish/v1/Chassis/{chassisID}/Drives/{driveID}
Manager Collection			/redfish/v1/Managers
Manager	V1_5_0	No	/redfish/v1/Managers/{managerID}
Log Service Collection			/redfish/v1/Managers/{managerID}/LogServices
Log Service	v1_1_1	No	/redfish/v1/Managers/{managerID}/LogServices/{serviceID}
Log Entry Collection			/redfish/v1/Managers/{managerID}/LogServices/{serviceID}/Entries
Log Entry	v1_4_1	Yes	/redfish/v1/Managers/{managerID}/LogServices/{serviceID}/Entries/{entryID}
Network Protocol	V1_4_0	Yes	/redfish/v1/Managers/{managerID}/NetworkProtocol
Ethernet Interface Collection			/redfish/v1/Systems/{systemID}/EthernetInterfaces /redfish/v1/Managers/{managerID}/EthernetInterfaces
Ethernet Interface	V1_4_1	Yes	/redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID} /redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}
Ethernet Switch Collection			/redfish/v1/EthernetSwitches
Ethernet Switch	OEM v1_0_0		/redfish/v1/EthernetSwitches/{switchID}

Resource	Schema version	OEM Extended?	URI
Ethernet Switch Metrics	OEM v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/Metrics
Ethernet Switch Port Collection			/redfish/v1/EthernetSwitches/{switchID}/Ports
Ethernet Switch Port	OEM v1_1_0		/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}
Ethernet Switch Port Metrics	OEM v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/Metrics
Ethernet Switch Port StaticMAC Collection			/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/StaticMACs
Ethernet Switch Port Static MAC	OEM v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/StaticMACs/{macID}
Ethernet Switch ACL collection			/redfish/v1/EthernetSwitches/{switchID}/ACLs
Ethernet Switch ACL	OEM v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/ACLs/{aclID}
Ethernet Switch ACL rule collection			/redfish/v1/EthernetSwitches/{switchID}/ACLs/{aclID}/Rules
Ethernet Switch ACL rule	OEM v1_0_0		/redfish/v1/EthernetSwitches/{switchID}/ACLs/{aclID}/Rules/{ruleID}
VLAN Network Interface Collection			/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/VLANs /redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}/VLANs /redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}/VLANs
VLAN Network Interface	V1_1_2	Yes	/redfish/v1/EthernetSwitches/{switchID}/Ports/{portID}/VLANs/{vlanID} /redfish/v1/Systems/{systemID}/EthernetInterfaces/{nicID}/VLANs/{vlanID} /redfish/v1/Managers/{managerID}/EthernetInterfaces/{nicID}/VLANs/{vlanID}
EventService	V1_2_0	No	/redfish/v1/EventService
Event Subscription Collection			/redfish/v1/EventService/Subscriptions
Event Subscription	V1_4_0	No	/redfish/v1/EventService/Subscriptions/{subscriptionID}
Fabrics collection			/redfish/v1/Fabrics
Fabric	V1_0_4	No	/redfish/v1/Fabrics/{fabricID}
Fabric Switch collection			/redfish/v1/Fabrics/{fabricID}/Switches
Fabric Switch	V1_1_1	No	/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}
Fabric Switch Port collection			/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}/Ports
Fabric Switch Port	V1_1_1	Yes	/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}/Ports/{portID}

Resource	Schema version	OEM Extended?	URI
Fabric Switch Port Metrics	OEM v1_0_0		/redfish/v1/Fabrics/{fabricID}/Switches/{switchID}/Ports/{portID}/Metrics
Fabric Zone collection			/redfish/v1/Fabrics/{fabricID}/Zones
Fabric Zone	V1_2_1	No	/redfish/v1/Fabrics/{fabricID}/Zones/{zoneID}
Endpoint Collection			/redfish/v1/Fabrics/{fabricID}/Endpoints
Endpoint	V1_3_0	No	/redfish/v1/Fabrics/{fabricID}/Endpoints/{endpointID}
PCIeDevice	V1_3_0	No	/redfish/v1/Chassis/{chassisID}/PCIeDevices/{deviceID}
PCIe Device Function	V1_2_1	No	/redfish/v1/Chassis/{chassisID}/PCIeDevices/{deviceID}/Functions/{functionID}
TelemetryService	v1_1_0		/redfish/v1/TelemetryService
Metric Definition Collection			/redfish/v1/TelemetryService/MetricDefinitions
Metric Definition	v1_0_1	Yes	/redfish/v1/TelemetryService/MetricDefinitions/{metricDefinitionId}
Metric Report Definition Collection			/redfish/v1/TelemetryService/MetricReportDefinitions
Metric Report Definition	v1_1_0		/redfish/v1/TelemetryService/MetricReportDefinitions/{metricReportDefinitionId}
Triggers Collection			/redfish/v1/TelemetryService/Triggers
Triggers	v1_0_1		/redfish/v1/TelemetryService/Triggers/{triggerId}
Network Adapter Collection			/redfish/v1/Chassis/{chassisID}/NetworkAdapters
Network Adapter	V1_2_0	No	/redfish/v1/Chassis/{chassisID}/NetworkAdapters/{adapterID}
Network Device Function Collection			/redfish/v1/Chassis/{chassisID}/NetworkAdapters/{adapterID}/NetworkDeviceFunctions
Network Device Function	V1_3_0	No	/redfish/v1/Chassis/{chassisID}/NetworkAdapters/{adapterID}/NetworkDeviceFunctions/{functionID}
Task Service	V1_1_2	No	/redfish/v1/TaskService
Task Collection			/redfish/v1//TaskService/Tasks
Task	V1_3_1	No	/redfish/v1//TaskService/Tasks/{taskID}
Power	V1_5_2	No	/redfish/v1/Chassis/{chassisID}/Power
Thermal	V1_5_1	No	/redfish/v1/Chassis/{chassisID}/Thermal
Update Service	V1_4_0	No	/redfish/v1/UpdateService
Software Inventory Collection		No	/redfish/v1/UpdateService/SoftwareIntventory /redfish/v1/UpdateService/FirmwareInventory
Software Inventory	v1_2_1	No	/redfish/v1/UpdateService/SoftwareInventory/{inventoryID} /redfish/v1/UpdateService/FirmwareInventory/{inventoryID}
Account Service	V1_4_0	No	/redfish/v1/AccountService
Manager Account	V1_2_0	No	/redfish/v1/AccountService/Accounts/{accountID}

Resource	Schema version	OEM Extended?	URI
Manager Account Collection		No	/redfish/v1/AccountService/Accounts
Role	V1_2_2	No	/redfish/v1/AccountService/Roles/{roleID}
Role Collection		No	/redfish/v1/AccountService/Roles
Session Service	v1_1_4	No	/redfish/v1/SessionService
Session	v1_1_1	No	/redfish/v1/SessionService/Sessions/{sessionID}
Session Collection		No	/redfish/v1/SessionService/Sessions
Bios	v1_0_5	No	/redfish/v1/Systems/{systemID}/Bios
Bios Settings Object	v1_2_1	No	/redfish/v1/Systems/{systemID}/Bios/Settings

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3.0 REST API Error Codes

This section contains descriptions of all error codes that may be returned by the REST calls implemented in the PSME REST API of the Intel® RSD v2.5 release.

3.1 API Error Responses

In case of an error, the PSME REST API responds with a status code, as defined by the *HTTP 1.1 Specification* (refer to Table 2) and constrained by additional requirements defined in this specification. HTTP response status codes often do not provide enough information to enable deterministic error semantics. PSME REST API returns extended error information as a JSON* object with a single property named `"error"`. The value of the property shall be a JSON* object with the properties shown in Table 4.

Table 4. API Error Response Attributes

Attribute	Description
`Code`	A string indicating a specific `MessageId` from the message registry. "Base.1.0.GeneralError" should be used only when no other message is better.
`Message`	A human-readable error message corresponding to the message in the message registry.
`@Message.ExtendedInfo`	An array of message objects describing one or more error message(s).

3.1.1 Message Object

Message objects provide additional information about an object, property, or error response. Messages are represented as JSON* objects with the properties shown in Table 5.

Table 5. Message Object Attributes

Attribute	Description
`MessageId`	A string indicating a specific error or message (not to be confused with the HTTP status code). This code can be used to access a detailed message from a message registry.
`Message`	A human-readable error message indicating the semantics associated with the error. This is the complete message and does not rely on substitution variables.
`MessageArgs`	An optional array of strings representing the substitution parameter values for the message. This is included in the response if a `MessageId` is specified for a parameterized message.
`Severity`	An optional string representing the severity of an error.
`Resolution`	An optional string describing recommended action(s) to take to resolve an error.
`RelatedProperties`	An optional array of JSON pointers defining the specific properties in a JSON payload described by the message.

3.1.2 Error Message Definitions

The messages returned by a Redfish* service are defined in Message Registries. In the current implementation, the PSME REST API responds with messages from two registries:

- The Redfish Base Registry v1.0.0, refer to Table 2.
- The Intel RackScale Registry, presented in the next section.

  The URIs of the registries may also be obtained from the service by querying the Message Registry File API at `/redfish/v1/Registries`.

3.1.3 Intel RackScale Message Registry

The registry contains two RSD-specific error messages.

Request:

```
GET /registries/Intel_RackScale
Content-Type: application/json
```

Response:

```
{
  "@odata.type": "#MessageRegistry.v1_0_0.MessageRegistry",
  "Id": "Intel_RackScale.1.0.0",
  "Name": "Intel_RackScale Message Registry",
  "Language": "en",
  "Description": "This registry defines messages specific to Intel RackScale",
  "RegistryPrefix": "Intel_RackScale",
  "RegistryVersion": "1.0.0",
  "OwningEntity": "Intel Corporation",
  "Messages": {
    "PropertyNotModifiable": {
      "Description": "Indicates that a property cannot be modified even though the
metadata specifies it as writable",
      "Message": "The service is unable to modify the property %1 even though metadata
specifies it as writeable.",
      "Severity": "Warning",
      "NumberOfArgs": 1,
      "ParamTypes": [
        "string"
      ],
      "Resolution": "Remove the unmodifiable property from the request body and
resubmit the request."
    },
    "PropertyValueRestricted": {
      "Description": "Indicates that the value given for a property is not within
restrictions imposed by the Service (even though it may be correct according to
metadata)",
      "Message": "The value %1 for property %2 is not within restrictions imposed by
the Service.",
      "Severity": "Warning",
      "NumberOfArgs": 1,
      "ParamTypes": [
        "string",
        "string"
      ],
      "Resolution": "Correct the value for the property in the request body and
resubmit the request."
    }
  }
}
```

3.1.4 Example Error JSON Object

```
{
    "error": {
        "code": "Base.1.0.GeneralError",
        "message": "A general error has occurred. See ExtendedInfo for more
information.",
        "@Message.ExtendedInfo": [
            {
```

```
                "@odata.type" : "/redfish/v1/$metadata#Message.v1_0_5.Message",
                "MessageId": "Base.1.0.MalformedJSON",
                "Message": "The request body submitted was malformed JSON and could
not be parsed by the receiving service",
                "Severity": "Error"
            },
            {
                "@odata.type" : "/redfish/v1/$metadata#Message.v1_0_5.Message",
                "MessageId": "Base.1.0.PropertyNotWriteable",
                "RelatedProperties": [
                    "#/Name"
                ],
                "Message": "The property Name is a read only property and cannot be
assigned a value",
                "MessageArgs": [
                    "Name"
                ],
                "Severity": "Warning",
                "Resolution": "Remove the property from the request body and resubmit
the request if the operation failed"
            }
        ]
    }
}
```

3.2 API Error Codes

If an error is not described in Table 6, it is to be mapped into HTTP 500 Internal Error code.

3.2.1 General Error Codes

For a detailed list of error codes, review the *Redfish* Scalable Platforms Management API Specification*, Section 6.5.2 (refer to Table 2). The client should be prepared to handle the error codes shown in Table 6:

Table 6. HTTP Error Status Codes

HTTP Status Code	Description
400 Bad Request	The request could not be processed because it contains missing or invalid information (such as validation error on an input field, a missing required value, or other invalid information). An extended error shall be returned in the response body.
401 Unauthorized	The authentication credentials included with this request are missing or invalid.
404 Not Found	The request specified a URI of a resource that does not exist.
405 Method Not Allowed	The HTTP verb specified in the request (for example `DELETE`, `GET`, `HEAD`, `POST`, `PUT`, `PATCH`) is not supported for the request URI. The response includes an Allow header, which provides a list of methods supported by the resource, identified by the request URI.
409 Conflict	A creation or update request could not be completed, because it would cause a conflict in the current state of the resources supported by the platform. For example, an attempt to set multiple attributes that work in a linked manner using incompatible values would return this status code.
500 Internal Server Error	The server encountered an unexpected condition that prevented it from fulfilling the request. An extended error shall be returned in the response body
501 Not Implemented	The server does not (currently) support the functionality required to fulfill the request. This is the appropriate response when the server does not recognize the request method and is not capable of supporting it for any resource.
503 Service Unavailable	The server is currently unable to handle the request due to temporary overloading or maintenance of the server.

3.2.2 PATCH Method Error Codes

For the `PATCH` method error codes, the Intel® RSD service conforms to the IETF RFC 5789 standard (refer to Table 2). The service responds with the following error codes in the cases listed.

Table 7. PATCH Method Error Codes

HTTP Status Code	Description
400 Bad Request	Malformed JSON in the request (such as values not in range, an unknown property, and so on). The code, message, and extended information within the error response explain why a request was rejected. Of special concern are the RSD-specific messages from the Intel_RackScale registry. `PropertyNotModifiable` is returned when a `PATCH` request was sent for a property which, while writable according to metadata, is read-only on the PSME REST API. `PropertyValueRestricted` is returned when a PATCH request contains a value for a property which is compliant with metadata, but the service has additional restrictions on the acceptable values for that property which were not met by the request.
405 Method Note Allowed	Resource does not support the `PATCH` method.
409 Conflict	Update cannot be executed at this moment. The user might be able to resolve the conflict and resubmit the request.
500 Internal Server Error	All other situations in which the previous codes do not fit (for example, underlying hardware does not allow executing a particular request).
501 Not Implemented	Resource supports `PATCH` method, but current implementation does not (for example, underlying hardware does not support the functionality).

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4.0 PSME REST API Definition

Important Note: The JSON* example in this document are informative, not normative. Metadata files that are referenced by this specification are normative.

4.1 OData* Support

Intel® Rack Scale Design (Intel® RSD) supports the Open Data Protocol (OData) v4.0 as it is defined in *Redfish* Scalable Platforms Management API Specification* (refer to Table 2).

All resources within this REST API are identified by a unique identifier property named "`@odata.id`". Resource Identifiers are represented in JSON* payloads as URI paths relative to the Redfish* Schema portion of the URI. For example, the URIs always start with `/redfish/`. The resource identifier is the canonical URI for the resource and can be used to retrieve or edit the resource as appropriate.

4.2 Asynchronous Operations

While the majority of operations in this architecture are synchronous in nature, some operations can take a long time to execute, more time than a client typically wants to wait. For this reason, some operations can be asynchronous at the discretion of the service. The request portion of an asynchronous operation is no different from the request portion of a synchronous operation.

The use of HTTP response codes enables a client to determine if the operation was completed synchronously or asynchronously. Clients must be prepared to handle both synchronous and asynchronous responses for requests using HTTP `DELETE`, `POST`, `PATCH` and `PUT` methods.

For details, refer to Table 2, *Redfish Scalable Platforms Management API Specification*, Section 8.2, Asynchronous operations.

4.3 Protocol Version

The protocol version is separate from the version of the resources or the version of the Redfish* Schema supported by them.

Each version of the Redfish* protocol is strongly typed. This is accomplished using the URI of the Redfish service in combination with the resource obtained at that URI, called the `ServiceRoot`.

The root URI for this version of the Redfish protocol shall be `/redfish/v1/`.

While the major version of the protocol is represented in the URI, the major version, minor version, and errata version of the protocol are represented in the Version property of the `ServiceRoot` resource, as defined in the Redfish Schema for that resource. The protocol version is a string of the form:

`MajorVersion.MinorVersion.Errata`

Where:

- *MajorVersion* = integer: something in the class was changed in a way that broke backwards compatibility.
- *MinorVersion* = integer: a minor update. New functionality may have been added but nothing removed. The compatibility will be preserved with previous minor versions.
- *Errata* = integer: something in the prior version was broken and needed fixing.

Any resource discovered through links found by accessing the root service, any service, or resource referenced using references from the root service, shall conform to the same version of the protocol supported by the root service.

4.3.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.3.1.1 GET

Request:

```
GET /redfish
Content-Type: application/json
```

Response:

```
{
  "v1": "/redfish/v1/"
}
```

4.4 OData* Service Document

This OData Service Document provides a standard format for enumerating the resources exposed by the service, enabling generic hypermedia-driven OData clients to navigate to the resources of the service.

4.4.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.4.1.1.1 GET

Request:

```
GET /redfish/v1/odata
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata",
  "value": [
    {
      "name": "Service",
      "kind": "Singleton",
      "url": "/redfish/v1/"
    },
    {
      "name": "Systems",
      "kind": "Singleton",
      "url": "/redfish/v1/Systems"
```

```
    },
    {
      "name": "Chassis",
      "kind": "Singleton",
      "url": "/redfish/v1/Chassis"
    },
    {
      "name": "Managers",
      "kind": "Singleton",
      "url": "/redfish/v1/Managers"
    },
    {
      "name": "Services",
      "kind": "Singleton",
      "url": "/redfish/v1/Services"
    },
    {
      "name": "EthernetSwitches",
      "kind": "Singleton",
      "url": "/redfish/v1/EthernetSwitches"
    },
    {
      "name": "EventService",
      "kind": "Singleton",
      "url": "/redfish/v1/EventService"
    },
    {
      "name": "Tasks",
      "kind": "Singleton",
      "url": "/redfish/v1/TaskService"
    },
    {
      "name": "Registries",
      "kind": "Singleton",
      "url": "/redfish/v1/Registries"
    },
    {
      "name": "Fabrics",
      "kind": "Singleton",
      "url": "/redfish/v1/Fabrics"
    },
    {
      "name": "UpdateService",
      "kind": "Singleton",
      "url": "/redfish/v1/UpdateService"
    },
    {
      "name": "AccountService",
      "kind": "Singleton",
      "url": "/redfish/v1/AccountService"
    },
    {
      "name": "SessionService",
      "kind": "Singleton",
      "url": "/redfish/v1/SessionService"
    },
    {
      "name": "TelemetryService",
      "kind": "Singleton",
      "url": "/redfish/v1/TelemetryService"
    }
```

```
    ]
}
```

4.5 Intel® Rackscale Design OEM Extensions

All Intel® Rackscale Design OEM extensions to all defined resources in this document shall be supported.

4.6 Service Root

Service root resource - entry point.

This property's details are available in `ServiceRoot_v1.xml` metadata file. OEM extensions details are available in `IntelRackScaleOem_v1.xml`. Table 8 shows the `ServiceRoot` attributes. Table 9 shows the `ServiceRoot` OEM extensions.

Table 8. ServiceRoot Attributes

Attribute	Type	Nullable	Description
`RedfishVersion`	`Edm.String`	False	The value of this string shall represent the version of the Redfish* service. The format of this string shall be of the format `majorversion.minorversion.errata` in compliance with Protocol Version section of the Redfish specification.
`UUID`	`Resource.UUID`	True	The value of this string shall represent the id of the Redfish service instance. The format of this string shall be a 32-byte value in the form 8-4-4-4-12. If SSDP is used, this value shall be an exact match of the UUID value returned in a 200 OK from an SSDP M-SEARCH request during discovery. A Universally Unique IDentifier (UUID) URN Namespace, RFC4122, Table 2 describes methods that can be used to create a UUID value. The value should be considered to be opaque. Client software should only treat the overall value as a universally unique identifier and should not interpret any sub-fields within the UUID.
`Links`	`ServiceRoot.v1_0_0.Links`	False	The `Links` property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.

Attribute	Type	Nullable	Description
Systems	ComputerSystemCollection.ComputerSystemCollection	False	This object shall only contain a reference to a collection of resources that comply with the Systems schema.
Chassis	ChassisCollection.ChassisCollection	False	This object shall only contain a reference to a collection of resources that comply with the Chassis schema.
Managers	ManagerCollection.ManagerCollection	False	This object shall only contain a reference to a collection of resources that comply with the Managers schema.
Tasks	TaskService.TaskService	False	The classes structure shall only contain a reference to a resource that complies to the TaskService schema.
SessionService	SessionService.SessionService	False	The classes structure shall only contain a reference to a resource that complies to the SessionService schema.
AccountService	AccountService.AccountService	False	The classes structure shall only contain a reference to a resource that complies to the AccountService schema.
EventService	EventService.EventService	False	The classes structure shall only contain a reference to a resource that complies to the EventService schema.
Registries	MessageRegistryFileCollection.MessageRegistryFileCollection	False	This object shall contain a reference to Message Registry.
JsonSchemas	JsonSchemaFileCollection.JsonSchemaFileCollection	False	This object shall only contain a reference to a collection of resources that comply with the SchemaFile schema where the files are Json-Schema files.
StorageSystems	StorageSystemCollection.StorageSystemCollection	False	The referenced collection shall contain computer systems that act as storage servers. The HostingRoles attribute of each such computer system shall have an entry for StorageServer.
StorageServices	StorageServiceCollection.StorageServiceCollection	False	The referenced collection shall contain references to all StorageService instances.
Fabrics	FabricCollection.FabricCollection	False	The referenced collection shall contain references to all Fabric instances.
UpdateService	UpdateService.UpdateService	False	The classes structure shall only contain a reference to a resource that complies to the UpdateService schema.

Attribute	Type	Nullable	Description
CompositionService	CompositionService.CompositionService	False	The classes structure shall only contain a reference to a resource that complies to the CompositionService schema.
Product	Edm.String	False	The value of this string shall include the name of the product represented by this Redfish service.
ProtocolFeaturesSupported	ServiceRoot.v1_3_0.ProtocolFeaturesSupported	False	This type contains information about protocol features supported by the service.
JobService	JobService.JobService	False	The classes structure shall only contain a reference to a resource that conforms to the JobService schema.
TelemetryService	TelemetryService.TelemetryService	False	The value shall be a link to the TelemetryService.
Vendor	Edm.String	True	The value of this string shall include the name of the manufacturer or vendor represented by this Redfish service. If this property is supported, the vendor name shall not be included in the value of the Product property.
CertificateService	CertificateService.CertificateService	False	The value shall be a link to the CertificateService.
ResourceBlocks	ResourceBlockCollection.ResourceBlockCollection	False	The referenced collection shall contain references to all ResourceBlock instances.

4.6.1 Intel® RSD OEM extensions:

Table 9. ServiceRoot Attributes

Attribute	Type	Nullable	Description
ApiVersion	Edm.String	False	The version of Intel® RSD API exposed by this service.
EthernetSwitches	EthernetSwitchCollection.EthernetSwitchCollection	True	The classes structure shall only contain a reference to a resource that complies to the EthernetSwitch schema.
Nodes	ComposedNodeCollection.ComposedNodeCollection	True	This object shall only contain a reference to a collection of resources that comply with the Nodes schema.

Attribute	Type	Nullable	Description
TelemetryService	Intel_RackScale.TelemetryService.TelemetryService	True	The classes structure shall only contain a reference to a resource that complies to the TelemetryService schema. ***Deprecated***: This value has been Deprecated in favor of ServiceRoot/ TelemetryService

4.6.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.6.2.1 GET

Request:

```
GET /redfish/v1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ServiceRoot.ServiceRoot",
  "@odata.id": "/redfish/v1/",
  "@odata.type": "#ServiceRoot.v1_5_0.ServiceRoot",
  "Id": "RootService",
  "Name": "Root Service",
  "Description": "description-as-string",
  "RedfishVersion": "1.5.0",
  "UUID": "92384634-2938-2342-8820-489239905423",
  "Systems": {
    "@odata.id": "/redfish/v1/Systems"
  },
  "Chassis": {
    "@odata.id": "/redfish/v1/Chassis"
  },
  "Managers": {
    "@odata.id": "/redfish/v1/Managers"
  },
  "StorageServices": {
    "@odata.id": "/redfish/v1/StorageServices"
  },
  "EventService": {
    "@odata.id": "/redfish/v1/EventService"
  },
  "Fabrics": {
    "@odata.id": "/redfish/v1/Fabrics"
  },
  "Tasks": {
    "@odata.id": "/redfish/v1/TaskService"
  },
  "Registries": {
    "@odata.id": "/redfish/v1/Registries"
  },
  "AccountService": {
    "@odata.id": "/redfish/v1/AccountService"
```

```
  },
  "SessionService": {
    "@odata.id": "/redfish/v1/SessionService"
  },
  "TelemetryService": {
    "@odata.id": "/redfish/v1/TelemetryService"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.ServiceRoot",
      "ApiVersion": "2.5.0",
      "EthernetSwitches": {
        "@odata.id": "/redfish/v1/EthernetSwitches"
      }
    }
  },
  "UpdateService": {
    "@odata.id": "/redfish/v1/UpdateService"
  },
  "Links": {}
}
```


4.6.2.2 PUT

Operation is not allowed on this resource.

4.6.2.3 PATCH

Operation is not allowed on this resource.

4.6.2.4 POST

Operation is not allowed on this resource.

4.6.2.5 DELETE

Operation is not allowed on this resource.

4.7 Chassis Collection

This section describes the chassis collection resource.

Table 10. ChassisCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Chassis.Chassis)`	True	Contains the members of this collection.

4.7.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.7.1.1 GET

Request:

```
GET /redfish/v1/Chassis
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Chassis",
  "@odata.id": "/redfish/v1/Chassis",
  "@odata.type": "#ChassisCollection.ChassisCollection",
  "Name": "Chassis Collection",
  "Description": "description-as-string",
  "Members@odata.count": 7,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/Pod"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Rack1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/FabricModule1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Blade1"
    },
    {
      "@odata.id": "/redfish/v1/Chassis/PCIeSwitchChassis"
    }
  ]
}
```


4.7.1.2 PUT

Operation is not allowed on this resource.

4.7.1.3 PATCH

Operation is not allowed on this resource.

4.7.1.4 POST

Operation is not allowed on this resource.

4.7.1.5 DELETE

Operation is not allowed on this resource.

4.8 Chassis

This is the schema definition for the Chassis resource. It represents the properties of physical components for any system. This resource is intended to represent racks, rackmount servers, blades, standalone, modular systems, enclosures, and all other containers. The non-CPU/device centric parts of the schema are all accessed either directly or indirectly through this resource.

Details of this resource are described in the Chassis_v1.xml metadata file. OEM extension details are available in IntelRackScaleOem_v1.xml.

Table 12 describes the Chassis attributes. Table 13 describes the Location attributes, Table 11 shows the Link attribute, Table 14 shows the ChassisLinks attribute, and Table 15 shows the ChassisType attributes. For the Intel® RSD OEM extensions, Table 16 describes the Chassis attribute and shows the Location attributes.

Table 11. Chassis Type Attributes

Member	Description
Rack	An equipment rack, typically a 19-inch wide freestanding unit.
Blade	An enclosed or semi-enclosed, typically vertically-oriented, system chassis which must be plugged into a multi-system chassis to function normally.
Enclosure	A generic term for a chassis that does not fit any other description.
StandAlone	A single, free-standing system, commonly called a tower or desktop chassis.
RackMount	A single system chassis designed specifically for mounting in an equipment rack.
Card	A loose device or circuit board intended to be installed in a system or other enclosure.
Cartridge	A small self-contained system intended to be plugged into a multi-system chassis.
Row	A collection of equipment racks.
Pod	A collection of equipment racks in a large, likely transportable, container.
Expansion	A chassis which expands the capabilities or capacity of another chassis.
Sidecar	A chassis that mates mechanically with another chassis to expand its capabilities or capacity.
Zone	A logical division or the portion of a physical chassis that contains multiple devices or systems that cannot be physically separated.
Sled	An enclosed or semi-enclosed, system chassis which must be plugged into a multi-system chassis to function normally similar to a blade type chassis.
Shelf	An enclosed or semi-enclosed, typically horizontally-oriented, system chassis which must be plugged into a multi-system chassis to function normally.
Drawer	An enclosed or semi-enclosed, typically horizontally-oriented, system chassis which may be slid into a multi-system chassis.
Module	A small, typically removable, chassis or card which contains devices for a particular subsystem or function.
Component	A small chassis, card, or device which contains devices for a particular subsystem or function.
IPBasedDrive	A chassis in a drive form factor with IP-based network connections.
RackGroup	A group of racks which form a single entity or share infrastructure.
StorageEnclosure	A chassis which encloses storage.
Other	A chassis that does not fit any of these definitions.

Table 12. Chassis Attributes

Attribute	Type	Nullable	Description
ChassisType	Chassis.v1_0_0.ChassisType	False	ChassisType shall indicate the physical form factor for the type of chassis.

Attribute	Type	Nullable	Description
Manufacturer	Edm.String	True	The value of this property shall be the name of the organization responsible for producing the chassis. This organization might be the entity from whom the chassis is purchased, but this is not necessarily true.
Model	Edm.String	True	The value of this property shall be the name by which the manufacturer generally refers to the chassis.
SKU	Edm.String	True	The value of this property shall be the stock-keeping unit number for this chassis.
SerialNumber	Edm.String	True	The value of this property shall be a manufacturer-allocated number used to identify the chassis.
PartNumber	Edm.String	True	The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the chassis.
AssetTag	Edm.String	True	The value of this property shall be an identifying string used to track the chassis for inventory purposes.
IndicatorLED	Chassis.v1_0_0.IndicatorLED	True	This value of this property shall contain the indicator light state for the indicator light associated with this system.
Links	Chassis.v1_0_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	Chassis.v1_0_0.Actions	False	The Actions property contains the available actions for this resource.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
LogServices	LogServiceCollection.LogServiceCollection	False	The value of this property shall be a link to a collection of type LogServiceCollection.
Thermal	Thermal.Thermal	False	The value of this property is a reference to the resource that represents the thermal characteristics of this chassis and shall be a Thermal type.

Attribute	Type	Nullable	Description
Power	Power.Power	False	The value of this property is a reference to the resource that represents the power characteristics of this chassis and shall be of type Power.
PowerState	Chassis.v1_0_1.PowerState	True	The value of this property shall contain the power state of the chassis.
PhysicalSecurity	Chassis.v1_1_0.PhysicalSecurity	False	This value of this property shall contain the sensor state of physical security.
Location	Resource.Location	False	This property shall contain location information of the associated chassis.
HeightMm	Edm.Decimal	True	The value of this property shall represent the height of the chassis (in millimeters) as specified by the manufacturer.
WidthMm	Edm.Decimal	True	The value of this property shall represent the width of the chassis (in millimeters) as specified by the manufacturer.
DepthMm	Edm.Decimal	True	The value of this property shall represent the depth (length) of the chassis (in millimeters) as specified by the manufacturer.
WeightKg	Edm.Decimal	True	The value of this property shall represent the published mass (commonly referred to as weight) of the chassis (in kilograms).
NetworkAdapters	NetworkAdapterCollection.NetworkAdapterCollection	False	The value of this property shall be a link to a collection of type NetworkAdapterCollection.
Assembly	Assembly.Assembly	False	The value of this property shall be a link to a resource of type Assembly.
UUID	Resource.UUID	True	The value of this property shall contain the universal unique identifier number for the chassis.
UUID	Resource.UUID	True	The value of this property shall contain the universal unique identifier number for the chassis.
PCIeSlots	PCIeSlots.PCIeSlots	False	The value of this property shall be a reference to the resource that represents the PCIe Slot information for this chassis and shall be of type PCIeSlot.

Attribute	Type	Nullable	Description
EnvironmentalClass	Chassis.v1_9_0.EnvironmentalClass	True	The value of this property shall be the ASHRAE Environmental Specification Class for this Chassis, as defined by ASHRAE Thermal Guidelines for Data Processing Environments. These classes define respective environmental limits which include temperature, relative humidity, dew point, and maximum allowable elevation.
Sensors	SensorCollection.SensorCollection	False	This property shall be a reference to a resource of type SensorCollection that contains the sensors located in the Chassis and sub-components.

Table 13. Location Attributes

Attribute	Type	Nullable	Description
Info	Edm.String	True	This property shall represent the location of the resource.
InfoFormat	Edm.String	True	This property shall represent the format of the Info property.
Oem	Resource.Oem	False	This object represents the Oem property. All values for resources described by this schema shall comply to the requirements as described in the Redfish specification.

Table 14. Links Attributes

Attribute	Type	Nullable	Description
ComputerSystems	Collection(ComputerSystem.ComputerSystem)	True	The value of this property shall be a reference to the resource. This physical container is associated with and shall reference a resource of type ComputerSystem. If a ComputerSystem is also referenced in a Chassis that is referenced in a Contains link from this resource, that ComputerSystem shall not be referenced in this Chassis.
ManagedBy	Collection(Manager.Manager)	True	The value of this property shall be a reference to the resource that manages this chassis and shall reference a resource of type Manager.

Attribute	Type	Nullable	Description
ContainedBy	Chassis.Chassis	False	The value of this property shall be a reference to the resource that represents the chassis that contains this chassis and shall be of type Chassis.
Contains	Collection(Chassis.Chassis)	True	The value of this property shall be a reference to the resource that represents the chassis that this chassis contains and shall be of type Chassis.
PoweredBy	Collection(Resource.Item)	True	The value of this property shall be an array of IDs, containing pointers consistent with JSON* pointer syntax to the resource that powers this chassis.
CooledBy	Collection(Resource.Item)	True	The value of this property shall be an array of IDs, containing pointers consistent with JSON pointer syntax, to the resource that cools this chassis.
ManagersInChassis	Collection(Manager.Manager)	True	The value of this property shall reference one or more Manager type resources that are in this Chassis.
Drives	Collection(Drive.Drive)	True	The value of this property shall reference one or more Drive type resources that are in this Chassis.
Storage	Collection(Storage.Storage)	True	The value of this property shall reference one or more Storage type resources that are connected to or contained inside this Chassis.
PCIeDevices	Collection(PCIeDevice.PCIeDevice)	True	The value of this property shall reference one or more PCIeDevices type resources.

Table 15. Intel® RSD OEM extensions: ChassisLinks Attributes

Attribute	Type	Nullable	Description
EthernetSwitches	Collection(EthernetSwitch.v1_0_0.EthernetSwitch)	True	The value of this property shall reference one or more EthernetSwitch type resources that are in this Chassis.

Attribute	Type	Nullable	Description
Switches	Collection(EthernetSwitch.v1_0_0.EthernetSwitch)	True	The value of this property shall reference one or more resources of type EthernetSwitch that are in this Chassis. ***Deprecated***: This value has been Deprecated in favor of EthernetSwitches.

Table 16. Chassis Attributes

Attribute	Type	Nullable	Description
Location	Intel.Oem.Location	True	Chassis location in relation to its parent.

4.8.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.8.1.1 GET

```
GET /redfish/v1/Chassis/Blade1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Chassis/Members/$entity",
  "@odata.id": "/redfish/v1/Chassis/Blade1",
  "@odata.type": "#Chassis.v1_7_0.Chassis",
  "Id": "Blade1",
  "ChassisType": "Blade",
  "Name": "name-as-string",
  "Description": "description-as-string",
  "Manufacturer": "Intel Corporation",
  "Model": "model-as-string",
  "SKU": "sku-as-string",
  "SerialNumber": "serial-number-as-string",
  "PartNumber": "part-number-as-string",
  "AssetTag": null,
  "IndicatorLED": null,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Chassis",
      "Location": {
        "Id": "Blade1",
        "ParentId": "Sled1"
      }
    }
  },
  "NetworkAdapters": {
    "@odata.id": "/redfish/v1/Chassis/Blade1/NetworkAdapters"
  },
```

```
  "Links": {
    "@odata.type": "#Chassis.v1_7_0.Links",
    "Contains": [],
    "Switches": [],
    "ContainedBy": {
      "@odata.id": "/redfish/v1/Chassis/Sled1"
    },
    "ComputerSystems": [
      {
        "@odata.id": "/redfish/v1/Systems/System1"
      }
    ],
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/VirtualBMC1"
      }
    ],
    "ManagersInChassis": [
      {}
    ],
    "Storage": [
      {
        "@odata.id": "/redfish/v1/Systems/System1/Storage/SATA"
      }
    ],
    "Drives": [
      {
        "@odata.id": "/redfish/v1/Chassis/Blade1/Drives/Disk1"
      }
    ],
    "PCIeDevices": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1"
      }
    ],
    "Oem": {
      "Intel_Rackscale": {
        "EthernetSwitches": []
      }
    }
  },
  "UUID": null
}
```


4.8.1.2 PUT

Operation is not allowed on this resource.

4.8.1.3 PATCH

Request:

```
PATCH /redfish/v1/Chassis/1
Content-Type: application/json
{
  "AssetTag": "Chassis1",
  "Oem": {
    "Intel_RackScale": {
      "Location": {
        "Id": "Blade1"
```

```
      }
    }
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.8.1.4 POST

Operation is not allowed on this resource.

4.8.1.5 DELETE

Operation is not allowed on this resource.

4.9 NetworkAdapterCollection

This section describes the property details of the `NetworkAdapterCollection` available in the `NetworkAdapterCollection_v1.xml` metadata file.

Table 17. NetworkAdapterCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(NetworkAdapter.NetworkAdapter)`	True	This property shall contain an array of references to the members of this collection.

4.9.1 Operations

4.9.1.1 Get

Request:

```
GET /redfish/v1/Chassis/Blade1/NetworkAdapters
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#NetworkAdapterCollection.NetworkAdapterCollection",
  "@odata.id": "/redfish/v1/Chassis/Blade1/NetworkAdapters",
  "@odata.type": "# NetworkAdapterCollection.NetworkAdapterCollection",
  "Name": "Network Adapter Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Chassis/Blade1/NetworkAdapters/1"
    }
  ]
}
```

4.9.1.2 PUT

Operation is not allowed on this resource.

4.9.1.3 PATCH

Operation is not allowed on this resource.

4.9.1.4 POST

Operation is not allowed on this resource.

4.9.1.5 DELETE

Operation is not allowed on this resource.

4.10 Network Adapter

`NetworkAdapter` contains references linking `NetworkDeviceFunction` resources and represents the network functionality available to the containing chassis.

Table 18. NetworkAdapter Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	False	This property shall contain any status or health properties of the resource.
`Manufacturer`	`Edm.String`	True	The value of this property shall contain a value that represents the manufacturer of the network adapter.
`Model`	`Edm.String`	True	The value of this property shall contain the information about how the manufacturer references this network adapter.
`SKU`	`Edm.String`	True	The value of this property shall contain the Stock Keeping Unit (SKU) for the network adapter.
`SerialNumber`	`Edm.String`	True	The value of this property shall contain the serial number for the network adapter.
`PartNumber`	`Edm.String`	True	The value of this property shall contain the part number for the network adapter as defined by the manufacturer.
`Controllers`	`Collection(NetworkAdapter.v1_0_0.Controllers)`	True	The value of this property shall contain the set of network controllers ASICs that make up this `NetworkAdapter`.
`Actions`	`NetworkAdapter.v1_0_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.

Attribute	Type	Nullable	Description
NetworkPorts	NetworkPortCollection.NetworkPortCollection	False	The value of this property shall be a link to a collection of type NetworkPortCollection.
NetworkDeviceFunctions	NetworkDeviceFunctionCollection.NetworkDeviceFunctionCollection	False	The value of this property shall be a link to a collection of type NetworkDeviceFunctionCollection.
Assembly	Assembly.Assembly	False	The value of this property shall be a link to a resource of type Assembly.

4.10.1 Operations

4.10.1.1 GET

Request:

```
GET /redfish/v1/Chassis/Blade1/NetworkAdapters/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkAdapter.NetworkAdapter",
  "@odata.id": "/redfish/v1/Chassis/Blade1/NetworkAdapters/1",
  "@odata.type": "#NetworkAdapter.v1_0_0.NetworkAdapter",
  "Id": "1",
  "Name": "Network Adapter",
  "Description": "Network Adapter",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "NetworkDeviceFunctions": {
    "@odata.id": "/redfish/v1/Chassis/Blade1/NetworkAdapters/1/NetworkDeviceFunctions"
  },
  "Links": {},
  "Oem": {}
}
```

4.10.1.2 PUT

Operation is not allowed on this resource.

4.10.1.3 PATCH

Operation is not allowed on this resource.

4.10.1.4 POST

Operation is not allowed on this resource.

4.10.1.5 DELETE

Operation is not allowed on this resource.

4.11 Network Device Function Collection

This property's details are available in the `NetworkDeviceFunctionCollection_v1.xml` metadata file.

Table 19. NetworkDeviceFunctionCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(NetworkDeviceFunction.NetworkDeviceFunction)`	True	This property shall contain an array of references to the members of this collection.

4.11.1 Operations

4.11.1.1 GET

Request:

```
GET /redfish/v1/Chassis/Blade1/NetworkAdapters/1/NetworkDeviceFunctions
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#NetworkDeviceFunctionCollection.NetworkDeviceFunctionCollection
",
  "@odata.id": "/redfish/v1/Chassis/Blade1/NetworkAdapters/1/NetworkDeviceFunctions",
  "@odata.type": "#NetworkDeviceFunctionCollection.NetworkDeviceFunctionCollection",
  "Name": "Network Device Function Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id":
"/redfish/v1/Chassis/Blade1/NetworkAdapters/1/NetworkDeviceFunctions/1"
    }
  ]
}
```

4.11.1.2 PUT

Operation is not allowed on this resource.

4.11.1.3 PATCH

Operation is not allowed on this resource.

4.11.1.4 POST

Operation is not allowed on this resource.

4.11.1.5 DELETE

Operation is not allowed on this resource.

4.12 Network Device Function

Network Device Function represents a logical interface exposed by the network adapter.

The property's details are available in the NetworkDeviceFunction_v1.xml metadata file.

Table 20. NetworkDeviceFunction Attributes

Attribute	Type	Nullable	Description
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
NetDevFuncType	NetworkDeviceFunction.v1_0_0.NetworkDeviceTechnology	True	The value of this property shall be the configured capability of this network device function.
DeviceEnabled	Edm.Boolean	True	The value of this property shall be a boolean indicating whether the network device function is enabled. Disabled network device functions shall not be enumerated or seen by the operating system.
NetDevFuncCapabilities	Collection(NetworkDeviceFunction.v1_0_0.NetworkDeviceTechnology)	True	This object shall contain an array of capabilities of this network device function.
Ethernet	NetworkDeviceFunction.v1_0_0.Ethernet	True	This object shall contain Ethernet capabilities, status, and configuration values for this network device function.
iSCSIBoot	NetworkDeviceFunction.v1_0_0.iSCSIBoot	True	This object shall contain iSCSI boot capabilities, status, and configuration values for this network device function.
FibreChannel	NetworkDeviceFunction.v1_0_0.FibreChannel	True	This object shall contain Fibre Channel capabilities, status, and configuration values for this network device function.
BootMode	NetworkDeviceFunction.v1_0_0.BootMode	True	The value of this property shall be the boot mode configured for this network device function. If the value is not "quot;Disabled", this network device function shall be configured for boot using the specified technology.
VirtualFunctionsEnabled	Edm.Boolean	True	The value of this property shall be a boolean indicating whether Single Root I/O Virtualization (SR-IOV) Virual Functions (VFs) are enabled for this Network Device Function.
MaxVirtualFunctions	Edm.Int64	True	The value of this property shall be the number of virtual functions (VFs) that are available for this Network Device Function.

Attribute	Type	Nullable	Description
Links	NetworkDeviceFunction.v1_0_0.Links	False	Links for this NetworkDeviceFunction.
AssignablePhysicalPorts	Collection(NetworkPort.NetworkPort)	True	The value of this property shall be an array of physical port references that this network device function may be assigned to.
PhysicalPortAssignment	NetworkPort.NetworkPort	False	The value of this property shall be the physical port that this network device function is currently assigned to. This value shall be one of the AssignablePhysicalPorts array members.
Actions	NetworkDeviceFunction.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.12.1 Operations

4.12.1.1 GET

Note: Because of the confidential nature of the CHAP secret fields, it won't be shown in the GET request, null will be shown instead.

Request:

```
GET /redfish/v1/Chassis/Blade1/NetworkAdapters/1/NetworkDeviceFunctions/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#NetworkDeviceFunction.NetworkDeviceFunction",
  "@odata.id":
"/redfish/v1/Chassis/Blade1/NetworkAdapters/1/NetworkDeviceFunctions/1",
  "@odata.type": "#NetworkDeviceFunction.v1_2_1.NetworkDeviceFunction",
  "Id": "1",
  "Name": "Network Device Function View",
  "Description": "Network Device Function View",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "DeviceEnabled": true,
  "Ethernet": {
    "MACAddress": "00:0C:29:9A:98:ED"
  },
  "iSCSIBoot": {
    "IPAddressType": "IPv4",
    "InitiatorIPAddress": "10.0.10.10",
    "InitiatorName": "iqn.2017-03.com.intel:workload-server",
    "InitiatorDefaultGateway": "10.0.10.1",
    "InitiatorNetmask": "255.255.255.0",
    "TargetInfoViaDHCP": false,
    "PrimaryTargetName": "iqn.2017-03.com.intel:image-server",
```

```
    "PrimaryTargetIPAddress": "10.0.10.254",
    "PrimaryTargetTCPPort": 3260,
    "PrimaryLUN": 1,
    "PrimaryVLANEnable": true,
    "PrimaryVLANId
": 4088,
    "PrimaryDNS": null,
    "SecondaryTargetName": null,
    "SecondaryTargetIPAddress": null,
    "SecondaryTargetTCPPort": null,
    "SecondaryLUN": null,
    "SecondaryVLANEnable": null,
    "SecondaryVLANId": null,
    "SecondaryDNS": null,
    "IPMaskDNSViaDHCP": false,
    "RouterAdvertisementEnabled": false,
    "AuthenticationMethod": "CHAP",
    "CHAPUsername": "user",
    "CHAPSecret": null,
    "MutualCHAPUsername": "mutualuser",
    "MutualCHAPSecret": null
  },
  "Links": {},
  "Oem": {}
}
```


4.12.1.2 PUT

Operation is not allowed on this resource.

4.12.1.3 PATCH

The `PATCH` method should be used to enable iSCSI boot of compute node. After patching this resource, one needs to set `BootSourceOverrideTarget` to `RemoteDrive` and submit `PATCH` to `ComputerSystem.Reset` action.

The following properties can be updated by the `PATCH` operation:

Table 21. NetworkDeviceFunction Attributes

Attribute	Type	Nullable	Description
`Ethernet`	`NetworkDeviceFunction.v1_0_0.Ethernet`	True	This object shall contain Ethernet capabilities, status, and configuration values for this network device function.
`iSCSIBoot`	`NetworkDeviceFunction.v1_0_0.iSCSIBoot`	True	This object shall contain iSCSI boot capabilities, status, and configuration values for this network device function.

Table 22. Ethernet Attributes

Attribute	Type	Nullable	Description
`PermanentMACAddress`	`Edm.String`	True	The value of this property shall be the Permanent MAC Address of this network device function (physical function). This value is typically programmed during the manufacturing time. This address is not assignable.

Attribute	Type	Nullable	Description
MACAddress	Edm.String	True	The value of this property shall be the effective current MAC Address of this network device function. If an assignable MAC address is not supported, this is a read only alias of the PermanentMACAddress.
MTUSize	Edm.Int64	True	The Maximum Transmission Unit (MTU) configured for this Network Device Function. This value serves as a default for the OS driver when booting. The value only takes-effect on boot.

Table 23. iSCSIBoot Attributes

Attribute	Type	Nullable	Description
IPAddressType	NetworkDeviceFunction.v1_0_0.IPAddressType	True	The value of this property shall be the type of IP address (IPv6 or IPv4) being populated in the iSCSIBoot IP address fields. Mixing of IPv6 and IPv4 addresses on the same network device function shall not be permissible.
InitiatorIPAddress	Edm.String	True	The value of this property shall be the IPv6 or IPv4 address of the iSCSI boot initiator.
InitiatorName	Edm.String	True	The value of this property shall be the iSCSI boot initiator name. The value of this property should match formats defined in RFC3720 or RFC3721.
InitiatorDefaultGateway	Edm.String	True	The value of this property shall be the IPv6 or IPv4 iSCSI boot default gateway.
InitiatorNetmask	Edm.String	True	The value of this property shall be the IPv6 or IPv4 netmask of the iSCSI boot initiator.
TargetInfoViaDHCP	Edm.Boolean	True	The value of this property shall be a boolean indicating whether the iSCSI boot target name, LUN, IP address, and netmask should be obtained from DHCP.
PrimaryTargetName	Edm.String	True	The value of this property shall be the name of the primary iSCSI boot target. The value of this property should match formats defined in RFC3720 or RFC3721.

Attribute	Type	Nullable	Description
PrimaryTargetIPAddress	Edm.String	True	The value of this property shall be the IP address (IPv6 or IPv4) for the primary iSCSI boot target.
PrimaryTargetTCPPort	Edm.Int64	True	The value of this property shall be the TCP port for the primary iSCSI boot target.
PrimaryLUN	Edm.Int64	True	The value of this property shall be the logical unit number (LUN) for the primary iSCSI boot target.
PrimaryVLANEnable	Edm.Boolean	True	The value of this property shall be used to indicate if this VLAN is enabled for the primary iSCSI boot target.
PrimaryVLANId	Edm.Int64	True	The value of this property shall be the 802.1q VLAN ID to use for iSCSI boot from the primary target. This VLAN ID is only used if PrimaryVLANEnable is true.
PrimaryDNS	Edm.String	True	The value of this property shall be the IPv6 or IPv4 address of the primary DNS server for the iSCSI boot initiator.
SecondaryTargetName	Edm.String	True	The value of this property shall be the name of the secondary iSCSI boot target. The value of this property should match formats defined in RFC3720 or RFC3721.
SecondaryTargetIPAddress	Edm.String	True	The value of this property shall be the IP address (IPv6 or IPv4) for the secondary iSCSI boot target.
SecondaryTargetTCPPort	Edm.Int64	True	The value of this property shall be the TCP port for the secondary iSCSI boot target.
SecondaryLUN	Edm.Int64	True	The value of this property shall be the logical unit number (LUN) for the secondary iSCSI boot target.
SecondaryVLANEnable	Edm.Boolean	True	The value of this property shall be used to indicate if this VLAN is enabled for the secondary iSCSI boot target.
SecondaryVLANId	Edm.Int64	True	The value of this property shall be the 802.1q VLAN ID to use for iSCSI boot from the secondary target. This VLAN ID is only used if SecondaryVLANEnable is true.

Attribute	Type	Nullable	Description
SecondaryDNS	Edm.String	True	The value of this property shall be the IPv6 or IPv4 address of the secondary DNS server for the iSCSI boot initiator.
IPMaskDNSViaDHCP	Edm.Boolean	True	The value of this property shall be a boolean indicating whether the iSCSI boot initiator uses DHCP to obtain the initiator name, IP address, and netmask.
RouterAdvertisementEnabled	Edm.Boolean	True	The value of this property shall be a boolean indicating whether IPv6 router advertisement is enabled for the iSCSI boot target. This setting shall only apply to IPv6 configurations.
AuthenticationMethod	NetworkDeviceFunction.v1_0_0.AuthenticationMethod	True	The value of this property shall be the iSCSI boot authentication method for this network device function.
CHAPUsername	Edm.String	True	The value of this property shall be the username for CHAP authentication.
CHAPSecret	Edm.String	True	The value of this property shall be the shared secret for CHAP authentication.
MutualCHAPUsername	Edm.String	True	The value of this property shall be the CHAP Username for 2-way CHAP authentication.
MutualCHAPSecret	Edm.String	True	The value of this property shall be the CHAP Secret for 2-way CHAP authentication.

Request:

```
GET /redfish/v1/Chassis/Blade1/NetworkAdapters/1/NetworkDeviceFunctions/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#NetworkDeviceFunction.NetworkDeviceFunction",
  "@odata.id":
"/redfish/v1/Chassis/Blade1/NetworkAdapters/1/NetworkDeviceFunctions/1",
  "@odata.type": "#NetworkDeviceFunction.v1_2_1.NetworkDeviceFunction",
  "Id": "1",
  "Name": "Network Device Fuction View",
  "Description": "Network Device Function View",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "DeviceEnabled": true,
```

```
  "Ethernet": {
    "MACAddress": "00:0C:29:9A:98:ED"
  },
  "iSCSIBoot": {
    "IPAddressType": "IPv4",
    "InitiatorIPAddress": "10.0.10.10",
    "InitiatorName": "iqn.2017-03.com.intel:workload-server",
    "InitiatorDefaultGateway": "10.0.10.1",
    "InitiatorNetmask": "255.255.255.0",
    "TargetInfoViaDHCP": false,
    "PrimaryTargetName": "iqn.2017-03.com.intel:image-server",
    "PrimaryTargetIPAddress": "10.0.10.254",
    "PrimaryTargetTCPPort": 3260,
    "PrimaryLUN": 1,
    "PrimaryVLANEnable": true,
    "PrimaryVLANId": 4088,
    "PrimaryDNS": null,
    "SecondaryTargetName": null,
    "SecondaryTargetIPAddress": null,
    "SecondaryTargetTCPPort": null,
    "SecondaryLUN": null,
    "SecondaryVLANEnable": null,
    "SecondaryVLANId": null,
    "SecondaryDNS": null,
    "IPMaskDNSViaDHCP": false,
    "RouterAdvertisementEnabled": false,
    "AuthenticationMethod": "CHAP",
    "CHAPUsername": "user",
    "CHAPSecret": null,
    "MutualCHAPUsername": "mutualuser",
    "MutualCHAPSecret": null
  },
  "Links": {},
  "Oem": {}
}
```


4.13 Computer System Collection

The Computer System Collection resource provides a collection of all computer systems managed by this service.

Table 24. ComputerSystemCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(ComputerSystem.ComputerSystem)`	True	Contains the members of this collection.

4.13.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.13.1.1 GET

Request:

```
GET /redfish/v1/Systems
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems",
  "@odata.id": "/redfish/v1/Systems",
  "@odata.type": "#ComputerSystemCollection.ComputerSystemCollection",
  "Name": "Computer System Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/System1"
    }
  ]
}
```

4.13.1.2 PUT

Operation is not allowed on this resource.

4.13.1.3 PATCH

Operation is not allowed on this resource.

4.13.1.4 POST

Operation is not allowed on this resource.

4.13.1.5 DELETE

Operation is not allowed on this resource.

4.14 Computer Systems

This schema defines a computer system and its respective properties. A computer system represents a machine (physical or virtual) and the local resources such as memory, CPU, and other devices that can be accessed from that machine.

Details of this resource are described in the metadata file: `ComputerSystem_v1.xml`. OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 25. Computer System Attributes

Attribute	Type	Nullable	Description
`SystemType`	`ComputerSystem.v1_0_0.SystemType`	False	An enumeration that indicates the kind of system this resource represents.
`Links`	`ComputerSystem.v1_0_0.Links`	False	The `Links` property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
`AssetTag`	`Edm.String`	True	The value of this property contains the value of the asset tag of the system.

Attribute	Type	Nullable	Description
Manufacturer	Edm.String	True	The value of this property contains a value that represents the manufacturer of the system.
Model	Edm.String	True	The value of this property contains information about how the manufacturer references this system. This is typically the product name, without the manufacturer name.
SKU	Edm.String	True	The value of this property contains the Stock Keeping Unit (SKU) for the system.
SerialNumber	Edm.String	True	The value of this property contains the serial number for the system.
PartNumber	Edm.String	True	The value of this property contains the part number for the system (defined by the manufacturer).
UUID	Resource.UUID	True	The value of this property is used to contain a universal unique identifier number for the system. RFC4122 describes methods that can be used to create the value. The value should be considered opaque. Client software should only treat the overall value as a universally unique identifier and should not interpret any sub-fields within the UUID. If the system supports SMBIOS, the value of the property should be formed by following the SMBIOS 2.6+ recommendation for converting the SMBIOS 16-byte UUID structure into the Redfish canonical xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx string format so that the property value matches the byte order presented by current OS APIs such as WMI and dmidecode.
HostName	Edm.String	True	The value of this property shall be the host name for this system, as reported by the operating system or hypervisor. This value is typically provided to the Manager by a service running in the host operating system.
IndicatorLED	ComputerSystem.v1_0_0.IndicatorLED	True	The value of this property shall contain the indicator light state for the indicator light associated with this system.

Attribute	Type	Nullable	Description
PowerState	ComputerSystem.v1_0_0.PowerState	True	The value of this property shall contain the power state of the system.
Boot	ComputerSystem.v1_0_0.Boot	False	This object shall contain properties which describe boot information for the current resource.
BiosVersion	Edm.String	True	The value of this property shall be the version string of the currently installed and running BIOS (for x86 systems). For other systems, the value may contain a version string representing the primary system firmware.
ProcessorSummary	ComputerSystem.v1_0_0.ProcessorSummary	False	This object shall contain properties which describe the central processors for the current resource.
MemorySummary	ComputerSystem.v1_0_0.MemorySummary	False	This object shall contain properties which describe the central memory for the current resource.
Actions	ComputerSystem.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
Processors	ProcessorCollection.ProcessorCollection	False	The value of this property shall be a link to a collection of type ProcessorCollection.
EthernetInterfaces	EthernetInterfaceCollection.EthernetInterfaceCollection	False	The value of this property shall be a link to a collection of type EthernetInterfaceCollection.
SimpleStorage	SimpleStorageCollection.SimpleStorageCollection	False	The value of this property shall be a link to a collection of type SimpleStorageCollection.
LogServices	LogServiceCollection.LogServiceCollection	False	The value of this property shall be a link to a collection of type LogServiceCollection.
TrustedModules	Collection(ComputerSystem.v1_1_0.TrustedModules)	False	This object shall contain an array of objects with properties which describe the trusted modules for the current resource.
SecureBoot	SecureBoot.SecureBoot	False	The value of this property shall be a link to a resource of type SecureBoot.
Bios	Bios.Bios	False	The value of this property shall be a link to a resource of type Bios that lists the BIOS settings for this system.
Memory	MemoryCollection.MemoryCollection	False	The value of this property shall be a link to a collection of type MemoryCollection.

Attribute	Type	Nullable	Description
Storage	StorageCollection.StorageCollection	False	The value of this property shall be a link to a collection of type StorageCollection.
HostingRoles	Collection(ComputerSystem.v1_2_0.HostingRole)	False	The values of this collection shall be the hosting roles supported by this computer system.
HostedServices	ComputerSystem.v1_2_0.HostedServices	False	The values of this collection shall describe services supported by this computer system.
PCIeDevices	Collection(PCIeDevice.PCIeDevice)	True	The value of this property shall be an array of references of type PCIeDevice.
PCIeFunctions	Collection(PCIeFunction.PCIeFunction)	True	The value of this property shall be an array of references of type PCIeFunction.
MemoryDomains	MemoryDomainCollection.MemoryDomainCollection	True	The value of this property shall be a link to a collection of type MemoryDomainCollection.
NetworkInterfaces	NetworkInterfaceCollection.NetworkInterfaceCollection	False	The value of this property shall be a link to a collection of type NetworkInterfaceCollection.
HostWatchdogTimer	ComputerSystem.v1_5_0.WatchdogTimer	False	This object shall contain properties which describe the host watchdog timer functionality for this ComputerSystem.
SubModel	Edm.String	True	The value of this property shall contain the information about the sub-model (or configuration) of the system. This shall not include the model/product name or the manufacturer name.
Redundancy	Collection(Redundancy.Redundancy)	True	If present, each entry shall reference a redundancy entity that specifies a kind and level of redundancy and a collection (RedundancySet) of other ComputerSystems that provide the specified redundancy to this ComputerSystem.
PowerRestorePolicy	ComputerSystem.v1_6_0.PowerRestorePolicyTypes	False	This property shall indicate the desired PowerState of the system when power is applied to the system. A value of 'LastState' shall return the system to the PowerState it was in when power was lost.

Refer to Table 26 for Intel® RSD OEM extensions:

Table 26. ComputerSystem Attributes

Attribute	Type	Nullable	Description
PCIeConnectionId	Collection(Edm.String)	True	This property shall contain an array of the string identifying cable(s) connected to this port. This is crucial for topology discovery.
PciDevices	Collection(Intel.Oem.PciDevice)	False	This indicates array of the PCI devices present in computer system
ProcessorSockets	Edm.Int64	True	This indicates number of memory sockets available in the system. ***Deprecated***: This value has been Deprecated in favor of ProcessorCollection/Members@odata.count.
MemorySockets	Edm.Int64	True	This indicates number of memory sockets available in the system. ***Deprecated***: This value has been Deprecated in favor of MemoryCollection/Members@odata.count.
UserModeEnabled	Edm.Boolean	True	This property shall represent current platform mode. When enabled update of FW components should be blocked on in-band interfaces.
InitiatorConfiguration	Intel.Oem.InitiatorConfiguration	True	This property contains information for NVMe-oF* initiator software and FPGA-oF initiator software running on the computer system, such as the network address of the Discovery Service.
TrustedExecutionTechnologyEnabled	Edm.Boolean	True	This property shall represent current Intel® Trusted Execution Technology state.
PerformanceConfiguration	Intel.Oem.SystemCpuPerformanceConfiguration	True	This property shall be used to manage the current and available performance configurations.
Metrics	ComputerSystemMetrics.ComputerSystemMetrics	False	A reference to the Metrics associated with this ComputerSystem.

4.14.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.14.1.1 GET (PSME Compute)

Request:

```
GET /redfish/v1/Systems/System1
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#ComputerSystem.ComputerSystem",
  "@odata.id": "/redfish/v1/Systems/System1",
  "@odata.type": "#ComputerSystem.v1_5_0.ComputerSystem",
  "Id": "System1",
  "Name": "My Computer System",
  "Description": "Description of server",
  "SystemType": "Physical",
  "AssetTag": "free form asset tag",
  "Manufacturer": "Manufacturer Name",
  "Model": "Model Name",
  "SKU": "SKU",
  "SerialNumber": "2M220100SL",
  "PartNumber": "Computer1",
  "UUID": "00000000-0000-0000-0000-000000000000",
  "HostName": null,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "IndicatorLED": "Off",
  "PowerState": "On",
  "Boot": {
    "@odata.type": "#ComputerSystem.v1_1_0.Boot",
    "BootSourceOverrideEnabled": "Once",
    "BootSourceOverrideTarget": "Pxe",
    "BootSourceOverrideTarget@Redfish.AllowableValues": [
      "None",
      "Pxe",
      "Hdd",
      "RemoteDrive"
    ],
    "BootSourceOverrideMode": "Legacy",
    "BootSourceOverrideMode@Redfish.AllowableValues": [
      "Legacy",
      "UEFI"
    ]
  },
  "BiosVersion": "P79 v1.00 (09/20/2013)",
  "ProcessorSummary": {
    "Count": 8,
    "Model": "Multi-Core Intel(R) Xeon(R) processor 7xxx Series",
    "Status": {
      "State": "Enabled",
      "Health": "OK",
      "HealthRollup": "OK"
    }
```

```
  },
  "MemorySummary": {
    "TotalSystemMemoryGiB": 16.0,
    "Status": {
      "State": "Enabled",
      "Health": "OK",
      "HealthRollup": "OK"
    }
  },
  "Processors": {
    "@odata.id": "/redfish/v1/Systems/System1/Processors"
  },
  "EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces"
  },
  "Storage": {
    "@odata.id": "/redfish/v1/Systems/System1/Storage"
  },
  "Memory": {
    "@odata.id": "/redfish/v1/Systems/System1/Memory"
  },
  "PCIeDevices": [
    {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1"
    }
  ],
  "PCIeFunctions": [],
  "TrustedModules": [
    {
      "@odata.type": "#ComputerSystem.v1_3_0.TrustedModules",
      "FirmwareVersion": "0.001",
      "InterfaceType": "TPM2_0",
      "Status": {
        "State": "Enabled",
        "Health": null,
        "HealthRollup": null
      },
      "Oem": {},
      "FirmwareVersion2": null,
      "InterfaceTypeSelection": "OemMethod"
    }
  ],
  "Bios": {
    "@odata.id": "/redfish/v1/Systems/System1/Bios"
  },
  "Links": {
    "@odata.type": "#ComputerSystem.v1_2_0.Links",
    "Chassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/4"
      }
    ],
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/1"
      }
    ],
    "Endpoints": [],
    "Oem": {}
  },
  "Actions": {
```

```
    "#ComputerSystem.Reset": {
      "target": "/redfish/v1/Systems/System1/Actions/ComputerSystem.Reset",
      "ResetType@Redfish.AllowableValues": [
        "On",
        "ForceOff",
        "GracefulShutdown",
        "ForceRestart",
        "Nmi",
        "GracefulRestart",
        "ForceOn",
        "PushPowerButton"
      ]
    },
    "Oem": {
      "#Intel.Oem.ChangeTPMState": {
        "target": "/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.ChangeTPMState",
        "InterfaceType@Redfish.AllowableValues": [
          "TPM1_2",
          "TPM2_0"
        ]
      },
      "#Intel.Oem.EraseOptaneDCPersistentMemory": {
        "target":
"/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.EraseOptaneDCPersistentMemory"
      }
    }
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.ComputerSystem",
      "PciDevices": [
        {
          "VendorId": "0x8086",
          "DeviceId": "0x1234"
        }
      ],
      "PCIeConnectionId": [
        "XYZ1234567890"
      ],
      "UserModeEnabled": false,
      "TrustedExecutionTechnologyEnabled": false,
      "Metrics": {
        "@odata.id": "/redfish/v1/Systems/System1/Metrics"
      },
      "PerformanceConfiguration": {
        "CurrentConfigurationId": 1,
        "Configurations": [
          {
            "@odata.type": "Intel.Oem.SpeedSelectConfiguration",
            "ConfigurationId": 0,
            "Type": "StaticSpeedSelect",
            "TDPPerCpu": 120,
            "MaxCpuJunctionTemp": 105,
            "ActiveCoresPerCpu": 18,
            "BaseCoreFrequency": 1600
          },
          {
            "@odata.type": "Intel.Oem.SpeedSelectConfiguration",
            "ConfigurationId": 1,
            "Type": "StaticSpeedSelect",
            "TDPPerCpu": 120,
```

```
            "MaxCpuJunctionTemp": 105,
            "ActiveCoresPerCpu": 14,
            "BaseCoreFrequency": 2800
          },
          {
            "@odata.type": "Intel.Oem.PrioritizedBaseFrequency",
            "ConfigurationId": 2,
            "Type": "PrioritizedBaseFrequency",
            "TDPPerCpu": 120,
            "MaxCpuJunctionTemp": 105,
            "HighPriorityCoreCountPerCpu": 4,
            "HighPriorityBaseCoreFrequency": 2600,
            "LowPriorityCoreCountPerCpu": 14,
            "LowPriorityBaseCoreFrequency": 1800
          }
        ]
      }
    }
  }
}
```

4.14.1.2 GET (PSME PCIe* Fabric)

This resource represents a logical system containing PCIe* devices (no CPU or memory).

Request:

```
GET /redfish/v1/Systems/System2
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ComputerSystem.ComputerSystem",
  "@odata.id": "/redfish/v1/Systems/System2",
  "@odata.type": "#ComputerSystem.v1_5_0.ComputerSystem",
  "Id": "System2",
  "Name": "My Computer System",
  "Description": "Description of server",
  "SystemType": "Physical",
  "AssetTag": "free form asset tag",
  "Manufacturer": "Manufacturer Name",
  "Model": "Model Name",
  "SKU": "SKU",
  "SerialNumber": "2M220100SL",
  "PartNumber": "Computer1",
  "UUID": "00000000-0000-0000-0000-000000000000",
  "HostName": null,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "IndicatorLED": null,
  "PowerState": "On",
  "Boot": {
    "@odata.type": "#ComputerSystem.v1_1_0.Boot",
    "BootSourceOverrideEnabled": "Disabled",
    "BootSourceOverrideTarget": "None",
    "BootSourceOverrideTarget@Redfish.AllowableValues": [
      "None"
    ],
```

```
    "BootSourceOverrideMode": null,
    "BootSourceOverrideMode@Redfish.AllowableValues": []
  },
  "BiosVersion": null,
  "ProcessorSummary": {
    "Count": null,
    "Model": null,
    "Status": {
      "State": null,
      "Health": null,
      "HealthRollup": null
    }
  },
  "MemorySummary": {
    "TotalSystemMemoryGiB": null,
    "Status": {
      "State": null,
      "Health": null,
      "HealthRollup": null
    }
  },
  "Processors": {
    "@odata.id": "/redfish/v1/Systems/System2/Processors"
  },
  "EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Systems/System2/EthernetInterfaces"
  },
  "Storage": {
    "@odata.id": "/redfish/v1/Systems/System2/Storage"
  },
  "Memory": {
    "@odata.id": "/redfish/v1/Systems/System1/Memory"
  },
  "PCIeDevices": [
    {
      "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1/PCIeDevices/Device1"
    }
  ],
  "PCIeFunctions": [],
  "TrustedModules": [],
  "Links": {
    "@odata.type": "#ComputerSystem.v1_2_0.Links",
    "Chassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/4"
      }
    ],
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/1"
      }
    ],
    "Endpoints": [],
    "Oem": {}
  },
  "Actions": {
    "#ComputerSystem.Reset": {
      "target": "/redfish/v1/Systems/System1/Actions/ComputerSystem.Reset",
      "ResetType@Redfish.AllowableValues": [
        "On",
        "ForceOff",
```

```
        "GracefulShutdown",
        "ForceRestart",
        "Nmi",
        "GracefulRestart",
        "ForceOn",
        "PushPowerButton"
      ]
    },
    "Oem": {
      "#Intel.Oem.ChangeTPMState": {
        "target": "/redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.ChangeTPMState",
        "InterfaceType@Redfish.AllowableValues": [
          "TPM1_2",
          "TPM2_0"
        ]
      }
    }
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.ComputerSystem",
      "PciDevices": [],
      "PCIeConnectionId": [],
      "UserModeEnabled": false,
      "TrustedExecutionTechnologyEnabled": false,
      "Metrics": {
        "@odata.id": "/redfish/v1/Systems/System2/Metrics"
      },
      "PerformanceConfiguration": null
    }
  }
}
```


4.14.1.3 PUT

Operation is not allowed on this resource.

4.14.1.4 PATCH

The following properties can be updated by the `PATCH` operation:

Table 27. ComputerSystem Attributes

Attribute	Type	Nullable	Description
`Boot`	`ComputerSystem.v1_0_0.Boot`	False	This object shall contain properties which describe boot information for the current resource. Changes to this object do not alter the BIOS persistent boot order configuration.
`AssetTag`	`Edm.String`	True	The value of this property shall contain the value of the asset tag of the system.

The OEM object properties in Table 28 describe the attributes of the Computer System Attributes.

Table 28. ComputerSystem Attributes

Attribute	Type	Nullable	Description
UserModeEnabled	Edm.Boolean	True	This property shall represent current platform mode. When enabled update of the firmware components should be blocked on in-band interfaces.
PerformanceConfiguration	Intel.Oem.SystemCpuPerformanceConfiguration	True	This property shall be used to manage the current and available performance configurations.

Table 29 describes the "Boot" properties that can be patched.

Table 29. Boot Attributes

Attribute	Type	Nullable	Description
BootSourceOverrideEnabled	ComputerSystem.v1_0_0.BootSourceOverrideEnabled	True	The value of this property shall be **Once** if this is a one-time boot override and **Continuous** if this selection should remain active until cancelled. If the property value is set to **Once**, the value will be reset back to Disabled after the BootSourceOverrideTarget actions have been completed.
BootSourceOverrideTarget	ComputerSystem.BootSource	True	The value of this property shall contain the source to boot the system from, overriding the normal boot order. The valid values for this property are specified through the Redfish.AllowableValues annotation. Pxe indicates to PXE boot from the primary NIC; Floppy, Cd, Usb, Hdd indicates to boot from their devices respectively. BiosSetup indicates to boot into the native BIOS screen setup. Utilities and Diags indicate to boot from the local utilities or diags partitions. UefiTarget indicates to boot from the UEFI device path found in UefiTargetBootSourceOverride. UefiBootNext indicates to boot from the UEFI BootOptionReference found in BootNext.
BootSourceOverrideMode	ComputerSystem.v1_1_0.BootSourceOverrideMode	True	The value of this property shall be Legacy for non-UEFI BIOS boot or UEFI for UEFI boot from boot source specified in BootSourceOverrideTarget property.

Table 30 describes "PerformanceConfiguration" properties that can be patched:

Table 30. SystemCpuPerformanceConfiguration Attributes

Attribute	Type	Nullable	Description
CurrentConfigurationId	Edm.Int64	True	This property shall match the ConfigurationId of the configuration which is currently active.

Note: In the current implementation, PATCH-ing the CurrentConfigurationId attribute must be done separately from other properties. The operation triggers a reboot of the ComputerSystem.

Request:

```
PATCH /redfish/v1/Systems/System1
Content-Type: application/json
{
  "Boot": {
    "BootSourceOverrideEnabled": "Once",
    "BootSourceOverrideTarget": "Pxe",
    "BootSourceOverrideMode": "UEFI"
  },
  "AssetTag": "Storage System"
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.14.1.4.1 PATCH CurrentConfigurationId

Request:

```
PATCH /redfish/v1/Systems/System3
Content-Type: application/json
{
  "Oem": {
    "Intel_RackScale": {
      "UserModeEnabled": true,
      "PerformanceConfiguration": {
        "CurrentConfigurationId": 0
      }
    }
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.14.1.5 POST

4.14.1.5.1 Reset Computer System

Request:

```
POST /redfish/v1/Systems/System1/Actions/ComputerSystem.Reset
Content-Type: application/json
{
  "ResetType": "On"
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created:

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.14.1.5.2 Change TPM State and/or Version

Table 31 contains the parameters of the action.

Note: Triggering this action causes the system to reboot.

Table 31. Attributes of Action for Changing TPM State

Attribute	Type	Required	Description
DeviceEnabled	Boolean	Yes	This defines the TPM device state as a result of triggering this action.
InterfaceType	String (enum)	No	Required interface type of the Trusted Module. Allowed values are defined in metadata ComputerSystem_v1.xml Refer to Redfish@AllowableValues for service supported types.
CLearOwnership	Boolean	No	This indicates if TPM ownership should be cleared.

Request:

```
POST /redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.ChangeTPMState
Content-Type: application/json
{
  "DeviceEnabled": true,
  "InterfaceType": "TPM2_0",
  "ClearOwnership": true
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.14.1.5.3 Erase Intel® Optane™ DC Memory Modules

This action applies to all Optane memory modules on the system. Table #NUMBER contains the parameters of the Erase operation. If any of the parameters is not specifying or is false, its corresponding action will not be performed. If there are no Optane memory modules in the system, the service will return 400 Bad Request with an appropriate error message.

Note: Triggering this action with any type of erasure (with any of the parameters set to **`true`**) causes the system to reboot.

Table 32. Attributes of Action for Clearing Optane Memory Modules

Attribute	Type	Required	Description
ResetConfiguration	Boolean	No	Indicates that the Platform Configuration Data should be overwritten.
EraseConfigurationKeys	Boolean	No	Indicates that the configuration keys should be securely erased.

Request:

```
POST /redfish/v1/Systems/System1/Actions/Oem/Intel.Oem.EraseOptaneDCPersistentMemory
Content-Type: application/json
{
  "ResetConfiguration": true,
  "EraseConfigurationKeys": false
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.14.1.6 DELETE

Operation is not allowed on this resource.

4.15 Computer System Metrics

This property's details are available in the ComputerSystemMetrics_v1.xml metadata file.

Table 33. ComputerSystemMetrics Attributes

Attribute	Type	Nullable	Description
ProcessorBandwidthPercent	Edm.Decimal	True	The value of this property shall be CPU Utilization on all the available CPUs in Percent. This metric is aggregate of all Processor sockets of this Computer System.

Attribute	Type	Nullable	Description
MemoryBandwidthPercent	Edm.Decimal	True	The value of this property shall be Memory Utilization on all the available Memory channels in Percent. This metric is aggregate of all memory controllers on all Processor sockets of this Computer System.
MemoryThrottledCyclesPercent	Edm.Decimal	True	The value of this property shall be the percentage of memory cycles that were throttled due to power limiting. This metric is aggregate of all memory controllers on all Processor sockets of this Computer System.
ProcessorPowerWatt	Edm.Decimal	True	The value of this property shall be global power for CPU domain (all packages) in Watts.
MemoryPowerWatt	Edm.Decimal	True	The value of this property shall be global power for Memory domain (all packages and channels) in Watts.
IOBandwidthGBps	Edm.Decimal	True	The value of this property shall be IO Bandwidth rate in ComputerSystem resource based on PCIe and DMI data transmission rate in GB/s.
Health	Collection(Edm.String)	True	The value of this property shall be Computer System Health as a discrete sensor reading.

4.15.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.15.1.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#Systems/Members/1/ComputerSystem/Metrics/$entity",
  "@odata.id": "/redfish/v1/Systems/System1/Metrics",
  "@odata.type": "#ComputerSystemMetrics.v1_0_0.ComputerSystemMetrics",
  "Name": "Computer System Metrics for System1",
  "Description": "description-as-string",
  "Id": "Metrics for System1",
  "ProcessorBandwidthPercent": 17,
  "MemoryBandwidthPercent": 23,
  "MemoryThrottledCyclesPercent": 13,
  "ProcessorPowerWatt": 120,
  "MemoryPowerWatt": 48,
```

```
  "IOBandwidthGBps": 4,
  "Health": [
    "OK"
  ]
}
```

4.15.1.2 PUT

Operation is not allowed on this resource.

4.15.1.3 PATCH

Operation is not allowed on this resource.

4.15.1.4 POST

Operation is not allowed on this resource.

4.15.1.5 DELETE

Operation is not allowed on this resource.

4.16 BIOS

This schema defines a BIOS (Base Input/Output System) of a computer system and its respective properties. The BIOS represents the server's embedded firmware that provides user graphical interface and OOB interface to control the server's behavior and hardware configuration (Processor, Chipset, USB, memory, etc.). Redfish models OOB interface to BIOS to control its behavior, mainly to control its settings.

Details of this resource are described in metadata file: `Bios_v1.xml`.

Note: The current generation of RSD (v2.5) doesn't implement this endpoint but provides the definition for RSD compatible solutions that require this functionality.

Table 34. BIOS Attributes

Attribute	Type	Nullable	Description
`AttributeRegistry`	`Edm.String`	True	The reference to the Attribute Registry that lists the metadata describing the BIOS attribute settings in this resource.
`Actions`	`Bios.v1_0_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.
`Attributes`	`Bios.v1_0_0.Attributes`	False	BIOS Attribute settings appear as additional properties in this object, and can be looked up in the Attribute Registry by their `AttributeName`.

4.16.1 Operations

4.16.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Bios
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Bios.Bios",
  "@odata.id": "/redfish/v1/Systems/System1/Bios",
  "@odata.type": "#Bios.v1_0_5.Bios",
  "Name": "BIOS Configuration current settings",
  "Description": "description-as-string",
  "Id": "Bios",
  "AttributeRegistry": "BiosAttributeRegistryP89.v1_0_0",
  "Attributes": {
    "BootMode": "Uefi",
    "EmbeddedSata": "Raid",
    "NicBoot1": "NetworkBoot",
    "NicBoot2": "Disabled",
    "PowerProfile": "MaxPerf",
    "ProcCoreDisable": 0,
    "ProcHyperthreading": "Enabled",
    "ProcTurboMode": "Enabled",
    "UsbControl": "UsbEnabled"
  },
  "@Redfish.Settings": {
    "@odata.type": "#Settings.v1_2_1.Settings",
    "Messages": [
      {
        "MessageId": "Base.1.0.SettingsFailed",
        "RelatedProperties": [
          "#/Attributes/ProcTurboMode"
        ]
      }
    ],
    "SettingsObject": {
      "@odata.id": "/redfish/v1/Systems/System1/Bios/Settings"
    },
    "Time": "2016-03-07T14:44.30-05:00"
  },
  "Actions": {
    "#Bios.ResetBios": {
      "target": "/redfish/v1/Systems/System1/Bios/Actions/Bios.ResetBios"
    }
  }
}
```


4.16.1.2 PUT

Operation is not allowed on this resource.

4.16.1.3 PATCH

Operation is not allowed on this resource.

4.16.1.4 POST

4.16.1.4.1 Reset Bios

This action performs reset all BIOS settings to their default values.

Request:

```
POST /redfish/v1/Systems/System1/Bios/Actions/Bios.ResetBios
Content-Type: application/json
{}
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.16.1.5 DELETE

Operation is not allowed on this resource.

4.17 BIOS Settings

This schema defines future settings of the BIOS Endpoint that will be applied, based on server implementation and/or client intent. A more detailed description of the `Settings` resource can be found in Chapter 9.9 of *Redfish* Scalable Platforms Management API Specification v1.6.0* (refer to `Table 2`).

The current generation of RSD (v2.5) doesn't implement this endpoint but provides the definition for the RSD compatible solutions that require this functionality.

4.17.1 Operations

4.17.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Bios/Settings
Content-Type: application/json
```

Response:

```
{
  "@odata.type": "#Bios.v1_0_5.Bios",
  "@odata.context": "/redfish/v1/$metadata#Bios.Bios",
  "@odata.id": "/redfish/v1/Systems/System1/Bios/Settings",
  "Id": "Settings",
  "Name": "BIOS Configuration Pending Settings",
  "AttributeRegistry": "BiosAttributeRegistryP89.v1_0_0",
  "Attributes": {
    "AdminPhone": "(404) 555-1212",
    "BootMode": "Uefi",
```

```
    "EmbeddedSata": "Ahci",
    "NicBoot1": "NetworkBoot",
    "NicBoot2": "NetworkBoot",
    "PowerProfile": "MaxPerf",
    "ProcCoreDisable": 0,
    "ProcHyperthreading": "Enabled",
    "ProcTurboMode": "Disabled",
    "UsbControl": "UsbEnabled"
  }
}
```

4.17.1.2 PUT

Operation is not allowed on this resource.

4.17.1.3 PATCH

The following properties can be updated by the `PATCH` operation:

Table 35. BIOS Attributes

Attribute	Type	Nullable	Description
`Attributes`	`Bios.v1_0_0.Attributes`	False	BIOS Attribute settings appear as additional properties in this object, and can be looked up in the Attribute Registry by their `AttributeName`.

4.17.1.4 POST

Operation is not allowed on this resource.

4.17.1.5 DELETE

Operation is not allowed on this resource.

4.18 Processor Collection

The processor collection resource provides collection of all processors available in a blade.

Table 36. ProcessorCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Processor.Processor)`	True	Contains the members of this collection.

4.18.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.18.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Processors
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Processors/#entity",
  "@odata.id": "/redfish/v1/Systems/System1/Processors",
  "@odata.type": "#ProcessorCollection.ProcessorCollection",
  "Name": "Processors Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
    }
  ]
}
```

4.18.1.2 PUT

Operation is not allowed on this resource.

4.18.1.3 PATCH

Operation is not allowed on this resource.

4.18.1.4 POST

Operation is not allowed on this resource.

4.18.1.5 DELETE

Operation is not allowed on this resource.

4.19 Processor

The processor resource provides detailed information about a single processor identified by `{ProcessorID}`.

The property' details are available in the `Processor_v1.xml` metadata file. OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 37. Processor Attributes

Attribute	Type	Nullable	Description
`Socket`	`Edm.String`	True	This property shall contain the string which identifies the physical location or socket of the processor.

Attribute	Type	Nullable	Description
ProcessorType	Processor.v1_0_0.ProcessorType	True	This property shall contain the string which identifies the type of processor contained in this Socket.
ProcessorArchitecture	Processor.v1_0_0.ProcessorArchitecture	True	This property shall contain the string which identifies the architecture of the processor contained in this Socket.
InstructionSet	Processor.v1_0_0.InstructionSet	True	This property shall contain the string which identifies the instruction set of the processor contained in this socket.
ProcessorId	Processor.v1_0_0.ProcessorId	false	This object shall contain identification information for this processor.
Status	Resource.Status	false	This property shall contain any status or health properties of the resource.
Manufacturer	Edm.String	True	This property shall contain a string which identifies the manufacturer of the processor.
Model	Edm.String	True	This property shall indicate the model information as provided by the manufacturer of this processor.
MaxSpeedMHz	Edm.Int64	True	This property shall indicate the maximum rated clock speed of the processor in MHz.
TotalCores	Edm.Int64	True	This property shall indicate the total count of independent processor cores contained within this processor.
TotalThreads	Edm.Int64	True	This property shall indicate the total count of independent execution threads supported by this processor.
Links	Processor.v1_1_0.Links	false	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	Processor.v1_1_0.Actions	false	The Actions property shall contain the available actions for this resource.
Location	Resource.Location	false	This property shall contain location information of the associated processor.
Assembly	Assembly.Assembly	false	The value of this property shall be a link to a resource of type Assembly.
SubProcessors	ProcessorCollection.ProcessorCollection	false	The value of this property shall be a link to a collection of type ProcessorCollection.

Attribute	Type	Nullable	Description
TDPWatts	Edm.Int64	True	The value of this property shall be the nominal Thermal Design Power (TDP) in watts.
MaxTDPWatts	Edm.Int64	True	The value of this property shall be the maximum Thermal Design Power (TDP) in watts.
UUID	Resource.UUID	True	The value of this property shall be used to contain a universal unique identifier number for the processor. RFC4122 describes methods that can be used to create the value. The value should be considered to be opaque. Client software should only treat the overall value as a universally unique identifier and should not interpret any sub-fields within the UUID.
ProcessorMemory	Collection(Processor.v1_4_0.ProcessorMemory)	false	The value of this property shall be the memory directly attached or integrated witin this Processor.
FPGA	Processor.v1_4_0.FPGA	true	The value of this property shall be an object containing properties specific for Processors of type FPGA.
Metrics	ProcessorMetrics.ProcessorMetrics	True	This property shall be a reference to the Metrics associated with this Processor.
AccelerationFunctions	AccelerationFunctionCollection.AccelerationFunctionCollection	false	The value of this property shall be a link to a collection of type AccelerationFunctionCollection.

Table 38. Links Attributes

Attribute	Type	Nullable	Description
Chassis	Chassis.Chassis	False	The value of this property shall be a reference to a resource of type Chassis that represents the physical container associated with this processor.
Endpoints	Collection(Endpoint.Endpoint)	True	The value of this property shall be an array of references of type Endpoint that represent Endpoints associated with this Processor.
ConnectedProcessors	Collection(Processor.Processor)	True	The value of this property shall be an array of references of type Processor that are directly connected to this Processor.

Attribute	Type	Nullable	Description
PCIeDevice	PCIeDevice.PCIeDevice	True	The value of this property shall be a reference of type PCIeDevice that represents the PCI-e Device associated with this Processor.
PCIeFunctions	Collection(PCIeFunction.PCIeFunction)	True	The value of this property shall be an array of references of type PCIeFunction that represent the PCI-e Functions associated with this Processor.

Table 39. Processor Attributes

Attribute	Type	Nullable	Description
FpgaType	Processor.v1_4_0.FpgaType	False	The value of this property shall be a type of the FPGA device.
Model	Edm.String	False	The value of this property shall be a model of the FPGA device.
FirmwareId	Edm.String	False	The value of this property shall contain a string describing the FPGA firmware identifier.
FirmwareManufacturer	Edm.String	False	The value of this property shall contain a string describing the FPGA firmware manufacturer.
FirmwareVersion	Edm.String	False	The value of this property shall contain a string describing the FPGA firmware version.
HostInterface	Processor.v1_4_0.FpgaInterface	False	The value of this property shall be an object that describes the connectivity to the host for system software to use.
ExternalInterfaces	Collection(Processor.v1_4_0.FpgaInterface)	False	The value of this property shall be an array of objects that describe the external connectivity of the FPGA.
PCIeVirtualFunctions	Edm.Int64	False	The value of this property shall be an integer that describes the number of PCIe Virtual Functions configured within the FPGA.
ProgrammableFromHost	Edm.Boolean	True	The value of this property shall indicate whether the FPGA firmware can be reprogrammed from the host using system software. If set to **false**, system software shall not be able to program the FPGA firmware from the host interface. In either state, a management controller may be able to program the FPGA firmware using the sideband interface.

Attribute	Type	Nullable	Description
ReconfigurationSlots	Collection(Processor.v1_4_0.FpgaReconfigurationSlot)	False	The value of this property shall be an array of the structures describing the FPGA reconfiguration slots that can be programmed with the acceleration functions.
Oem	Resource.Oem	False	This object represents the Oem property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification.

Intel® RSD OEM Extensions:

Table 40. Procssor Attributes

Attribute	Type	Nullable	Description
Brand	Intel.Oem.ProcessorBrand	True	This property shall represent the brand of processor.
Capabilities	Collection(Edm.String)	True	This property shall represent an array of processor capabilities (like reported in /proc/cpuinfo flags)
IntegratedMemory	Collection(Intel.Oem.ProcessorMemory)	True	The value of this property shall be a reference to the resources that this processor is associated with and shall reference a resource of type Endpoint.
OnPackageMemory	Collection(Intel.Oem.ProcessorMemory)	True	The value of this property shall be a reference to the resources that this processor is associated with and shall reference a resource of type Endpoint. ***Deprecated***: This value has been Deprecated in favor of ProcessorMemory.
ThermalDesignPowerWatt	Edm.Decimal	True	Thermal Design Power (TDP) of this processor.
FPGA	Intel.Oem.FPGA	True	For FPGA ProcessorType , this property will expose FPGA-specific data.
ExtendedIdentificationRegisters	Intel.Oem.ExtendedIdentificationRegister	True	This property shall include the extended raw CPUID instruction output for (that is for all possible combinations of input registers) as provided by the manufacturer of this processor.
Metrics	Intel_RackScale.ProcessorMetrics.ProcessorMetrics	False	A reference to the Metrics associated with this Processor. ***Deprecated***: This value has been Deprecated in favor of Processor/Metrics.

PCIeFunction	PCIeFunction.PCIeFunction	True	A reference to the PCIe function that provides this processor functionality.

Table 41. FPGA Attributes

Attribute	Type	Nullable	Description
Type	Intel.Oem.FpgaType	False	The value of this property shall be a type of the FPGA device.. ***Deprecated***: This value has been deprecated in favor of Type in Processor/FPGA.
BitStreamVersion	Edm.String	True	Version of BitStream loaded on FPGA. ***Deprecated:*** This value has been deprecated in favor of FirmwareVersion in Processor/FPGA.
HSSIConfiguration	Intel.Oem.HSSIConfig	True	High Speed Serial Interface configuration. ***Deprecated***: This value has been deprecated in favor of HostInterface in the Processor/FPGA resource.
HSSISideband	Intel.Oem.HSSISideband	True	High Speed Serial Interface sideband interface type. ***Deprecated***: This value has been deprecated.
Model	Intel.Oem.FpgaModel	False	The value of this property shall be a model of the FPGA device. ***Deprecated***: This value has been deprecated in favor of Model in Processor.
FwId	Edm.String	False	The value of this property shall contain a string describing the FPGA firmware identifier. A format of the identifier is vendor specific. ***Deprecated***: This value has been deprecated in favor of FirmwareId in Processor/FPGA.
FwManufacturer	Edm.String	False	The value of this property shall contain a string describing the FPGA firmware manufacturer. ***Deprecated***: This value has been deprecated in favor of FirmwareManufacturer in Processor/FPGA.
FwVersion	Edm.String	False	The value of this property shall contain a string describing the FPGA firmware version. ***Deprecated***: This value has been deprecated in favor of FirmwareVersion in Processor/FPGA.

Attribute	Type	Nullable	Description
HostInterface	Intel.Oem.FpgaInterface	false	The value of this property shall be a type of the FPGA interface to the host. ***Deprecated***: This value has been deprecated in favor of HostInterface in Processor/FPGA.
ExternalInterfaces	Collection(Intel.Oem.FpgaInterface)	false	The value of this property shall be an array of the FPGA external interfaces. ***Deprecated***: This value has been deprecated in favor of ExternalInterfaces in Processor/FPGA.
SidebandInterface	Intel.Oem.FpgaInterface	false	The value of this property shall be a type of the FPGA sideband interface. ***Deprecated***: This value has been deprecated.
PCIeVirtualFunctions	Edm.Int64	false	The value of this property shall be a number of PCIe Virtual Functions configured within the FPGA. ***Deprecated***: This value has been deprecated in favor of PCIeVirtualFunctions in Processor/FPGA.
ProgrammableFromHost	Edm.Boolean	True	The value of this property shall indicate whether the FPGA firmware can be reprogrammed from the host. If set to **false**, a FPGA firmware can be programmed through the sideband interface only. ***Deprecated***: This value has been deprecated in favor of ProgrammableFromHost in Processor/FPGA.
ReconfigurationSlots	Edm.Int64	True	Number of supported reconfiguration slots. ***Deprecated***: This value has been deprecated in favor of size of FpgaReconfigurationSlots array in Processor/FPGA.
Erased	Edm.Boolean	True	This property shall represent the erase state of an FPGA.

Attribute	Type	Nullable	Description
AccelerationFunctions	AccelerationFunctionCollection.AccelerationFunctionCollection	false	The value of this property shall be a reference to the resources that this processor uses and shall reference a resource of type AccelerationFunction. ***Deprecated***: This value has been deprecated in favor of Processor/FPGA/AccelerationFunctions.

4.19.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.19.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Processors/CPU1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Processor.Processor",
  "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1",
  "@odata.type": "#Processor.v1_3_0.Processor",
  "Description": "description-as-string",
  "Name": "Processor",
  "Id": "CPU1",
  "Socket": "CPU 1",
  "ProcessorType": "CPU",
  "ProcessorArchitecture": "x86",
  "InstructionSet": "x86-64",
  "Manufacturer": "Intel(R) Corporation",
  "Model": "Multi-Core Intel(R) Xeon(R) processor 7xxx Series",
  "ProcessorId": {
    "VendorId": "GenuineIntel",
    "IdentificationRegisters": "0x34AC34DC8901274A",
    "EffectiveFamily": "0x42",
    "EffectiveModel": "0x61",
    "Step": "0x1",
    "MicrocodeInfo": "0x429943"
  },
  "MaxSpeedMHz": 3700,
  "TotalCores": 8,
  "TotalThreads": 16,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "Metrics": {
    "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1/ProcessorMetrics"
  },
  "Oem": {
    "Intel_RackScale": {
```

```
      "@odata.type": "#Intel.Oem.Processor",
      "Brand": "E5",
      "Capabilities": [
        "sse",
        "sse2",
        "sse3"
      ],
      "ExtendedIdentificationRegisters": {
        "EAX_00h": "0x0429943FFFFFFFFF",
        "EAX_01h": "0x0429943FFFFFFFFF",
        "EAX_02h": "0x0429943FFFFFFFFF",
        "EAX_03h": "0x0429943FFFFFFFFF",
        "EAX_04h": "0x0429943FFFFFFFFF",
        "EAX_05h": "0x0429943FFFFFFFFF",
        "EAX_07h": "0x0429943FFFFFFFFF",
        "EAX_80000000h": "0x0429943FFFFFFFFF",
        "EAX_80000001h": "0x0429943FFFFFFFFF",
        "EAX_80000002h": "0x0429943FFFFFFFFF",
        "EAX_80000003h": "0x0429943FFFFFFFFF",
        "EAX_80000004h": "0x0429943FFFFFFFFF",
        "EAX_80000005h": "0x0429943FFFFFFFFF",
        "EAX_80000006h": "0x0429943FFFFFFFFF",
        "EAX_80000007h": "0x0429943FFFFFFFFF",
        "EAX_80000008h": "0x0429943FFFFFFFFF"
      }
    }
  }
}
```


4.19.1.2 GET (FPGA)

Request:

```
GET /redfish/v1/Systems/System1/Processors/FPGA1
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Processor.Processor",
  "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1",
  "@odata.type": "#Processor.v1_4_0.Processor",
  "Actions": {
    "Oem": {
      "#Intel.Oem.SecureErase": {
        "target":
"/redfish/v1/Systems/System1/Processors/FPGA1/Actions/Oem/Intel.Oem.SecureErase"
      }
    }
  },
  "Description": "description-as-string",
  "Id": "FPGA1",
  "InstructionSet": "OEM",
  "Links": {
    "@odata.type": "#Processor.v1_4_0.Links",
    "PCIeFunctions": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1/Functions/1"
      }
    ],
    "Oem": {
```

```
      "Intel_Rackscale": {
        "@odata.type": "#Intel.Oem.ProcessorLinks",
        "ConnectedProcessors": [
          {
            "@odata.id": "/redfish/v1/Systems/System1/Processors/1"
          }
        ],
        "Endpoints": [
          {
            "@odata.id": "/redfish/v1/Fabrics/FPGAoF/Endpoints/1"
          }
        ]
      }
    }
  },
  "Manufacturer": "Intel(R) Corporation",
  "MaxSpeedMHz": null,
  "MaxTDPWatts": 150,
  "Model": "Arria10",
  "Name": "Accelerator",
  "Metrics": {
    "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1/Metrics"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Processor",
      "Brand": null,
      "Capabilities": [],
      "FPGA": {
        "Erased": true,
        "HostInterface": "8xPCIe-4",
        "Model": "Stratix10",
        "SidebandInterface": "I2C"
      }
    }
  },
  "ProcessorMemory": [
    {
      "CapacityMiB": 512,
      "MemoryType": "HBM2",
      "SpeedMHz": 1066
    }
  ],
  "FPGA": {
    "ExternalInterfaces": [
      "4x10G"
    ],
    "FirmwareId": "123000200000185",
    "FirmwareManufacturer": "8086",
    "FirmwareVersion": "1.2.3",
    "PCIeVirtualFunctions": 0,
    "ProgrammableFromHost": true,
    "ReconfigurationSlots": [
      {
        "ProgrammableFromHost": true,
        "SlotId": "AFU0",
        "UUID": "f7df405c-bd7a-cf72-22f1-44b0b93acd18"
      }
    ],
    "Type": "Discrete"
  },
```

```
  "ProcessorArchitecture": "OEM",
  "ProcessorType": "FPGA",
  "Status": {
    "Health": "OK",
    "HealthRollup": null,
    "State": "Enabled"
  },
  "TotalCores": null,
  "TotalThreads": null
}
```

4.19.1.3 PUT

Operation is not allowed on this resource.

4.19.1.4 PATCH

The following property of the FPGA OEM object properties can be patched:

Table 42. FPGA Attributes

Attribute	Type	Nullable	Description
Erased	EDM Boolean	True	This property shall represent the erase state of an FPGA.

Request:

```
PATCH /redfish/v1/Systems/System1/Processors/FPGA1
Content-Type: application/json
{
  "Oem": {
    "Intel_RackScale": {
      "FPGA": {
        "Erased": false
      }
    }
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.19.1.5 POST

The `POST` action is used to `SecureErase` an FPGA processor. This action works only on FPGAs currently not assigned to any zones. When the action is complete, the FPGA's Erased property will change to `true`.

Request:

```
POST /redfish/v1/Systems/System1/Processors/FPGA1/Actions/Oem/Intel.Oem.SecureErase
Content-Type: application/json
{}
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.19.1.6 DELETE

Operation is not allowed on this resource.

4.20 Processor Metrics

The property's details are available in `ProcessorMetrics_v1.xml` metadata file.

Table 43. ProcessorMetrics Attributes

Attribute	Type	Nullable	Description
`BandwidthPercent`	`Edm.Decimal`	True	The value of this property shall be CPU Utilization on specific CPU in %.
`AverageFrequencyMHz`	`Edm.Decimal`	True	The value of this property shall be average frequency across all enabled cores in MHz.
`ThrottlingCelsius`	`Edm.Decimal`	True	The value of this property shall be CPU margin to throttle based on an offset between max temperature resource can operate and its current temperature.
`TemperatureCelsius`	`Edm.Decimal`	True	The value of this property shall be temperature of the Processor resource in Celsius.
`ConsumedPowerWatt`	`Edm.Decimal`	True	The value of this property shall be power for specific CPU domain in Watts.

Attribute	Type	Nullable	Description
Health	Collection(Edm.String)	True	The value of this property shall be Processor Health as a discrete sensor reading.
FrequencyRatio	Edm.Decimal	True	The value of this property shall be Frequency relative to nominal CPU frequency of the Processor resource.
L3Miss	Edm.Decimal	True	The value of this property shall be L3 cache line misses of the Processor resource in millions.
L3HitRatio	Edm.Decimal	True	The value of this property shall be L3 cache hit ratio of the Processor resource.
L3Mpi	Edm.Decimal	True	The value of this property shall be L3 cache misses per instruction of the Processor resource.
LlcOccupancyBytes	Edm.Int64	True	The value of this property shall be total last level cache occupancy of the Processor resource in bytes.
LlcOccupancyPercent	Edm.Decimal	True	The value of this property shall be total last level cache occupancy percentage of the Processor resource.
MblBytes	Edm.Int64	True	The value of this property shall be local memory bandwidth usage of the Processor resource in bytes.
MbrBytes	Edm.Int64	True	The value of this property shall be remote memory bandwidth usage of the Processor resource in bytes.
KernelPercent	Edm.Decimal	True	The value of this property shall be total percentage of time the processor spend in kernel mode.
UserPercent	Edm.Decimal	True	The value of this property shall be total percentage of time the processor spend in user mode.
CoreMetrics	Collection(ProcessorMetrics.v1_0_0.CoreMetrics)	True	This type shall contain properties that describe this Core of the Processor resource.
Actions	ProcessorMetrics.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.

Intel® RSD OEM extensions:

Table 44. ProcessorMetrics Attributes

Attribute	Type	Nullable	Description
Health	Collection(Edm.String)	True	The value of this property shall be Processor Health as a discrete sensor reading.

4.20.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.20.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Processors/CPU1/ProcessorMetrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ProcessorMetrics.ProcessorMetrics",
  "@odata.id": "/redfish/v1/Systems/System1/Processors/CPU1/ProcessorMetrics",
  "@odata.type": "#ProcessorMetrics.v1_0_0.ProcessorMetrics",
  "Name": "ProcessorMetrics for CPU1",
  "Description": "description-as-string",
  "Id": "Metrics for CPU1",
  "AverageFrequencyMHz": 3014,
  "ThrottlingCelsius": 19,
  "TemperatureCelsius": 73,
  "ConsumedPowerWatt": 153,
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.ProcessorMetrics",
      "Health": [
        "FRB1 BIST Failure",
        "Processor Throttled"
      ]
    }
  }
}
```

4.20.1.2 PUT

Operation is not allowed on this resource.

4.20.1.3 PATCH

Operation is not allowed on this resource.

4.20.1.4 POST

Operation is not allowed on this resource.

4.20.1.5 DELETE

Operation is not allowed on this resource.

4.21 Memory Collection

The Memory collection resource provides collection of all memory modules installed in a computer system.

Table 45. MemoryCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(Memory.Memory)	True	Contains the members of this collection.

4.21.1.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.21.1.2 GET

Request:

```
GET /redfish/v1/Systems/System1/Memory
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/$entity",
  "@odata.type": "#MemoryCollection.MemoryCollection",
  "@odata.id": "/redfish/v1/Systems/System1/Memory",
  "Name": "Memory Collection",
  "Description": "description-as-string",
  "Members@odata.count": 4,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1"
    },
    {
      "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm2"
    },
    {
      "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm3"
    },
    {
      "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm4"
    }
  ],
  "Oem": {}
}
```

4.21.1.3 PUT

Operation is not allowed on this resource.

4.21.1.4 PATCH

Operation is not allowed on this resource.

4.21.1.5 POST

Operation is not allowed on this resource.

4.21.1.6 DELETE

Operation is not allowed on this resource.

4.22 Memory

Memory resource - provides detailed information about a single memory module identified by `{memoryID}`.

The properties' details are available in the *`Memory_v1.xml`* metadata file. OEM extensions details available in *`IntelRackScaleOem_v1.xml`*.

Table 46 describes the `Memory` attributes:

Table 46. Memory Attributes

Attribute	Type	Nullable	Description
`MemoryType`	`Memory.v1_0_0.MemoryType`	True	The value of this property shall be the type of Memory represented by this resource.
`MemoryDeviceType`	`Memory.v1_0_0.MemoryDeviceType`	True	The value of this property shall be the Memory Device Type as defined by `SMBIOS`.
`BaseModuleType`	`Memory.v1_0_0.BaseModuleType`	True	The value of this property shall be the base module type of `Memory`.
`MemoryMedia`	`Collection(Memory.v1_0_0.MemoryMedia)`	False	The value of this property shall be the media types of this `Memory`.
`CapacityMiB`	`Edm.Int64`	True	The value of this property shall be the `Memory` capacity in MiB.
`DataWidthBits`	`Edm.Int64`	True	The value of this property shall be the data width in bits.
`BusWidthBits`	`Edm.Int64`	True	The value of this property shall be the bus width in bits.
`Manufacturer`	`Edm.String`	True	This property shall contain a string which identifies the manufacturer of the `Memory`.
`SerialNumber`	`Edm.String`	True	This property shall indicate the serial number as provided by the manufacturer of this `Memory`.
`PartNumber`	`Edm.String`	True	This property shall indicate the part number as provided by the manufacturer of this Memory.
`AllowedSpeedsMHz`	`Collection(Edm.Int64)`	False	The value of this property shall be the speed supported by this `Memory`.
`FirmwareRevision`	`Edm.String`	True	The value of this property shall be the revision of firmware on the `Memory` controller.
`FirmwareApiVersion`	`Edm.String`	True	The value of this property shall be the version of API supported by the firmware.
`MaxTDPMilliWatts`	`Collection(Edm.Int64)`	False	The value of this property shall be the maximum power budgets supported by the Memory in milliwatts.
`SecurityCapabilities`	`Memory.v1_0_0.SecurityCapabilities`	False	This object shall contain properties which describe the security capabilities of the Memory.

Attribute	Type	Nullable	Description
SpareDeviceCount	Edm.Int64	True	The value of this property shall be the number of unused spare devices available in the Memory. If memory devices fails, the spare device could be used.
RankCount	Edm.Int64	True	The value of this property shall be number of ranks available in the Memory. The ranks could be used for spare or interleave.
DeviceLocator	Edm.String	True	The value of this property shall be location of the Memory in the platform, typically marked in the silk screen.
MemoryLocation	Memory.v1_0_0.MemoryLocation	False	This object shall contain properties which describe the Memory connection information to sockets and memory controllers.
ErrorCorrection	Memory.v1_0_0.ErrorCorrection	True	The value of this property shall be the error correction scheme supported for this memory.
OperatingSpeedMhz	Edm.Int64	True	The value of this property shall be the operating speed of Memory in MHz or MT/s (mega-transfers per second) as reported by the memory device. Memory devices which operate at their bus speed shall report the operating speed in MHz (bus speed), while memory device which transfer data faster than their bus speed (for example, DDR memory) shall report the operating speed in MT/s (mega-transfers/second). In any case, the reported value shall match the conventionally reported values for the technology utilized by the memory device.
VolatileRegionSizeLimitMiB	Edm.Int64	True	The value of this property shall be the total size of volatile regions in MiB.
PersistentRegionSizeLimitMiB	Edm.Int64	True	The value of this property shall be the total size of persistent regions in MiB.
Regions	Collection(Memory.v1_0_0.RegionSet)	False	The value of this property shall be the memory region information within the Memory.
OperatingMemoryModes	Collection(Memory.v1_0_0.OperatingMemoryModes)	False	The value of this property shall be the memory modes supported by the Memory.

Attribute	Type	Nullable	Description
PowerManagementPolicy	Memory.v1_0_0.PowerManagementPolicy	False	This object shall contain properties which describe the power management policy for the current resource.
IsSpareDeviceEnabled	Edm.Boolean	True	The value of this property shall be true if a spare device is enabled for this Memory.
IsRankSpareEnabled	Edm.Boolean	True	The value of this property shall be true if a rank spare is enabled for this Memory.
Actions	Memory.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Metrics	MemoryMetrics.MemoryMetrics	False	A reference to the Metrics associated with this Memory.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
VolatileRegionNumberLimit	Edm.Int64	True	The value of this property shall be the total number of volatile regions this Memory can support.
PersistentRegionNumberLimit	Edm.Int64	True	The value of this property shall be the total number of persistent regions this Memory can support.
VolatileRegionSizeMaxMiB	Edm.Int64	True	The value of this property shall be the maximum size of a single volatile regions in MiB.
PersistentRegionSizeMaxMiB	Edm.Int64	True	The value of this property shall be the maximum size of a single persistent regions in MiB.
AllocationIncrementMiB	Edm.Int64	True	The value of this property shall be the allocation increment for regions, measured in MiB.
AllocationAlignmentMiB	Edm.Int64	True	The value of this property shall be the alignment boundary on which memory regions are allocated, measured in MiB.
Links	Memory.v1_2_0.Links	False	The Links property, as described by the Redfish* Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
ModuleManufacturerID	Edm.String	True	The value of this property shall be the two byte manufacturer ID of this memory module as defined by JEDEC in JEP-106.
ModuleProductID	Edm.String	True	The value of this property shall be the two byte product ID of this memory module as defined by the manufacturer.

Attribute	Type	Nullable	Description
MemorySubsystemControllerManufacturerID	Edm.String	True	The value of this property shall be the two byte manufacturer ID of the memory subsystem controller of this memory module as defined by JEDEC in JEP-106.
MemorySubsystemControllerProductID	Edm.String	True	The value of this property shall be the two byte product ID of the memory subsystem controller of this memory module as defined by the manufacturer.
VolatileSizeMiB	Edm.Int64	True	The value of this property shall be the total size of the volatile portion memory in MiB.
NonVolatileSizeMiB	Edm.Int64	True	The value of this property shall be the total size of the non-volatile portion memory in MiB.
CacheSizeMiB	Edm.Int64	True	The value of this property shall be the total size of the cache portion memory in MiB.
LogicalSizeMiB	Edm.Int64	True	The value of this property shall be the total size of the logical memory in MiB.
Location	Resource.Location	False	This property shall contain location information of the associated memory.
Assembly	Assembly.Assembly	False	The value of this property shall be a link to a resource of type Assembly.

Table 47 shows the RegionSet attributes:

Table 47. MemoryLocation Attributes

Attribute	Type	Nullable	Description
Socket	Edm.Int64	True	Socket number in which Memory is connected.
MemoryController	Edm.Int64	True	Memory controller number in which Memory is connected.
Channel	Edm.Int64	True	Channel number in which Memory is connected.
Slot	Edm.Int64	True	Slot number in which Memory is connected.

Table 48 shows the PowerManagementPolicy attribute:

Table 48. RegionSet Attributes

Attribute	Type	Nullable	Description
RegionId	Edm.String	True	Unique region ID representing a specific region within the Memory.
MemoryClassification	Memory.v1_0_0.MemoryClassification	True	Classification of memory occupied by the given memory region.

Attribute	Type	Nullable	Description
OffsetMiB	Edm.Int64	True	Offset with in the Memory that corresponds to the starting of this memory region in MiB.
SizeMiB	Edm.Int64	True	Size of this memory region in MiB.

Table 48 shows the PowerManagementPolicy attributes:

Table 49. PowerManagementPolicy Attributes

Attribute	Type	Nullable	Description
PolicyEnabled	Edm.Boolean	True	Power management policy enabled status.
MaxTDPMilliWatts	Edm.Int64	True	Maximum TDP in milli watts.
PeakPowerBudgetMilliWatts	Edm.Int64	True	Peak power budget in milli watts.
AveragePowerBudgetMilliWatts	Edm.Int64	True	Average power budget in milli watts.

Table 50 shows the SecurityCapabilities attributes:

Table 50. SecurityCapabilities Attributes

Attribute	Type	Nullable	Description
PassphraseCapable	Edm.Boolean	True	Memory passphrase set capability.
MaxPassphraseCount	Edm.Int64	True	Maximum number of passphrases supported for this Memory.
SecurityStates	Collection(Memory.v1_0_0.SecurityStates)	False	Security states supported by the Memory.

For the Intel® RSD OEM extensions, Table 51 describes the Memory attributes.

Table 51. Memory Attributes

Attribute	Type	Nullable	Description
VoltageVolt	Edm.Decimal	True	This property shall represent current voltage of memory module

4.22.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.22.1.1 GET (Legacy DIMM)

Request:

```
GET /redfish/v1/Systems/System1/Memory/Dimm1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/$entity",
  "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1",
  "@odata.type": "#Memory.v1_7_0.Memory",
```

```
"Name": "DRAM",
"Description": "DDR SDRAM",
"Id": "Dimm1",
"MemoryType": "DRAM",
"MemoryDeviceType": "DDR4",
"BaseModuleType": "LRMemory",
"MemoryMedia": [
  "DRAM"
],
"CapacityMiB": 16384,
"DataWidthBits": 64,
"BusWidthBits": 72,
"Manufacturer": "Contoso",
"SerialNumber": "1A2B3B",
"PartNumber": "1A2B3D",
"AllowedSpeedsMHz": [
  2133,
  2400,
  2667
],
"FirmwareRevision": "RevAbc",
"FirmwareApiVersion": "ApiAbc",
"ModuleManufacturerID": "0x8086",
"ModuleProductID": "0x9876",
"MemorySubsystemControllerManufacturerID": "0x8086",
"MemorySubsystemControllerProductID": "0x9876",
"MaxTDPMilliWatts": [
  2400
],
"RankCount": 1,
"DeviceLocator": "PROC 1 DIMM A0",
"MemoryLocation": {
  "Socket": 1,
  "MemoryController": 1,
  "Channel": 1,
  "Slot": 1
},
"ErrorCorrection": "MultiBitECC",
"Status": {
  "State": "Enabled",
  "Health": "OK",
  "HealthRollup": null
},
"OperatingSpeedMhz": 2400,
"Regions": [
  {
    "RegionId": "1",
    "MemoryClassification": "Volatile",
    "OffsetMiB": 0,
    "SizeMiB": 16384
  }
],
"OperatingMemoryModes": [
  "Volatile"
],
"Metrics": {
  "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm1/Metrics"
},
"Oem": {
  "Intel_RackScale": {
    "@odata.type": "Intel.Oem.Memory",
```

```
      "VoltageVolt": 1.35
    }
  }
}
```

4.22.1.2 GET (Intel® Optane™ DC DIMM)

Request:

```
GET /redfish/v1/Systems/System1/Memory/Dimm2
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/$entity",
  "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm2",
  "@odata.type": "#Memory.v1_7_0.Memory",
  "Name": "DCPMM",
  "Description": "Intel(R) Optane DC Persistent Memory Module",
  "Id": "Dimm2",
  "MemoryType": "IntelOptane",
  "MemoryDeviceType": "DDR4",
  "BaseModuleType": "LRDIMM",
  "MemoryMedia": [
    "Intel3DXPoint"
  ],
  "CapacityMiB": 131072,
  "DataWidthBits": 64,
  "BusWidthBits": 72,
  "Manufacturer": "Intel",
  "SerialNumber": "000003c5",
  "PartNumber": "8089A21751000003C5",
  "AllowedSpeedsMHz": [
    2133,
    2400,
    2667
  ],
  "FirmwareRevision": "01.00.00.4847",
  "FirmwareApiVersion": "01.09",
  "ModuleManufacturerID": "0x8086",
  "ModuleProductID": "0x097a",
  "MemorySubsystemControllerManufacturerID": "SubsystemVendorID",
  "MemorySubsystemControllerProductID": "SubsystemDeviceID",
  "MaxTDPMilliWatts": [
    240
  ],
  "SecurityCapabilities": {
    "ConfigurationLockCapable": true,
    "DataLockCapable": true,
    "PassphraseCapable": true,
    "MaxPassphraseCount": 3
  },
  "SpareDeviceCount": 2,
  "RankCount": 1,
  "DeviceLocator": "PROC 1 DIMM A1",
  "MemoryLocation": {
    "Socket": 1,
    "MemoryController": 1,
    "Channel": 1,
    "Slot": 2
```

```
  },
  "ErrorCorrection": "MultiBitECC",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "OperatingSpeedMhz": 2400,
  "VolatileRegionSizeLimitMiB": 98304,
  "PersistentRegionSizeLimitMiB": 32768,
  "Regions": [
    {
      "RegionId": "1",
      "MemoryClassification": "Volatile",
      "OffsetMiB": 0,
      "SizeMiB": 32768
    },
    {
      "RegionId": "2",
      "MemoryClassification": "ByteAccessiblePersistent",
      "OffsetMiB": 32768,
      "SizeMiB": 32768
    },
    {
      "RegionId": "3",
      "MemoryClassification": "Block",
      "OffsetMiB": 65536,
      "SizeMiB": 32768
    },
    {
      "RegionId": "4",
      "MemoryClassification": "Block",
      "OffsetMiB": 98304,
      "SizeMiB": 32768
    }
  ],
  "OperatingMemoryModes": [
    "Volatile",
    "PMEM",
    "Block"
  ],
  "PowerManagementPolicy": {
    "PolicyEnabled": true,
    "MaxTDPMilliWatts": 5000,
    "PeakPowerBudgetMilliWatts": 3400,
    "AveragePowerBudgetMilliWatts": 1983
  },
  "Metrics": {
    "@odata.id": "/redfish/v1/Systems/System1/Memory/Dimm2/Metrics"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "Intel.Oem.Memory",
      "VoltageVolt": 1.35
    }
  }
}
```

4.22.1.3 PUT

Operation is not allowed on this resource.

4.22.1.4 PATCH

Operation is not allowed on this resource.

4.22.1.5 POST

Operation is not allowed on this resource.

4.22.1.6 DELETE

Operation is not allowed on this resource.

4.23 Memory Metrics

The property details are available in `MemoryMetrics_v1.xml` metadata file for official Redfish* Memory Metrics and `IntelRackScaleOem_v1.xml` file for Intel® RSD extensions for Memory Metrics.

Note: The current version of RSD implements a subset of all memory metrics. Third Party PSME implementations may choose a bigger memory metric set for implementation based on capabilities on underlying hardware/firmware.

Table 52. MemoryMetrics Attributes

Attribute	Type	Nullable	Description
`BlockSizeBytes`	`Edm.Int64`	True	The value of this property shall be the block size in bytes of all structure elements.
`CurrentPeriod`	`MemoryMetrics.v1_0_0.CurrentPeriod`	False	This object shall contain properties which describe the `CurrentPeriod` metrics for the current resource.
`LifeTime`	`MemoryMetrics.v1_0_0.LifeTime`	False	This object shall contain properties which describe the `LifeTime` metrics for the current resource.
`HealthData`	`MemoryMetrics.v1_0_0.HealthData`	False	This object shall contain properties which describe the `HealthData` metrics for the current resource.
`Actions`	`MemoryMetrics.v1_0_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.

Table 53. CurrentPeriod Attributes

Attribute	Type	Nullable	Description
`BlocksRead`	`Edm.Int64`	True	The value of this property shall be number of blocks read since reset.
`BlocksWritten`	`Edm.Int64`	True	The value of this property shall be member of blocks written since reset.

Table 54. LifeTime Attributes

Attribute	Type	Nullable	Description
BlocksRead	Edm.Int64	True	The value of this property shall be number of blocks read for the lifetime of the Memory.
BlocksWritten	Edm.Int64	True	The value of this property shall be number of blocks written for the lifetime of the Memory.

Table 55. HealthData Attributes

Attribute	Type	Nullable	Description
RemainingSpareBlockPercentage	Edm.Decimal	True	The value of this property shall be the remaining spare blocks in percentage.
LastShutdownSuccess	Edm.Boolean	True	The value of this property shall be the status of the last shutdown, with true indicating success.
DataLossDetected	Edm.Boolean	True	The value of this property shall be data loss detection status, with true indicating data loss detected.
PerformanceDegraded	Edm.Boolean	True	The value of this property shall be performance degraded mode status, with true indicating performance degraded.
AlarmTrips	MemoryMetrics.v1_0_0.AlarmTrips	False	This object shall contain properties describe the types of alarms that have been raised by the memory.
PredictedMediaLifeLeftPercent	Edm.Decimal	True	This property shall contain an indicator of the percentage of life remaining in the media.

Intel® RSD OEM extensions:

Table 56. MemoryMetrics Attributes

Attribute	Type	Nullable	Description
TemperatureCelsius	Edm.Decimal	True	The value of this property shall be temperature of the Memory resource in Celsius.
ControllerTemperatureCelsius	Edm.Decimal	True	The value of this property shall be temperature of the Memory controller in Celsius.
BandwidthPercent	Edm.Decimal	True	The value of this property shall be Memory Utilization on specific Memory module in Percent.
ThrottledCyclesPercent	Edm.Decimal	True	The value of this property shall be the percentage of memory cycles that were throttled due to power limiting.

Attribute	Type	Nullable	Description
ConsumedPowerWatt	Edm.Decimal	True	The value of this property shall be global power for specific Memory module (for example, DIMM) in Watts.
ThermalMarginCelsius	Edm.Decimal	True	The value of this property shall be a difference between current memory module temperature and optimal temperature for the module in degree Celsius.
Health	Collection(Edm.String)	True	The value of this property shall be Memory module Health as a discrete sensor reading.
ECCErrorsCount	Edm.Int64	True	The value of this property shall be a number of ECC Errors found on this Memory module. It's up to implementer if only UnCorrectable or both Correctable and Uncorrectable errors are shown per Module resource. ***Deprecated***: This value has been Deprecated in favor of CurrentPeriod and LifeTime.
CurrentPeriod	Intel.Oem.MemoryMetricsCurrentPeriod	False	This object shall contain properties which describe the CurrentPeriod metrics for the current resource.
LifeTime	Intel.Oem.MemoryMetricsLifeTime	False	This object shall contain properties which describe the LifeTime metrics for the current resource.

Table 57. MemoryMetricsCurrentPeriod Attributes

Attribute	Type	Nullable	Description
UptimeSeconds	Edm.Decimal	True	The value of this property shall be the current uptime of the Memory module for the current power cycle in seconds.
HostReadRequests	Edm.Decimal	True	The value of this property shall be the number of read requests the Memory module has serviced for the current power cycle.
HostWriteRequests	Edm.Decimal	True	The value of this property shall be the number of write requests the Memory module has serviced for the current power cycle.
ECCCorrectedErrors	Edm.Decimal	True	The value of this property shall be a number of Corrected ECC Errors found on this Memory module.

Table 58. MemoryMetricsLifeTime Attributes

Attribute	Type	Nullable	Description
UnsafeShutdownCount	Edm.Int64	True	This property shall be a number of times the Memory module has undergone unsafe shutdown.
PowerCycles	Edm.Decimal	True	The value of this property shall be number of power cycles over the lifetime of the Memory module.
PowerOnTimeSeconds	Edm.Decimal	True	The value of this property shall be the amount of time the Memory module was powered on during its lifetime in seconds.
HostReadRequests	Edm.Decimal	True	The value of this property shall be the number of read requests the Memory module has serviced over its lifetime.
HostWriteRequests	Edm.Decimal	True	The value of this property shall be the number of write requests the Memory module has serviced over its lifetime.
WriteCountMax	Edm.Decimal	True	The value of this property shall be the largest number of data writes to a single block across the Memory module.
WriteCountAvg	Edm.Decimal	True	The value of this property shall be the average number of data writes to all blocks across the Memory module.
MediaECCCorrectedErrors	Edm.Decimal	True	The value of this property shall be a number of corrected ECC Errors found on Media of this Memory module.
MediaECCUncorrectableErrors	Edm.Int64	True	The value of this property shall be a number of Uncorrectable ECC Errors found on Media of this Memory module.
ECCUncorrectableErrors	Edm.Decimal	True	The value of this property shall be a number of ECC Errors found on this Memory module.

4.23.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.23.1.1 GET (Legacy DIMM)

Request:

```
GET /redfish/v1/Systems/System1/Memory/Dimm1/Metrics
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/Metrics/$entity",
  "@odata.id": "/redfish/v1/Systems/3/Memory/Dimm1/Metrics",
  "@odata.type": "#MemoryMetrics.v1_0_0.MemoryMetrics",
  "Name": "Memory Metrics for DIMM1",
  "Description": "description-as-string",
  "Id": "Metrics for DIMM1",
  "HealthData": {
    "AlarmTrips": {
      "Temperature": false,
      "UncorrectableECCError": false,
      "CorrectableECCError": true
    }
  },
  "Oem": {
    "Intel_RackScale": {
      "TemperatureCelsius": 46,
      "ThermalMarginCelsius": 32,
      "Health": [
        "OK"
      ]
    }
  }
}
```


4.23.1.2 GET (Intel® Optane™ DC DIMM)

Request:

```
GET /redfish/v1/Systems/System1/Memory/Dimm2/Metrics
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Memory/Metrics/$entity",
  "@odata.id": "/redfish/v1/Systems/3/Memory/Dimm2/Metrics",
  "@odata.type": "#MemoryMetrics.v1_1_3.MemoryMetrics",
  "Name": "Memory Metrics for DIMM2",
  "Description": "Optane DC Persistent Memory Metrics",
  "Id": "Metrics for DIMM2",
  "BlockSizeBytes": 64,
  "CurrentPeriod": {
    "BlocksRead": 1406,
    "BlocksWritten": 12
  },
  "LifeTime": {
    "BlocksRead": 1452306,
    "BlocksWritten": 1212
  },
  "HealthData": {
    "DataLossDetected": false,
    "LastShutdownsSuccess": true,
    "PerformanceDegraded": false,
    "PredictedMediaLifeLeftPercent": 98,
    "RemainingSpareBlockPercentage": 75,
    "AlarmTrips": {
      "Temperature": false,
      "SpareBlock": true,
      "AddressParityError": false,
```

```
      "UncorrectableECCError": false,
      "CorrectableECCError": false
    }
  },
  "Oem": {
    "Intel_RackScale": {
      "TemperatureCelsius": 46,
      "ControllerTemperatureCelsius": 49,
      "ThermalMarginCelsius": 32,
      "BandwidthPercent": 10,
      "ConsumedPowerWatt": 52,
      "ThrottledCyclesPercent": 0,
      "Health": [
        "NonCritical"
      ],
      "CurrentPeriod": {
        "UptimeSeconds": 550800,
        "HostReadRequests": 5276,
        "HostWriteRequests": 235,
        "ECCCorrectedErrors": 4
      },
      "LifeTime": {
        "UnsafeShutdownCount": 565,
        "PowerCycles": 3091,
        "PowerOnTimeSeconds": 190330568712445,
        "HostReadRequests": 5023256,
        "HostWriteRequests": 239400442,
        "WriteCountMax": 2703818,
        "WriteCountAvg": 4679,
        "MediaECCCorrectedErrors": 47023,
        "MediaECCUncorrectableErrors": 2,
        "ECCUncorrectableErrors": 7
      }
    }
  }
}
```


4.23.1.3 PUT

Operation is not allowed on this resource.

4.23.1.4 PATCH

Operation is not allowed on this resource.

4.23.1.5 POST

Operation is not allowed on this resource.

4.23.1.6 DELETE

Operation is not allowed on this resource.

4.24 Storage Collection

The Storage subsystem collection resource provides collection of all storage subsystems available in a computer system.

Details of this resource are described in the metadata file: `StorageCollection_v1.xml`

Table 59. Storage Collection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Storage.Storage)`	True	Contains the members of this collection.

4.24.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.24.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Storage
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#StorageCollection.StorageCollection",
  "@odata.id": "/redfish/v1/Systems/1/Storage",
  "@odata.type": "#StorageCollection.StorageCollection",
  "Name": "Storage Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/3/Storage/SATA"
    }
  ]
}
```

4.24.1.2 PUT

Operation is not allowed on this resource.

4.24.1.3 PATCH

Operation is not allowed on this resource.

4.24.1.4 POST

Operation is not allowed on this resource.

4.24.1.5 DELETE

Operation is not allowed on this resource.

4.25 Storage

The Storage subsystem resource provides detailed information about a single storage subsystem identified by `{storageID}`.

Details of this resource are described in metadata file: `Storage_v1.xml`

Table 60. Storage Attributes

Attribute	Type	Nullable	Description
`Links`	`Storage.v1_0_0.Links`	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
`Actions`	`Storage.v1_0_0.Actions`	False	The Actions property shall contain the available actions for this resource.
`Status`	`Resource.Status`	False	-
`StorageControllers`	`Collection(Storage.StorageController)`	True	A collection that indicates all the storage controllers that this resource represents.
`Drives`	`Collection(Drive.Drive)`	True	A collection that indicates all the drives attached to the storage controllers that this resource represents.
`Volumes`	`VolumeCollection.VolumeCollection`	False	A collection that indicates all the volumes produced by the storage controllers that this resource represents.
`Redundancy`	`Collection(Redundancy.Redundancy)`	True	Redundancy information for the storage subsystem.

4.25.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.25.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Storage/SATA
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Storage/Members/$entity",
  "@odata.id": "/redfish/v1/Systems/1/Storage/SATA",
  "@odata.type": "#Storage.v1_1_0.Storage",
  "Id": "1",
  "Name": "SATA Storage System",
  "Description": "System SATA",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
```

```
  "StorageControllers": [
    {
      "@odata.id": "/redfish/v1/Systems/1/Storage/SATA#/StorageControllers/0",
      "@odata.type": "#Storage.v1_0_0.StorageController",
      "Id": "0",
      "Name": "System SATA",
      "Description": "System SATA (Embedded)",
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "Manufacturer": "ManufacturerName",
      "Model": "ProductModelName",
      "SKU": "",
      "SerialNumber": "2M220100SL",
      "PartNumber": "",
      "AssetTag": "CustomerWritableThingy",
      "SpeedGbps": 6,
      "FirmwareVersion": null,
      "SupportedControllerProtocols": [
        "PCIe"
      ],
      "SupportedDeviceProtocols": [
        "SATA"
      ],
      "Identifiers": [
        {
          "@odata.type": "#Resource.v1_1_0.Identifier",
          "DurableName": "123e4567-e89b-12d3-a456-426655440000",
          "DurableNameFormat": "UUID"
        }
      ]
    }
  ],
  "Drives": [
    {
      "@odata.id": "/redfish/v1/Chassis/Blade1/Drives/Disk1"
    }
  ],
  "Volumes": {
    "@odata.id": "/redfish/v1/Systems/System1/Storage/SATA/Volumes"
  },
  "Links": {
    "Enclosures": [
      {
        "@odata.id": "/redfish/v1/Chassis/Blade1"
      }
    ]
  },
  "Actions": {}
}
```


4.25.1.2 PUT

Operation is not allowed on this resource.

4.25.1.3 PATCH

Operation is not allowed on this resource.

4.25.1.4 POST

Operation is not allowed on this resource.

4.25.1.5 DELETE

Operation is not allowed on this resource.

4.26 Volume Collection

The resource Volume Collection provides collection of all storage volumes available in a storage subsystem.

Details of this resource are described in metadata file: `VolumeCollection_v1.xml`

Table 61 VolumeCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Volume.Volume)`	True	The value of each member entry shall reference a Volume resource.

4.26.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.26.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/Storage/SATA/Volumes
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#VolumeCollection.VolumeCollection",
  "@odata.id": "/redfish/v1/Systems/System1/Storage/SATA/Volumes",
  "@odata.type": "#VolumeCollection.VolumeCollection",
  "Name": "Storage Volume Collection",
  "Description": "Storage Volume Collection",
  "Members@odata.count": 0,
  "Members": [],
  "Oem": {}
}
```

4.26.1.2 PUT

Operation is not allowed on this resource.

4.26.1.3 PATCH

Operation is not allowed on this resource.

4.26.1.4 POST

Operation is not allowed on this resource.

4.26.1.5 DELETE

Operation is not allowed on this resource.

4.27 Drive

Drive contains properties describing a single physical disk drive for any system.

Details of this resource are described in metadata file: `Drive_v1.xml` OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 62. Drive Attributes

Attribute	Type	Nullable	Description
`StatusIndicator`	`Drive.v1_0_0.StatusIndicator`	True	The value of this property shall contain the status indicator state for the status indicator associated with this drive. The valid values for this property are specified through the Redfish*.`AllowableValues` annotation.
`IndicatorLED`	`Resource.IndicatorLED`	True	This value of this property shall contain the indicator light state for the indicator light associated with this drive.
`Model`	`Edm.String`	True	The value of this property shall be the name by which the manufacturer generally refers to the drive.
`Revision`	`Edm.String`	True	This property shall contain the revision as defined by the manufacturer for the associated drive.
`Status`	`Resource.Status`	False	This property shall contain any status or health properties of the resource.
`CapacityBytes`	`Edm.Int64`	True	This property shall contain the raw size in bytes of the associated drive.
`FailurePredicted`	`Edm.Boolean`	True	This property shall contain failure information as defined by the manufacturer for the associated drive.
`Protocol`	`Protocol.Protocol`	True	This property shall contain the protocol which the associated drive is using to communicate to the storage controller for this system.
`MediaType`	`Drive.v1_0_0.MediaType`	True	This property shall contain the type of media contained in the associated drive.

Attribute	Type	Nullable	Description
Manufacturer	Edm.String	True	The value of this property shall be the name of the organization responsible for producing the drive. This organization might be the entity from whom the drive is purchased, but this is not necessarily true.
SKU	Edm.String	True	The value of this property shall be the stock-keeping unit number for this drive.
SerialNumber	Edm.String	True	The value of this property shall be a manufacturer allocated number used to identify the drive.
PartNumber	Edm.String	True	The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the drive.
AssetTag	Edm.String	True	The value of this property shall be an identifying string used to track the drive for inventory purposes.
Identifiers	Collection(Resource.Identifier)	False	This property shall contain a list of all known durable names for the associated drive.
Location	Collection(Resource.Location)	false	This property shall contain location information of the associated drive.
HotspareType	Drive.v1_0_0.HotspareType	True	This property shall contain the hot spare type for the associated drive. If the drive is currently serving as a hot spare its Status.State field shall be StandbySpare and Enabled when it is being used as part of a Volume.
EncryptionAbility	Drive.v1_0_0.EncryptionAbility	True	This property shall contain the encryption ability for the associated drive.
EncryptionStatus	Drive.v1_0_0.EncryptionStatus	True	This property shall contain the encryption status for the associated drive.
RotationSpeedRPM	Edm.Decimal	True	This property shall contain rotation speed of the associated drive.
BlockSizeBytes	Edm.Int64	True	This property shall contain size of the smallest addressable unit of the associated drive.
CapableSpeedGbs	Edm.Decimal	True	This property shall contain fastest capable bus speed of the associated drive.
NegotiatedSpeedGbs	Edm.Decimal	True	This property shall contain current bus speed of the associated drive.
PredictedMediaLifeLeftPercent	Edm.Decimal	True	This property shall contain an indicator of the percentage of life remaining in the Drive's media.

Attribute	Type	Nullable	Description
Links	Drive.v1_0_0.Links	False	The Links property, as described by the Redfish* Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	Drive.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Operations	Collection(Drive.v1_1_0.Operations)	False	This property shall contain a list of all operations currently running on the Drive.
Assembly	Assembly.Assembly	False	The value of this property shall be a link to an Assembly type resource.
PhysicalLocation	Resource.Location	False	This property shall contain location information of the associated drive.
HotspareReplacementMode	Drive.v1_5_0.HotspareReplacementModeType	True	This property shall specify if a commissioned hotspare will continue to serve as a hotspare once the failed drive is replaced.

4.27.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.27.1.1 GET

Request:

```
GET /redfish/v1/Chassis/Blade1/Drives/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Drive.Drive",
  "@odata.id": "/redfish/v1/Chassis/Blade1/Drives/1",
  "@odata.type": "#Drive.v1_4_0.Drive",
  "Id": "1",
  "Name": "Drive",
  "Description": "Drive description string",
  "IndicatorLED": "Lit",
  "Model": "Drive Model string",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "CapacityBytes": 899527000000,
  "Protocol": "SATA",
  "MediaType": "SSD",
  "Manufacturer": "Intel",
  "SerialNumber": "72D0A037FRD27",
  "PartNumber": "SG0GP8811253178M02GJA00",
  "SKU": "SKU version",
```

```
  "StatusIndicator": "OK",
  "Revision": "revision string",
  "FailurePredicted": false,
  "AssetTag": null,
  "CapableSpeedGbs": 6,
  "NegotiatedSpeedGbs": 6,
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableName": "123e4567-e89b-12d3-a456-426655440000",
      "DurableNameFormat": "UUID"
    }
  ],
  "HotspareType": null,
  "EncryptionAbility": null,
  "EncryptionStatus": null,
  "RotationSpeedRPM": null,
  "BlockSizeBytes": null,
  "PredictedMediaLifeLeftPercent": null,
  "Links": {
    "Volumes": [],
    "Endpoints": []
  },
  "Actions": {
    "#Drive.SecureErase": {
      "target": "/redfish/v1/Chassis/Blade1/Drives/1/Actions/Drive.SecureErase"
    }
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Drive",
      "DriveErased": false,
      "FirmwareVersion": "1.17",
      "Storage": null,
      "UsedBy": [],
      "PCIeFunction": null,
      "Metrics": {}
    }
  }
}
```


4.27.1.2 PUT

Operation is not allowed on this resource.

4.27.1.3 PATCH

The following properties can be updated by the `PATCH` operation.

Table 63. Drive Attributes

Attribute	Type	Nullable	Description
`AssetTag`	`Edm.String`	True	The value of this property shall be an identifying string used to track the drive for inventory purposes.

The following OEM object properties can be patched.

Table 64. Drive Attributes

Attribute	Type	Nullable	Description
DriveErased	Edm.Boolean	False	This property shall represent the erase state of drive.

Request:

```
PATCH /redfish/v1/Chassis/Blade1/Drives/1
Content-Type: application/json
{
  "AssetTag": "TemporaryStorage",
  "Oem": {
    "Intel_RackScale": {
      "DriveErased": false
    }
  }
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or:

```
HTTP/1.1 200 OK
((updated resource body as in 4.21.1.1))
```

4.27.1.4 POST

The POST request is used to execute the SecureErase action. If this operation is not immediate, the Status->State of the resource should be changed to "**Starting**". This action works only on drives currently not assigned to any zone. When the action is complete, the drive's DriveErased property will change to "**true**".

Request:

```
POST /redfish/v1/Chassis/Blade1/Drives/1/Actions/Drive.SecureErase
Content-Type: application/json
{}
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip>:<port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.27.1.5 DELETE

Operation is not allowed on this resource.

4.28 System Network Interface

The Blade Network Interface resource provides detailed information about a network interface identified by `{nicID}`.

Details of this resource are described in the metadata file: `EthernetInterface_v1.xml`. OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 65. Storage Collection Attributes

Attribute	Type	Nullable	Description
`UefiDevicePath`	`Edm.String`	True	The value of this property shall be the UEFI device path to the device which implements this interface (port).
`Status`	`Resource.Status`	False	This property shall contain any status or health properties of the resource.
`InterfaceEnabled`	`Edm.Boolean`	True	The value of this property shall be a `boolean` indicating whether this interface is enabled.
`PermanentMACAddress`	`EthernetInterface.v1_0_0.MACAddress`	True	The value of this property shall be the Permanent MAC Address of this interface (port). This value is typically programmed during the manufacturing time. This address is not assignable.
`MACAddress`	`EthernetInterface.v1_0_0.MACAddress`	True	The value of this property shall be the effective current MAC Address of this interface. If an assignable MAC address is not supported, this is a read only alias of the `PermanentMACAddress`.
`SpeedMbps`	`Edm.Int64`	True	The value of this property shall be the link speed of the interface in Mbps.
`AutoNeg`	`Edm.Boolean`	True	The value of this property shall be true if auto negotiation of speed and duplex is enabled on this interface and false if it is disabled.

Attribute	Type	Nullable	Description
FullDuplex	Edm.Boolean	True	The value of this property shall represent the duplex status of the Ethernet connection on this interface.
MTUSize	Edm.Int64	True	The value of this property shall be the size in bytes of largest Protocol Data Unit (PDU) that can be passed in an Ethernet (MAC) frame on this interface.
HostName	Edm.String	True	The value of this property shall be host name for this interface.
FQDN	Edm.String	True	The value of this property shall be the fully qualified domain name for this interface.
MaxIPv6StaticAddresses	Edm.Int64	True	The value of this property shall indicate the number of array items supported by IPv6StaticAddresses.
VLAN	VLanNetworkInterface.VLAN	True	The value of this property shall be the VLAN for this interface. If this interface supports more than one VLAN, the VLAN property shall not be present and the VLANS collection link shall be present instead.

Attribute	Type	Nullable	Description
IPv4Addresses	Collection(IPAddresses.IPv4Address)	False	The value of this property shall be an array of objects used to represent the IPv4 connection characteristics for this interface. It is recommended that this propety be regarded as read-only, with configuration of static addresses performed by updating the values within IPv4StaticAddesssses. Services may reject updates to this array for this reason.
IPv6AddressPolicyTable	Collection(EthernetInterface.v1_0_0.IPv6AddressPolicyEntry)	False	The value of this property shall be an array of objects used to represent the Address Selection Policy Table as defined in RFC 6724.
IPv6Addresses	Collection(IPAddresses.IPv6Address)	False	The value of this property shall be an array of objects used to represent the IPv6 connection characteristics for this interface.
IPv6StaticAddresses	Collection(IPAddresses.IPv6StaticAddress)	False	The value of this property shall be an array of objects used to represent the IPv6 static connection characteristics for this interface.
IPv6DefaultGateway	Edm.String	True	The value of this property shall be the current IPv6 default gateway address that is in use on this interface.
NameServers	Collection(Edm.String)	False	The value of this property shall be the DNS name servers used on this interface.

Attribute	Type	Nullable	Description
VLANs	VLanNetworkInterfaceCollection.VLanNetworkInterfaceCollection	False	The value of this property shall reference a collection of VLAN resources. If this property is used, the VLANEnabled and VLANId property shall not be used.
LinkStatus	EthernetInterface.v1_1_0.LinkStatus	True	The value of this property shall be the link status of this interface (port).
Links	EthernetInterface.v1_1_0.Links	False	The `Links` property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	EthernetInterface.v1_3_0.Actions	False	The `Actions` property shall contain the available actions for this resource.
DHCPv4	EthernetInterface.v1_4_0.DHCPv4Configuration	True	This property shall contain the configuration of DHCP v4.
DHCPv6	EthernetInterface.v1_4_0.DHCPv6Configuration	True	This property shall contain the configuration of DHCP v6.
StatelessAddressAutoConfig	EthernetInterface.v1_4_0.StatelessAddressAutoConfiguration	True	This object shall contain the IPv4 and IPv6 Stateless Address Automatic Configuration (SLAAC) properties for this interface.
IPv6StaticDefaultGateways	Collection(IPAddresses.IPv6StaticAddress)	False	The values in this array shall represent the IPv6 static default gateway addresses for this interface.

Attribute	Type	Nullable	Description
StaticNameServers	Collection(Edm.String)	False	A statically defined set of DNS server IP addresses to be used when DHCP provisioning is not in enabled for name server configuration. As an implementation option they may also be used in addition to DHCP provided addresses, or in cases where the DHCP server provides no DNS assignments.
IPv4StaticAddresses	Collection(IPAddresses.IPv4Address)	False	The value of this property shall be an array of objects used to represent all IPv4 static addresses assigned (but not necessarily in use) to this interface. Addresses in use by this interface shall also appear in the IPv4Addresses property.

4.28.1 Intel® RSD OEM Extensions

Table 66. EthernetInterface Attributes

Attribute	Type	Nullable	Description
SupportedProtocols	Collection(Protocol.Protocol)	True	This property shall represent an array of supported protocol types by the Ethernet interface.

4.28.2 Intel® RSD OEM Links extensions

Table 67. EthernetInterfaceLinks Attributes

Attribute	Type	Nullable	Description
NeighborPort	EthernetSwitchPort.EthernetSwitchPort	True	This property shall represent the URI of the Ethernet port connected to this interface

4.28.3 Operations

The following sections specify the HTTP methods available on this endpoint.

4.28.3.1 GET

Note: The `NeighborPort` link will not be filled by PSME. If PODM is able to match the MAC address of an interface with a NeighborMAC of an `EthernetSwitchPort` resource, it will fill this property with a link to the Port.

Request:

```
GET /redfish/v1/Systems/System1/EthernetInterfaces/LAN1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetInterface.EthernetInterface",
  "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces/LAN1",
  "@odata.type": "#EthernetInterface.v1_3_0.EthernetInterface",
  "Id": "LAN1",
  "Name": "Ethernet Interface",
  "Description": "System NIC 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "InterfaceEnabled": true,
  "PermanentMACAddress": "AA:BB:CC:DD:EE:FF",
  "MACAddress": "AA:BB:CC:DD:EE:FF",
  "SpeedMbps": 100,
  "AutoNeg": true,
  "FullDuplex": true,
  "MTUSize": 1500,
  "HostName": "web483",
  "FQDN": "web483.redfishspecification.org",
  "IPv6DefaultGateway": "fe80::3ed9:2bff:fe34:600",
  "MaxIPv6StaticAddresses": null,
  "NameServers": [
    "names.redfishspecification.org"
  ],
  "IPv4Addresses": [
    {
      "@odata.type": "#IPAddresses.v1_0_0.IPv4Address",
      "Address": "192.168.0.10",
      "SubnetMask": "255.255.252.0",
      "AddressOrigin": "Static",
      "Gateway": "192.168.0.1"
    }
  ],
  "IPv4StaticAddresses": [],
  "IPv6Addresses": [
    {
      "@odata.type": "#IPAddresses.v1_0_0.IPv6Address",
      "Address": "fe80::1ec1:deff:fe6f:1e24",
      "PrefixLength": 64,
      "AddressOrigin": "Static",
      "AddressState": "Preferred"
    }
  ],
  "IPv6StaticAddresses": [],
  "IPv6StaticDefaultGateways": [],
```

```
  "StaticNameServers": [],
  "VLAN": null,
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.EthernetInterface",
      "SupportedProtocols": [
        "RoCEv2"
      ]
    }
  },
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    },
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EthernetInterfaceLinks",
        "NeighborPort": {
          "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1"
        }
      }
    }
  }
}
```

4.28.3.2 PUT

Operation is not allowed on this resource.

4.28.3.3 PATCH

Operation is not allowed on this resource.

4.28.3.4 POST

Operation is not allowed on this resource.

4.28.3.5 DELETE

Operation is not allowed on this resource.

4.29 Manager Collection

The Manager Collection resource provides collection of all managers available in a drawer.

Detailed info about this resource properties can be obtained from metadata file: `Manager_v1.xml`. OEM extensions details are available in `IntelRackScaleOem_v1.xml`.

Table 68. ManagerCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Manager.Manager)`	True	This property shall contain an array of references to the members of this collection.

4.29.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.29.1.1 GET

Request:

```
GET /redfish/v1/Managers
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ManagerCollection.ManagerCollection",
  "@odata.id": "/redfish/v1/Managers",
  "@odata.type": "#ManagerCollection.ManagerCollection",
  "Name": "Manager Collection",
  "Description": "description-as-string",
  "Members@odata.count": 3,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Managers/BMC1"
    },
    {
      "@odata.id": "/redfish/v1/Managers/PSME"
    },
    {
      "@odata.id": "/redfish/v1/Managers/PCIeManager1"
    }
  ]
}
```

4.29.1.2 PUT

Operation is not allowed on this resource.

4.29.1.3 PATCH

Operation is not allowed on this resource.

4.29.1.4 POST

Operation is not allowed on this resource.

4.29.1.5 DELETE

Operation is not allowed on this resource.

4.30 Manager

The manager resource provides detailed information about a manager identified by `{managerID}`.

Table 69. Manager Attributes

Attribute	Type	Nullable	Description
ManagerType	Manager.v1_0_0.ManagerType	False	The value of this property shall describe the function of this manager. The value EnclosureManager shall be used if this manager controls one or more services through aggregation. The value BMC shall be used if this manager represents a traditional server management controller. The value ManagementController shall be used if none of the other enumerations apply.
Links	Manager.v1_0_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
ServiceEntryPointUUID	Resource.UUID	True	This property shall contain the UUID of the Redfish* Service provided by this manager. Each Manager providing an Entry Point to the same Redfish Service shall report the same UUID value (even though the name of the property may imply otherwise). This property shall not be present if this manager does not provide a Redfish Service Entry Point.
UUID	Resource.UUID	True	The value of this property shall contain the universal unique identifier number for the manager.
Model	Edm.String	True	The value of this property shall contain the information about how the manufacturer references this manager.
DateTime	Edm.DateTimeOffset	True	The value of this property shall represent the current DateTime value for the manager, with offset from UTC, in Redfish Timestamp format.
DateTimeLocalOffset	Edm.String	True	The value is property shall represent the offset from UTC time that the current value of DataTime property contains.

Attribute	Type	Nullable	Description
FirmwareVersion	Edm.String	True	This property shall contain the firmware version as defined by the manufacturer for the associated manager.
SerialConsole	Manager.v1_0_0.SerialConsole	False	The value of this property shall contain information about the Serial Console service of this manager.
CommandShell	Manager.v1_0_0.CommandShell	False	The value of this property shall contain information about the Command Shell service of this manager.
GraphicalConsole	Manager.v1_0_0.GraphicalConsole	False	The value of this property shall contain the information about the Graphical Console (KVM-IP) service of this manager.
Actions	Manager.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
EthernetInterfaces	EthernetInterfaceCollection.EthernetInterfaceCollection	False	The value of this property shall be a link to a collection of type EthernetInterfaceCollection.
SerialInterfaces	SerialInterfaceCollection.SerialInterfaceCollection	False	The value of this property shall be a link to a collection of type SerialInterfaceCollection which are for the use of this manager.
NetworkProtocol	ManagerNetworkProtocol.ManagerNetworkProtocol	False	The value of this property shall contain a reference to a resource of type ManagerNetworkProtocol which represents the network services for this manager.
LogServices	LogServiceCollection.LogServiceCollection	False	The value of this property shall contain a reference to a collection of type LogServiceCollection which are for the use of this manager.
VirtualMedia	VirtualMediaCollection.VirtualMediaCollection	False	The value of this property shall contain a reference to a collection of type VirtualMediaCollection which are for the use of this manager.

Attribute	Type	Nullable	Description
Redundancy	Collection(Redundancy.Redundancy)	True	The values of the properties in this array shall be used to show how this manager is grouped with other managers for form redundancy sets.
PowerState	Resource.PowerState	True	The value of this property shall contain the power state of the Manager.
HostInterfaces	HostInterfaceCollection.HostInterfaceCollection	False	The value of this property shall be a link to a collection of type HostInterfaceCollection.
AutoDSTEnabled	Edm.Boolean	False	The value of this property shall contain the enabled status of the automatic Daylight Saving Time (DST) adjustment of the manager's DateTime. If Automatic DST adjustment is **enabled**, it shall be true. Otherwise, if **disabled**, it is false.
RemoteRedfishServiceUri	Edm.String	True	This property shall contain the URI of the Redfish Service Root for the remote Manager represented by this resource. This property shall only be present when providing aggregation of Redfish services.
RemoteAccountService	AccountService.AccountService	False	This property shall contain a reference to the AccountService resource for the remote Manager represented by this resource. This property shall only be present when providing aggregation of Redfish services.

Table 70. Links Attributes

Attribute	Type	Nullable	Description
ManagerForServers	Collection(ComputerSystem.ComputerSystem)	True	This property shall contain an array of references to ComputerSystem resources of which this Manager instance has control.
ManagerForChassis	Collection(Chassis.Chassis)	True	This property shall contain an array of references to Chassis resources of which this Manager instance has control.
ManagerInChassis	Chassis.Chassis	False	This property shall contain a reference to the chassis that this manager is located in.

4.30.1 Intel® RSD OEM extensions

Table 71. ManagerLinks Attributes

Attribute	Type	Nullable	Description
ManagerForServices	Collection(StorageService.StorageService)	True	This property is an array of references to services that this manager has control over.
ManagerForEthernetSwitches	Collection(EthernetSwitch.v1_0_0.EthernetSwitch)	True	This property is an array of references to Ethernet switches that this manager has control over.
ManagerForFabrics	Collection(Fabric.Fabric)	True	This property is an array of references to fabrics that this manager has control over. ***Deprecated***: This value has been Deprecated in favor of ManagerForEthernetSwitches.

4.30.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.30.2.1 GET

Request:

```
GET /redfish/v1/Managers/PSME
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Manager.Manager",
  "@odata.id": "/redfish/v1/Managers/PSME",
  "@odata.type": "#Manager.v1_4_0.Manager",
  "Id": "1",
  "Name": "Manager",
  "ManagerType": "BMC",
  "Description": "BMC",
  "ServiceEntryPointUUID": "92384634-2938-2342-8820-489239905423",
  "UUID": "00000000-0000-0000-0000-000000000000",
  "Model": "Joo Janta 200",
  "DateTime": "2015-03-13T04:14:33+06:00",
  "DateTimeLocalOffset": "+06:00",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "AutoDSTEnabled": false,
  "GraphicalConsole": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 2,
    "ConnectTypesSupported": [
      "KVMIP"
    ]
  },
  "HostInterfaces": [],
```

```
  "SerialConsole": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 1,
    "ConnectTypesSupported": [
      "Telnet",
      "SSH",
      "IPMI"
    ]
  },
  "CommandShell": {
    "ServiceEnabled": true,
    "MaxConcurrentSessions": 4,
    "ConnectTypesSupported": [
      "Telnet",
      "SSH"
    ]
  },
  "FirmwareVersion": "1.00",
  "NetworkProtocol": {
    "@odata.id": "/redfish/v1/Managers/PSME/NetworkProtocol"
  },
  "EthernetInterfaces": {
    "@odata.id": "/redfish/v1/Managers/PSME/EthernetInterfaces"
  },
  "LogServices": {
    "@odata.id": "/redfish/v1/Managers/PSME/LogServices"
  },
  "Links": {
    "@odata.type": "#Manager.v1_4_0.Links",
    "ManagerForServers": [],
    "ManagerForChassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/FabricModule1"
      }
    ],
    "ManagerInChassis": {
      "@odata.id": "/redfish/v1/Chassis/Drawer1"
    },
    "ManagerForSwitches": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1"
      }
    ],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.ManagerLinks",
        "ManagerForServices": [
          {
            "@odata.id": "/redfish/v1/StorageServices/NVMeoE1"
          }
        ],
        "ManagerForFabrics": [
          {
            "@odata.id": "/redfish/v1/Fabrics/PCIe"
          }
        ],
        "ManagerForEthernetSwitches": [
          {
            "@odata.id": "/redfish/v1/EthernetSwitches/Switch1"
          }
        ]
```

```
      }
    }
  },
  "Actions": {
    "#Manager.Reset": {
      "target": "/redfish/v1/Managers/PSME/Actions/Manager.Reset"
    },
    "Oem": {}
  },
  "Oem": {}
}
```

4.30.2.2 PUT

Operation is not allowed on this resource.

4.30.2.3 PATCH

Request:

```
PATCH /redfish/v1/Managers/PSME
Content-Type: application/json
{
  "GraphicalConsole": {
    "ServiceEnabled": true
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.30.2.4 POST

Operation is not allowed on this resource.

4.30.2.5 DELETE

Operation is not allowed on this resource.

4.31 Network Protocol

The Network protocol resource provides detailed information about all network services supported by a manager identified by `{managerID}`.

Table 72. ManagerNetworkProtocol Attributes

Attribute	Type	Nullable	Description
`HostName`	`Edm.String`	True	The value of this property shall contain the host name without any domain information.
`FQDN`	`Edm.String`	True	The value of this property shall contain the fully qualified domain name for the manager.

Attribute	Type	Nullable	Description
HTTP	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the HTTP protocol settings for the manager. The default value of the Port property should be 80 for compatibility with established client implementations.
HTTPS	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the HTTPS/SSL protocol settings for this manager. The default value of the Port property should be “443” for compatibility with established client implementations.
SNMP	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the SNMP protocol settings for this manager. The default value of the Port property should be “161” for compatibility with established client implementations.
VirtualMedia	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the Virtual Media protocol settings for this manager. The value of the Port property shall contain the TCP port assigned for Virtual Media usage.
Telnet	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the Telnet protocol settings for this manager. The default value of the Port property should be “23” for compatibility with established client implementations.
SSDP	ManagerNetworkProtocol.v1_0_0.SSDProtocol	False	This object shall contain information for the SSDP protocol settings for this manager. Simple Service Discovery Protocol (SSDP) is for network discovery of devices supporting the Redfish* service. The default value of the Port property should be “1900” for compatibility with established client implementations.

Attribute	Type	Nullable	Description
IPMI	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the IPMI over LAN protocol settings for the manager. The default value of the Port property should be “623” for compatibility with established client implementations.
SSH	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the SSH protocol settings for the manager. The default value of the Port property should be “22” for compatibility with established client implementations.
KVMIP	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the KVM-IP (Keyboard, Video, Mouse) protocol settings for the manager.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
DHCP	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the DHCP protocol settings for the manager.
NTP	ManagerNetworkProtocol.v1_2_0.NTPProtocol	False	This object shall contain information for the NTP protocol settings for the manager.
Actions	ManagerNetworkProtocol.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.
DHCPv6	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the DHCPv6 protocol settings for the manager.
RDP	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the Remote Desktop Protocol settings for the manager.
RFB	ManagerNetworkProtocol.v1_0_0.Protocol	False	This object shall contain information for the Remote Frame Buffer protocol settings for the manager.

4.31.1 Operations

The following sections specify the HTTP methods available on this endpoint.

Note: Because of confidential nature of `KVMIPPassword` field, its value will be shown as `null`.

4.31.1.1 GET

Request:

```
GET /redfish/v1/Managers/PSME/NetworkProtocol
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#ManagerNetworkProtocol.ManagerNetworkProtocol",
  "@odata.id": "/redfish/v1/Managers/PSME/NetworkProtocol",
  "@odata.type": "#ManagerNetworkProtocol.v1_2_0.ManagerNetworkProtocol",
  "Id": "NetworkProtocol",
  "Name": "Manager Network Protocol",
  "Description": "Manager Network Service Status",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "HostName": "mymanager",
  "FQDN": "mymanager.mydomain.com",
  "HTTP": {
    "ProtocolEnabled": true,
    "Port": 8888
  },
  "HTTPS": {
    "ProtocolEnabled": true,
    "Port": 8443
  },
  "DHCP": {
    "ProtocolEnabled": false
  },
  "IPMI": {
    "ProtocolEnabled": false
  },
  "SSH": {
    "ProtocolEnabled": true,
    "Port": 22
  },
  "SNMP": {
    "ProtocolEnabled": false
  },
  "VirtualMedia": {
    "ProtocolEnabled": false
  },
  "SSDP": {
    "ProtocolEnabled": true,
    "Port": 1900,
    "NotifyMulticastIntervalSeconds": 600,
    "NotifyTTL": 5,
    "NotifyIPv6Scope": "Site"
  },
  "Telnet": {
    "ProtocolEnabled": false
  },
  "KVMIP": {
```

```
    "ProtocolEnabled": true,
    "Port": 5901
  },
  "NTP": {
    "ProtocolEnabled": false
  },
  "Actions": {
    "Oem": {}
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.NetworkProtocol",
      "KVMIPPassword": null,
      "KVMIPOverWebSocket": {
        "ProtocolEnabled": true,
        "Protocol": "RFB",
        "URI": "/redfish/v1/Managers/PSME/NetworkProtocol/KVM"
      }
    }
  }
}
```

4.31.1.2 PUT

Operation is not allowed on this resource.

4.31.1.3 PATCH

Request:

```
PATCH /redfish/v1/Managers/PSME/NetworkProtocol
Content-Type: application/json
{
  "KVMIP": {
    "ProtocolEnabled": true,
    "Port": 5901
  },
  "Oem": {
    "Intel_RackScale": {
      "KVMIPPassword": "secret",
      "KVMIPOverWebSocket": {
        "ProtocolEnabled": true
      }
    }
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body with 'KVMIPPassword' being 'null'))
```

4.31.1.4 POST

Operation is not allowed on this resource.

4.31.1.5 DELETE

Operation is not allowed on this resource.

4.31.2 Accessing the Graphical Console

Access to the Graphical Console is provided through the HTTP WebSocket endpoint in `OEM/Intel_RackScale/KVMIPOverWebSocket/URI` or the VNC connection to the port exposed by the PSME.

Note: To connect to the HTTP endpoint, establish a WebSocket connection from a client using request described below. A new Sec-WebSocket-Key nonce has to be generated for every connection. Refer to Section 4.1 of *WebSocket Protocol* (refer to Table 2) for more information.

Request:

```
GET /redfish/v1/Managers/PSME/NetworkProtocol/KVM HTTP/1.1
Host: server.example.com
Upgrade: websocket
Connection: Upgrade
Sec-WebSocket-Key: x3JJHMbDL1EzLkh9GBhXDw==
Sec-WebSocket-Protocol: rfb
Sec-WebSocket-Version: 1
Origin: http://example.com
```

Response:

```
HTTP/1.1 101 Switching Protocols
Upgrade: websocket
Connection: Upgrade
Sec-WebSocket-Accept: HSmrc0sM1YUkAGmm5OPpG2HaGWk=
Sec-WebSocket-Protocol: rfb
```

4.32 Log Service Collection

Log Service Collection resource - provides collection of all Log Services managed by the service.

Table 73. LogServiceCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(LogService.LogService)	True	This property shall contain an array of references to the members of this collection.

4.32.1 Operations

4.32.1.1 GET

Request:

```
GET /redfish/v1/Managers/PSME/LogServices
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogServiceCollection.LogServiceCollection",
  "@odata.id": "/redfish/v1/Managers/PSME/LogServices",
  "@odata.type": "#LogServicesCollection.LogServiceCollection",
  "Name": "Log Service Collection",
  "Description": "Collection of LogServices for this Manager",
  "Members@odata.count": 1,
  "Members": [
```

```
    {
      "@odata.id": "/redfish/v1/Managers/PSME/LogServices/SEL"
    }
  ]
}
```

4.32.1.2 PUT

Operation is not allowed on this resource.

4.32.1.3 PATCH

Operation is not allowed on this resource.

4.32.1.4 POST

Operation is not allowed on this resource.

4.32.1.5 DELETE

Operation is not allowed on this resource.

4.33 LogService

The `LogService` resource represents a functionality for monitoring events occurring on a service.

Detailed info about this resource's properties can be obtained from metadata file: `LogService_v1.xml`.

Table 74. LogService Attributes

Attribute	Type	Nullable	Description
`ServiceEnabled`	`Edm.Boolean`	True	The value of this property shall be a `boolean` indicating whether this service is enabled.
`MaxNumberOfRecords`	`Edm.Int64`	False	The value of this property shall be the maximum numbers of `LogEntry` resources in the Entries collection for this service.

Attribute	Type	Nullable	Description
OverWritePolicy	LogService.v1_0_0.OverWritePolicy	False	The value of this property shall indicate the policy of the log service when the MaxNumberOfRecords has been reached. Unknown indicates the log overwrite policy is unknown. WrapsWhenFull indicates that the log overwrites its entries with new entries when the log has reached its maximum capacity. NeverOverwrites indicates that the log never overwrites its entries by the new entries and ceases logging when the limit has been reached.
DateTime	Edm.DateTimeOffset	True	The value of this property shall represent the current DateTime value that the log service is using, with offset from UTC, in Redfish Timestamp format.
DateTimeLocalOffset	Edm.String	True	The value is property shall represent the offset from UTC time that the current value of DataTime property contains.
Actions	LogService.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
Entries	LogEntryCollection.LogEntryCollection	False	The value of this property shall reference a collection of resources of type LogEntry.

Attribute	Type	Nullable	Description
LogEntryType	LogService.v1_1_0.LogEntryTypes	True	The value of this property shall represent the EntryType of all LogEntry resources contained in the Entries collection. If a single EntryType for all LogEntry resources cannot be determined or guaranteed by the Service, the value of this property shall be 'Multiple'.

4.33.1 Operations

4.33.1.1 GET (SEL Log Service)

Request:

```
GET /redfish/v1/Managers/PSME/LogServices/SEL
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogService.LogService",
  "@odata.id": "/redfish/v1/Managers/PSME/LogServices/SEL",
  "@odata.type": "#LogService.v1_1_1.LogService",
  "Id": "1",
  "Name": "BMC SEL Log Service",
  "Description": "Log Service for System Event Log events",
  "LogEntryType": "SEL",
  "OverWritePolicy": "Unknown",
  "ServiceEnabled": true,
  "Entries": {
    "@odata.id": "/redfish/v1/Managers/PSME/LogServices/SEL/Entries"
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  }
}
```

4.33.1.2 PUT

Operation is not allowed on this resource.

4.33.1.3 PATCH

Operation is not allowed on this resource.

4.33.1.4 POST

Operation is not allowed on this resource.

4.33.1.5 DELETE

Operation is not allowed on this resource.

4.34 Log Entry Collection

Log Entry Collection resource - provides collection of all Log Entries in a Log Service.

Table 75. LogEntryCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(LogEntry.LogEntry)	True	This property shall contain an array of references to the members of this collection.

4.34.1 Operations

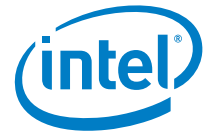
4.34.1.1 GET

Request:

```
GET /redfish/v1/Managers/PSME/LogServices/SEL/Entries
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#LogEntryCollection.LogEntryCollection",
  "@odata.id": "/redfish/v1/Managers/PSME/LogServices/SEL/Entries",
  "@odata.type": "#LogEntryCollection.LogEntryCollection",
  "Name": "Log Entry Collection",
  "Description": "Collection of LogEntries for this Log Service",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.context": "/redfish/v1/$metadata#LogEntry.LogEntry",
      "@odata.id": "/redfish/v1/Managers/PSME/LogServices/SEL/Entries/1",
      "@odata.type": "#LogEntry.v1_4_1.LogEntry",
      "Id": "1",
      "Name": "BMC SEL Log Service Entry",
      "Description": "System Event Log entry",
      "EntryType": "SEL",
      "EntryCode": "Assert",
      "EventTimestamp": "2019-05-13T04:14:33+06:00",
      "Links": {
        "OriginOfCondition": {
          "@odata.id": "/redfish/v1/Systems/System1"
        }
      },
      "SensorType": "Processor",
      "SensorNumber": 231,
      "Message": "Asserted Processor CATERR",
      "MessageId": "0x00FFFF",
      "Oem": {
        "Intel_RackScale": {
          "@odata.type": "#Intel.Oem.LogEntry",
          "RecordID": 12305
```



```
            }
        }
    }
  ]
}
```

4.34.1.2 PUT

Operation is not allowed on this resource.

4.34.1.3 PATCH

Operation is not allowed on this resource.

4.34.1.4 POST

Operation is not allowed on this resource.

4.34.1.5 DELETE

Operation is not allowed on this resource.

4.35 Log Entry

The Log Entry resource represents a single event in a Log Service.

Table 76. LogEntry Attributes

Attribute	Type	Nullable	Description
Severity	LogEntry.v1_0_0.EventSeverity	True	The value of this property shall be the severity of the condition resulting in the log entry, as defined in the Status section of the Redfish specificaiton.
Created	Edm.DateTimeOffset	False	The value of this property shall be the time at which the log entry was created.
EntryType	LogEntry.v1_0_0.LogEntryType	False	This property shall represent the type of LogEntry. If the resource represents an IPMI SEL log entry, the value shall be SEL. If the resource represents an Event log, the value shall be Event. If the resource represents an OEM log format, the value shall be Oem.

Attribute	Type	Nullable	Description
OemRecordFormat	Edm.String	True	The value of this property shall represent the OEM specific format of the Entry. This property shall be required if the value of EntryType is Oem.
EntryCode	LogEntry.v1_0_0.LogEntryCode	True	This property shall be present if the EntryType value is SEL. These enumerations are the values from tables 42-1 and 42-2 of the IPMI specification.
SensorType	LogEntry.v1_0_0.SensorType	True	This property shall be present if the EntryType value is SEL. These enumerations are the values from table 42-3 of the IPMI specification.
SensorNumber	Edm.Int64	True	The value of this property shall be the IPMI sensor number if the EntryType is SEL, the count of events if the EntryType is Event, and OEM Specific if EntryType is Oem.
Message	Edm.String	True	The value of this property shall be the Message property of the event if the EntryType is Event, the Description if the EntryType is SEL, and OEM Specific if the EntryType is Oem.

Attribute	Type	Nullable	Description
MessageId	Edm.String	False	The value of this property shall the MessageId property of the event if the EntryType is Event, the three IPMI Event Data bytes if the EntryType is SEL, and OEM Specific if the EntryType is Oem. The format of this property shall be as defined in the Redfish specification. If representing the three IPMI Event Data bytes, the format should follow the pattern '^0xX{3}$', where Event Data 1 is the first byte in the string, Event Data 2 is the second byte in the string, and Event Data 3 is the third byte in the string.
MessageArgs	Collection(Edm.String)	False	This contains message arguments to be substituted into the message included or in the message looked up through a registry.
Links	LogEntry.v1_0_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
EventType	Event.EventType	False	If present, this LogEntry records an Event and the value shall indicate the type of event.
EventId	Edm.String	False	If present, this LogEntry records an Event and the value shall indicate a unique identifier for the event, the format of which is implementation dependent.

Attribute	Type	Nullable	Description
EventTimestamp	Edm.DateTimeOffset	False	If present, this LogEntry records an Event and the value shall be the time the event occurred.
Actions	LogEntry.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.
OemLogEntryCode	Edm.String	True	The value of this property shall represent the OEM specific Log Entry Code type of the Entry. This property shall only be present if the value of EntryType is SEL and the value of LogEntryCode is OEM.
OemSensorType	Edm.String	True	The value of this property shall represent the OEM specific sensor type of the Entry. This property shall only be used if the value of EntryType is SEL and the value of SensorType is OEM.
EventGroupId	Edm.Int64	True	The value of this property shall indicate that events are related and shall have the same value in the case where multiple Event messages are produced by the same root cause. Implementations shall use separate values for events with separate root cause. There shall not be ordering of events implied by the value of this property.

4.35.1.1 Operations

4.35.1.2 GET

Request:

```
GET /redfish/v1/Managers/PSME/LogServices/SEL/Entries/1
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#LogEntry.LogEntry",
  "@odata.id": "/redfish/v1/Managers/PSME/LogServices/SEL/Entries/1",
  "@odata.type": "#LogEntry.v1_4_1.LogEntry",
  "Id": "1",
  "Name": "BMC SEL Log Service Entry",
  "Description": "System Event Log entry",
  "EntryType": "SEL",
  "EntryCode": "Assert",
  "EventTimestamp": "2019-05-13T04:14:33+06:00",
  "Links": {
    "OriginOfCondition": {
      "@odata.id": "/redfish/v1/Systems/System1"
    }
  },
  "SensorType": "Processor",
  "SensorNumber": 231,
  "Message": "Asserted Processor CATERR",
  "MessageId": "0x00FFFF",
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.LogEntry",
      "RecordID": 12305
    }
  }
}
```


4.35.1.3 PUT

Operation is not allowed on this resource.

4.35.1.4 PATCH

Operation is not allowed on this resource.

4.35.1.5 POST

Operation is not allowed on this resource.

4.35.1.6 DELETE

Operation is not allowed on this resource.

4.36 Ethernet Switch Collection

The Ethernet Switch collection resource provides collection of all switches available in a fabric module.

Table 77. EthernetSwitchCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(EthernetSwitch.v1_0_0.EthernetSwitch)	True	Contains the members of this collection.

4.36.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.36.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches",
  "@odata.id": "/redfish/v1/EthernetSwitches",
  "@odata.type": "#EthernetSwitchCollection.EthernetSwitchCollection",
  "Name": "Ethernet  Switches Collection",
  "Description": "Network Switches Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1"
    }
  ]
}
```

4.36.1.2 PUT

Operation is not allowed on this resource.

4.36.1.3 PATCH

Operation is not allowed on this resource.

4.36.1.4 POST

Operation is not allowed on this resource.

4.36.1.5 DELETE

Operation is not allowed on this resource.

4.37 Ethernet Switch

The Ethernet Switch resource provides detailed information about a switch identified by `{switchID}`.

Detailed info about this resource's properties can be obtained from metadata file: `EthernetSwitch_v1.xml`.

Table 78. EthernetSwitch Attributes

Attribute	Type	Nullable	Description
`SwitchId`	`Edm.String`	True	Unique switch Id (within drawer) used to identify in switch hierarchy discovery.
`Manufacturer`	`Edm.String`	True	Switch manufacturer name.

Attribute	Type	Nullable	Description
Model	Edm.String	True	Switch model.
ManufacturingDate	Edm.String	True	Manufacturing date.
SerialNumber	Edm.String	True	Switch serial number.
PartNumber	Edm.String	True	Switch part number.
FirmwareName	Edm.String	True	Switch firmware name.
FirmwareVersion	Edm.String	True	Switch firmware version.
Role	Edm.String	True	Role of switch.
MaxACLNumber	Edm.Int32	True	Maximum quantity of Access Control Lists.
Status	Resource.Status	True	-
Links	EthernetSwitch.v1_0_0.Links	False	-
Ports	EthernetSwitchPortCollection.EthernetSwitchPortCollection	True	Collection of switch ports.
ACLs	EthernetSwitchACLCollection.EthernetSwitchACLCollection	True	Collection of switch access control list.
LLDPEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Link Layer Discovery Protocol (LLDP) IEEE 802.1AB is enabled on this switch.
ETSEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Enhanced Transmission Selection (ETS) defined in IEEE 802.1Qaz is enabled on this switch.
DCBXEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Data Center Bridging Extensions is enabled on this switch.
PFCEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Priority Flow Control (PFC) defined in IEEE 802.1Qbb is enabled on this switch.

Attribute	Type	Nullable	Description
DCBXSharedConfiguration	EthernetSwitch.v1_1_0.DCBXConfig	True	This object shall contain Data Center Bridging Extensions capabilities and configuration conveyed between neighbors to ensure consistent configuration across the network. This protocol leverages functionality provided by IEEE 802.1AB (LLDP).
Metrics	EthernetSwitchMetrics.EthernetSwitchMetrics	False	A reference to the Metrics associated with this EthernetSwitch.

Table 79. DCBXConfig Attributes

Attribute	Type	Nullable	Description
ApplicationProtocol	Collection(EthernetSwitch.v1_1_0.ApplicationProtocolType)	True	This object allows Data Center Bridging (DCB) node to announce upper layer protocols and associated priority map over DCB link.
PriorityToPriorityGroupMapping	Collection(EthernetSwitch.v1_1_0.PriorityClassMapping)	True	This property shall provide configuration of priority to priority group mapping for this switch.
BandwidthAllocation	Collection(EthernetSwitch.v1_1_0.BandwidthMapping)	True	This property shall provide configuration of bandwidth allocation on converged links in end stations and switches in a DCB environment.

Table 80. ApplicationProtocolType Attributes

Attribute	Type	Nullable	Description
Priority	Edm.Int64	True	The value of this property shall indicate priority for PFC.
Protocol	EthernetSwitch.v1_1_0.ProtocolType	True	The value of this property shall indicate DCB node supported protocol.
Port	Edm.Int64	True	The value of this property shall be a socket number for Protocol set to UDP and TCP or EtherType for Protocol set to L2.

Table 81. ProtocolType Attributes

Member	Description
TCP	TCP.
UDP	UDP.
L2	L2 EtherType.

Table 82. PriorityClassMapping Attributes

Attribute	Type	Nullable	Description
PriorityGroup	Edm.Int64	True	The value of this property shall be a Priority Group ID.
Priority	Edm.Int64	True	The value of this property shall be a numeric value of PFC priority ID.

Table 83 BandwidthMapping Attributes

Attribute	Type	Nullable	Description
PriorityGroup	Edm.Int64	True	The value of this property shall be a Priority Group ID.
BandwidthPercent	Edm.Int64	True	The value of this property shall be a percentage of guaranteed bandwidth.

4.37.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.37.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/$entity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1",
  "@odata.type": "#EthernetSwitch.v1_1_0.EthernetSwitch",
  "Id": "Switch1",
  "SwitchId": "unique switch id",
  "Name": "Switch1",
  "Description": "description-as-string",
  "Manufacturer": "Quanta",
  "Model": "ly8_rangley",
  "ManufacturingDate": "02/21/2015 00:00:00",
  "SerialNumber": "2M220100SL",
  "PartNumber": "1LY8UZZ0007",
  "FirmwareName": "ONIE",
  "FirmwareVersion": "1.1",
  "Role": "TOR",
  "MaxACLNumber": 4,
```

```
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "Oem": {},
  "Ports": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports"
  },
  "ACLs": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs"
  },
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/FabricModule1"
    },
    "ManagedBy": [
      {
        "@odata.id": "/redfish/v1/Managers/PSME"
      }
    ],
    "Oem": {}
  },
  "LLDPEnabled": true,
  "ETSEnabled": true,
  "DCBXEnabled": true,
  "DCBXSharedConfiguration": {
    "ApplicationProtocol": [
      {
        "Priority": 1,
        "Protocol": "UDP",
        "Port": 4791
      },
      {
        "Priority": 2,
        "Protocol": "TCP",
        "Port": 860
      },
      {
        "Priority": 2,
        "Protocol": "TCP",
        "Port": 3260
      }
    ],
    "PriorityToPriorityGroupMapping": [
      {
        "PriorityGroup": 1,
        "Priority": 5
      },
      {
        "PriorityGroup": 2,
        "Priority": 5
      }
    ],
    "BandwidthAllocation": [
      {
        "PriorityGroup": 1,
        "BandwidthPercent": 60
      },
      {
        "PriorityGroup": 2,
```

```
        "BandwidthPercent": 30
      }
    ]
  },
  "PFCEnabled": true
}
```

4.37.1.2 PUT

Operation is not allowed on this resource.

4.37.1.3 PATCH

Table 84. EthernetSwitch Attributes

Attribute	Type	Nullable	Description
DCBXEnabled	Edm.Boolean	True	The value of this property shall be a boolean indicating whether Data Center Bridging Extensions is enabled on this switch.
ETSEnabled	Edm.Boolean	True	The value of this property shall be a boolean indicating whether Enhanced Transmission Selection (ETS) defined in IEEE 802.1Qaz is enabled on this switch.
DCBXSharedConfiguration	EthernetSwitch.v1_1_0.DCBXConfig	True	This object shall contain Data Center Bridging Extensions capabilities and configuration conveyed between neighbors to ensure consistent configuration across the network. This protocol leverages functionality provided by IEEE 802.1AB (LLDP).
PFCEnabled	Edm.Boolean	True	The value of this property shall be a boolean indicating whether Priority Flow Control (PFC) defined in IEEE 802.1Qbb is enabled on this switch.
LLDPEnabled	Edm.Boolean	True	The value of this property shall be a boolean indicating whether Link Layer Discovery Protocol (LLDP) IEEE 802.1AB is enabled on this switch.

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1
Content-Type: application/json
{
  "LLDPEnabled": true,
  "ETSEnabled": true,
  "DCBXEnabled": true,
  "DCBXSharedConfiguration": {
    "ApplicationProtocol": [
      {
        "Priority": 1,
        "Protocol": "UDP",
        "Port": 4791
      },
      {
        "Priority": 2,
        "Protocol": "TCP",
        "Port": 860
      },
      {
        "Priority": 2,
        "Protocol": "TCP",
        "Port": 3260
      }
    ],
    "PriorityGroupToPriorityMapping": [
      {
        "PriorityGroup": 1,
        "Priority": 5
      },
      {
        "PriorityGroup": 2,
        "Priority": 5
      }
    ],
    "BandwidthAllocation": [
      {
        "PriorityGroup": 1,
        "BandwidthPercent": 60
      },
      {
        "PriorityGroup": 2,
        "BandwidthPercent": 30
      }
    ]
  },
  "PFCEnabled": true
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.37.1.4 POST

Operation is not allowed on this resource.

4.37.1.5 DELETE

Operation is not allowed on this resource.

4.38 Ethernet Switch Metrics

The property's details are available in the `EthernetSwitchMetrics_v1.xml` metadata file.

Note: Current version of RSD doesn't implement Ethernet switch metrics.

Table 85. EthernetSwitchMetrics Attributes

Attribute	Type	Nullable	Description
`Health`	`Edm.String`	True	The value of this property shall be `Health` of `EthernetSwitch` as a discrete sensor reading.

4.38.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.38.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitchMetrics.EthernetSwitchMetrics",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Metrics",
  "@odata.type": "#EthernetSwitchMetrics.v1_0_0.EthernetSwitchMetrics",
  "Name": "EthernetSwitch Metrics for Switch1",
  "Description": "description-as-string",
  "Id": "Metrics for Switch1",
  "Health": "OK"
}
```

4.38.1.2 PUT

Operation is not allowed on this resource.

4.38.1.3 PATCH

Operation is not allowed on this resource.

4.38.1.4 POST

Operation is not allowed on this resource.

4.38.1.5 DELETE

Operation is not allowed on this resource.

4.39 Ethernet Switch Port Collection

The Ethernet Switch Port Collection resource provides collection of all switch port available in a switch.

Table 86. EthernetSwitchPortCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(EthernetSwitchPort.v1_0_0.EthernetSwitchPort)	True	Contains the members of this collection.

4.39.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.39.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports",
  "@odata.type": "#EthernetSwitchPortCollection.EthernetSwitchPortCollection",
  "Name": "Ethernet  Switch Port Collection",
  "Description": "Switch Port Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1"
    }
  ]
}
```

4.39.1.2 PUT

Operation is not allowed on this resource.

4.39.1.3 PATCH

Operation is not allowed on this resource.

4.39.1.4 POST

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/Ports
Content-Type: application/json
{
  "PortId": "Lag1",
  "PortMode": "LinkAggregationStatic",
  "Links": {
    "PortMembers": [
      {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port10"
      },
```

```
      {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port11"
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/Ports/Lag1
((created resource body))
```

4.39.1.5 DELETE

Operation is not allowed on this resource.

4.40 Ethernet Switch Port

The Ethernet Switch port resource provides detailed information about a switch port identified by `{portID}`.

Detailed info about this resource's properties can be obtained from metadata file: `EthernetSwitchPort_v1.xml`.

Table 87. EthernetSwitchPort Attributes

Attribute	Type	Nullable	Description
PortId	Edm.String	True	Switch port unique identifier.
LinkType	EthernetSwitchPort.v1_0_0.LinkType	True	Type of port link.
OperationalState	EthernetSwitchPort.v1_0_0.OperationalState	True	Port link operational state.
AdministrativeState	EthernetSwitchPort.v1_0_0.AdministrativeState	True	Port link state forced by user.
LinkSpeedMbps	Edm.Int64	True	Port speed.
NeighborInfo	EthernetSwitchPort.v1_0_0.NeighborInfo	True	For Upstream port type this property provide information about neighbor switch (and switch port if available) connected to this port
NeighborMAC	EthernetInterface.v1_0_0.MACAddress	True	For Downstream port type this property provide MAC address of NIC connected to this port.
FrameSize	Edm.Int64	True	MAC frame size in bytes.
Autosense	Edm.Boolean	True	Indicates if the speed and duplex is automatically configured by the NIC
FullDuplex	Edm.Boolean	True	Indicates if port is in Full Duplex mode or not.
MACAddress	EthernetInterface.v1_0_0.MACAddress	True	MAC address of port.
IPv4Addresses	Collection(IPAddresses.v1_0_0.IPv4Address)	False	Array of following IPv4 address.
IPv6Addresses	Collection(IPAddresses.v1_0_0.IPv6Address)	False	Array of following IPv6 address.
PortClass	EthernetSwitchPort.v1_0_0.PortClass	True	Port class.

Attribute	Type	Nullable	Description
PortMode	EthernetSwitchPort.v1_0_0.PortMode	True	Port working mode. The value shall correspond to the port class (especially to the logical port definition).
PortType	EthernetSwitchPort.v1_0_0.PortType	True	PortType.
Status	Resource.Status	True	-
Links	EthernetSwitchPort.v1_0_0.Links	False	-
VLANs	VLanNetworkInterfaceCollection.VLanNetworkInterfaceCollection	True	-
StaticMACs	EthernetSwitchStaticMACCollection.EthernetSwitchStaticMACCollection	True	-
PriorityFlowControl	EthernetSwitchPort.v1_1_0.PFC	True	This property shall provide configuration of Priority Flow Control for this switch port.
DCBXState	EthernetSwitchPort.v1_1_0.DCBXStateType	True	The value of this property shall be a Boolean indicating whether Data Center Bridging Extensions is enabled on this switch port.
LLDPEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Link Layer Discovery Protocol (LLDP) IEEE 802.1AB is enabled on this switch port.
Metrics	EthernetSwitchPortMetrics.EthernetSwitchPortMetrics	False	A reference to the Metrics associated with this EthernetSwitchPort.
NeighborInterface	EthernetInterface.EthernetInterface	True	A reference to the Metrics associated with this EthernetSwitchPort.

Table 88. OperationalState Attributes

Member	Description
Up	Port link operational state is up.
Down	Port link operational state is down.

Table 89. AdministrativeState Attributes

Member	Description
Up	Port link state forced by user is up.
Down	Port link state forced by user is down.

Table 90. PortClass Attributes

Member	Description
Physical	Port class is physical.
Logical	Port class is logical.
Reserved	Port class is reserved.

Table 91. PortMode Attributes

Member	Description
LinkAggregationStatic	Port working mode is Link Aggregation Static.
LinkAggregationDynamic	Port working mode is Link Aggregation Dynamic.

Member	Description
Unknown	Port working mode is unknown.

Table 92. PFC Attributes

Attribute	Type	Nullable	Description
Enabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Priority Flow Control (PFC) defined in IEEE 802.1Qbb is enabled on this switch port.
EnabledPriorities	Collection(Edm.Int64)	True	This property shall provide a list of priorities that should be treated by switch as lossless - for those priorities switch will send PAUSE frame.

Table 93. DCBXStateType Attributes

Member	Description
Disabled	TCP.
EnabledIEEE	DCBX messages will be sent in IEEE defined format.
EnabledCEE	DCBX messages will be sent in CEE defined format.

4.40.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.40.1.1 GET

Note: The NeighborInterface property will not be filled by PSME. If PODM is able to match the MAC address of an EthernetInterface with the NeighborMAC property of the Ethernet Port, it will fill this property with a link to the interface.

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports/Members/$entity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1",
  "@odata.type": "#EthernetSwitchPort.v1_1_0.EthernetSwitchPort",
  "Id": "Port1",
  "Name": "RSD Switch Port",
  "Description": "description-as-string",
  "PortId": "sw0p10",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "LinkType": "Ethernet",
```

```
  "OperationalState": "Up",
  "AdministrativeState": "Up",
  "LinkSpeedMbps": 10000,
  "NeighborInfo": {
    "SwitchId": "unique switch id",
    "PortId": "11",
    "CableId": "CustomerWritableThing"
  },
  "NeighborMAC": "00:11:22:33:44:55",
  "FrameSize": 1520,
  "Autosense": true,
  "FullDuplex": true,
  "MACAddress": "2c:60:0c:72:e6:33",
  "IPv4Addresses": [
    {
      "Address": "192.168.0.10",
      "SubnetMask": "255.255.252.0",
      "AddressOrigin": "Static",
      "Gateway": "192.168.0.1"
    }
  ],
  "IPv6Addresses": [
    {
      "Address": "fe80::1ec1:deff:fe6f:1e24",
      "PrefixLength": 64,
      "AddressOrigin": "Static",
      "AddressState": "Preferred"
    }
  ],
  "PortClass": "Logical",
  "PortMode": "LinkAggregationStatic",
  "PortType": "Upstream",
  "Oem": {},
  "VLANs": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs"
  },
  "StaticMACs": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs"
  },
  "Links": {
    "PrimaryVLAN": {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1"
    },
    "Switch": {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1"
    },
    "MemberOfPort": {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/LAG1"
    },
    "PortMembers": [],
    "ActiveACLs": [
      {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1"
      }
    ]
  },
  "DCBXState": "Disabled",
  "LLDPEnabled": true,
  "PriorityFlowControl": {
    "Enabled": true,
    "EnabledPriorities": [
```

```
      0,
      1,
      6,
      7
    ]
  },
  "NeighborInterface": {
    "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces/LAN1"
  }
}
```

4.40.1.2 PUT

Operation is not allowed on this resource.

4.40.1.3 PATCH

Table 94. EthernetSwitchPort Attributes

Attribute	Type	Nullable	Description
AdministrativeState	EthernetSwitchPort.v1_0_0.AdministrativeState	True	Port link state forced by user.
FrameSize	Edm.Int64	True	MAC frame size in bytes.
LLDPEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether Link Layer Discovery Protocol (LLDP) IEEE 802.1AB is enabled on this switch port.
Autosense	Edm.Boolean	True	Indicates if the speed and duplex is automatically configured by the NIC
LinkSpeedMbps	Edm.Int64	True	Port speed.
Links	EthernetSwitchPort.v1_0_0.Links	False	--
DCBXState	EthernetSwitchPort.v1_1_0.DCBXStateType	True	The value of this property shall be a Boolean indicating whether Data Center Bridging Extensions is enabled on this switch port.
FullDuplex	Edm.Boolean	True	Indicates if port is in Full Duplex mode or not.
PriorityFlowControl	EthernetSwitchPort.v1_1_0.PFC	True	This property shall provide configuration of Priority Flow Control for this switch port.
MACAddress	EthernetInterface.v1_0_0.MACAddress	True	MAC address of port.

Table 95. EthernetSwitchPort Link attributes

Attribute	Type	Nullable	Description
PrimaryVLAN	VLanNetworkInterface.v1_0_0.VLanNetworkInterface	True	Link to primary VLanNetworkInterface of this EthernetSwitchPort.

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1/Ports/Port1
Content-Type: application/json
{
  "AdministrativeState": "Up",
  "LinkSpeedMbps": 1000,
  "FrameSize": 1500,
  "Autosense": false,
  "Links": {
    "PrimaryVLAN": {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1"
    }
  },
  "DCBXState": "Disabled",
  "LLDPEnabled": true,
  "PriorityFlowControl": {
    "Enabled": true,
    "EnabledPriorities": [
      0,
      1,
      6,
      7
    ]
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 204 No Content202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.40.1.4 POST

Operation is not allowed on this resource.

4.40.1.5 DELETE

Note: In current PSME implementation deleting Ethernet Switch Ports will always fail. This functionality is reserved for LAG ports, which are no longer supported.

Request:

```
DELETE redfish/v1/EthernetSwitches/Switch1/Ports/Port1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.41 Ethernet Switch Port Metrics

This property's details are available in the `EthernetSwitchPortMetrics_v1.xml` metadata file.

Note: Current version of RSD does not implement Ethernet switch port metrics.

Table 96. EthernetSwitchPortMetrics Attributes

Attribute	Type	Nullable	Description
`Received`	`EthernetSwitchPortMetrics.v1_0_0.Metrics`	True	This property shall represent port receive metrics.
`Transmitted`	`EthernetSwitchPortMetrics.v1_0_0.Metrics`	True	This property shall represent port transmit metrics.
`Collisions`	`Edm.Int64`	True	The value of this property shall be Port collisions counter.

4.41.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.41.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/Metrics
Content-Type: application/json
```

Response:


```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitchPortMetrics.EthernetSwitchPortMetrics",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/Metrics",
  "@odata.type": "#EthernetSwitchPortMetrics.v1_0_0.EthernetSwitchPortMetrics",
  "Name": "Ethernet Switch Port Metrics",
  "Id": "Metrics",
  "Received": {
    "Packets": 8,
    "DroppedPackets": 0,
    "ErrorPackets": 0,
    "BroadcastPackets": 0,
    "MulticastPackets": 0,
    "Errors": 0,
    "Bytes": 64
  },
  "Transmitted": {
    "Packets": 128,
    "DroppedPackets": 0,
    "ErrorPackets": 0,
    "BroadcastPackets": 0,
    "MulticastPackets": 0,
    "Errors": 0,
    "Bytes": 512
  },
  "Collisions": 0,
  "Oem": {}
}
```


4.41.1.2 PUT

Operation is not allowed on this resource.

4.41.1.3 PATCH

Operation is not allowed on this resource.

4.41.1.4 POST

Operation is not allowed on this resource.

4.41.1.5 DELETE

Operation is not allowed on this resource.

4.42 Ethernet Switch ACL Collection

The Ethernet Switch Access Control List (ACL) collection resource provides collection of resources of type `EthernetSwitchACL` defined on switch.

Note: In the current PSME implementation ACL, Collection will always be empty. No ACL can be created as this functionality is no longer supported.

Detailed info about this resource's properties can be obtained from metadata file:
`EthernetSwitchACLCollection_v1.xml`

Table 97. EthernetSwitchACLCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(EthernetSwitchACL.v1_0_0.EthernetSwitchACL)	True	Contains the Members of this collection.

4.42.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.42.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/ACLs
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/ACLs",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs",
  "@odata.type": "#EthernetSwitchACLCollection.EthernetSwitchACLCollection",
  "Name": "Ethernet  Switch Access Control List Collection",
  "Description": "Switch Access Control List. Each ACL entry can be bind to any switch
port",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1"
    }
  ]
}
```

4.42.1.2 PUT

Operation is not allowed on this resource.

4.42.1.3 PATCH

Operation is not allowed on this resource.

4.42.1.4 POST

The POST action is used to create new clean ACL without any rules and bound port. Because of that JSON* used in this post operation shall not contain any properties.

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/ACLs
Content-Type: application/json
{}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1
((created resource body))
```

4.42.1.5 DELETE

Operation is not allowed on this resource.

4.43 Ethernet Switch ACL

The Ethernet Switch ACL resource provides detailed information about a switch ACL defined on a switch.

Detailed info about this resource's properties can be obtained from metadata file: `EthernetSwitchACL_v1.xml`.

Table 98. EthernetSwitchACL Attributes

Attribute	Type	Nullable	Description
`Links`	`EthernetSwitchACL.v1_0_0.Links`	False	The `links` object contains the links to other resources that are related to this resource.
`Actions`	`EthernetSwitchACL.v1_0_0.Actions`	False	The `Actions` object contains the available custom actions on this resource.
`Rules`	`EthernetSwitchACLRuleCollection.EthernetSwitchACLRuleCollection`	True	Rules for switch ACL. Each Rule defines single action and at least one condition.

4.43.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.43.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/ACLs/Members/$entity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1",
  "@odata.type": "#EthernetSwitchACL.v1_0_0.EthernetSwitchACL",
  "Id": "ACL1",
  "Name": "Example ACL",
  "Description": "User defined description of ACL",
  "Oem": {},
  "Rules": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules"
  },
  "Links": {
    "BoundPorts": [
      {
        "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p1"
      }
    ],
    "Oem": {}
  },
  "Actions": {
    "#EthernetSwitchACL.Bind": {
```

```
      "target":
"/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Actions/EthernetSwitchACL.Bind",
      "Port@Redfish.AllowableValues": [
        {
          "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p2"
        },
        {
          "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p3"
        }
      ]
    },
    "#EthernetSwitchACL.Unbind": {
      "target":
"/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Actions/EthernetSwitchACL.Unbind",
      "Port@Redfish.AllowableValues": [
        {
          "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p1"
        }
      ]
    }
  }
}
```

4.43.1.2 PUT

Operation is not allowed on this resource.

4.43.1.3 PATCH

Operation is not allowed on this resource.

4.43.1.4 POST

The `POST` action is used to execute one of supported actions:

1. `Bind` - action binds given port to ACL
2. `Unbind` - action will remove given port from ACL

Table 99. Ethernet Switch ACL POST Attributes

Attribute	Type	Required	Description
`Port`	`Link object`	Yes	Provides URI of switch port that should be bind to current ACL. Port should be located on the same switch as ACL is.

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Actions/EthernetSwitchACL.Bind
Content-Type: application/json
{
  "Port": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/sw0p2"
  }
}
```

Response:

```
HTTP/1.1 204 No Content
```

4.43.1.5 DELETE

Request:

```
DELETE redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

Note: Switch may contain some pre-defined ACLs that can't be deleted. In case of attempt to delete such rule, "HTTP 400 BadRequest" will be returned along with the extended error info indicating that ACL is persistent.

4.44 Ethernet Switch ACL Rule Collection

The Ethernet Switch ACL Rule Collection resource provides collection of all rules for ACL defined on switch.

Detailed info about this resource's properties can be obtained from metadata file:
`EthernetSwitchACLRuleCollection_v1.xml`

Table 100. EthernetSwitchACLRuleCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(EthernetSwitchACLRule.v1_0_0.EthernetSwitchACLRule)`	True	Contains the members of this collection.

4.44.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.44.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/ACLs/Members/Rules",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules",
  "@odata.type": "#EthernetSwitchACLRuleCollection.EthernetSwitchACLRuleCollection",
  "Name": "Ethernet  Switch Access Control List Rules Collection",
  "Description": "Rules for switch Access Control List. Each Rule defines single
action and at least one condition",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule1"
    }
  ]
}
```

4.44.1.2 PUT

Operation is not allowed on this resource.

4.44.1.3 PATCH

Operation is not allowed on this resource.

4.44.1.4 POST

Attributes of `POST` action can create new ACL rule (refer to Table 101).

Table 101. EthernetSwitchACLRule Attributes

Attribute	Type	Nullable	Description
`RuleId`	`Edm.Int64`	True	This is ACL rule ID which determine rule priority. If not provided during creation, service will assign default next free Id
`MirrorPortRegion`	`Collection(EthernetSwitchPort.EthernetSwitchPort)`	True	Group of interfaces (ports) which should be mirrored.
`Action`	`EthernetSwitchACLRule.v1_0_0.ActionType`	True	Action that will be executed when rule condition will be met.
`MirrorType`	`EthernetSwitchACLRule.v1_0_0.MirrorType`	True	Type of mirroring that should be use for Mirror action.
`ForwardMirrorInterface`	`EthernetSwitchPort.EthernetSwitchPort`	True	Reference to interface (port) to which traffic should be mirrored/forwarded.
`Condition`	`EthernetSwitchACLRule.v1_0_0.ConditionType`	True	Property contain set of conditions that should be met to trigger Rule action.
`Links`	`EthernetSwitchACLRule.v1_0_0.Links`	False	Contains links to other resources that are related to this resource.

Table 102. ConditionType Attributes

Attribute	Type	Nullable	Description
IPSource	EthernetSwitchACLRule.v1_0_0.IPConditionType	True	Provides packet source IPv4 address.
IPDestination	EthernetSwitchACLRule.v1_0_0.IPConditionType	True	Provides packet destination IPv4 address.
MACSource	EthernetSwitchACLRule.v1_0_0.MACConditionType	True	Provides packet source MAC address.
MACDestination	EthernetSwitchACLRule.v1_0_0.MACConditionType	True	Provides packet destination MAC address.
VLANId	EthernetSwitchACLRule.v1_0_0.VlanIdConditionType	True	Provides packet VLAN tag ID.
L4SourcePort	EthernetSwitchACLRule.v1_0_0.PortConditionType	True	IP layer 4 source port.
L4DestinationPort	EthernetSwitchACLRule.v1_0_0.PortConditionType	True	IP layer 4 destination port.
L4Protocol	Edm.Int64	True	IP layer 4 protocol number as defined in *Protocol Numbers* (refer to Table 2)..

4.44.1.5 DELETE

Operation is not allowed on this resource.

4.45 Ethernet Switch ACL Rule

The Ethernet Switch ACL Rule resource provides detailed information about a switch ACL rule defined identified by `{ruleID}`.

Detailed info about this resource's properties can be obtained from metadata file:
`EthernetSwitchACLRule_v1.xml`

Table 103. EthernetSwitchACLRule Attributes

Attribute	Type	Nullable	Description
Action	EthernetSwitchACLRule.v1_0_0.ActionType	True	Action that will be executed when rule condition will be met.
ForwardMirrorInterface	EthernetSwitchPort.EthernetSwitchPort	True	Reference to interface (port) to which traffic should be mirrored/forwarded.
MirrorPortRegion	Collection(EthernetSwitchPort.EthernetSwitchPort)	True	Group of interfaces (ports) which should be mirrored.
MirrorType	EthernetSwitchACLRule.v1_0_0.MirrorType	True	Type of mirroring that should be use for the `Mirror` action.
RuleId	Edm.Int64	True	ACL rule ID which determines rule priority. If not provided during creation, service will assign default next free Id
Condition	EthernetSwitchACLRule.v1_0_0.ConditionType	True	Property contain set of conditions that should be met to trigger `Rule` action.

Attribute	Type	Nullable	Description
Links	EthernetSwitchACLRule.v1_0_0.Links	False	Contains links to other resources that are related to this resource.

4.45.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.45.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule1
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/ACLs/Members/Rules/Members/$en
tity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule1",
  "@odata.type": "#EthernetSwitchACLRule.v1_0_0.EthernetSwitchACLRule",
  "Id": "Rule1",
  "Name": "Example Rule",
  "Description": "User defined rule for ACL",
  "RuleId": 1,
  "Action": "Mirror",
  "ForwardMirrorInterface": {
    "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port9"
  },
  "MirrorPortRegion": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1"
    },
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port2"
    }
  ],
  "MirrorType": "Bidirectional",
  "Condition": {
    "IPSource": {
      "IPv4Address": "192.168.1.0",
      "Mask": "0.0.0.255"
    },
    "IPDestination": null,
    "MACSource": {
      "Address": "00:11:22:33:44:55",
      "Mask": null
    },
    "MACDestination": null,
    "VLANId": {
      "Id": 1088,
      "Mask": 4095
    },
    "L4SourcePort": {
      "Port": 22,
      "Mask": 255
    },
```

```
    "L4DestinationPort": null,
    "L4Protocol": null
  },
  "Oem": {},
  "Links": {}
}
```


4.45.1.2 PUT

Operation is not allowed on this resource.

4.45.1.3 PATCH

Attributes of ACL Rule can be modified by the `PATCH` method (refer to Table 104).

Table 104. EthernetSwitchACLRule Attributes

Attribute	Type	Nullable	Description
`Action`	`EthernetSwitchACLRule.v1_0_0.ActionType`	True	Action that will be executed when rule condition will be met.
`ForwardMirrorInterface`	`EthernetSwitchPort.EthernetSwitchPort`	True	Reference to interface (port) to which traffic should be mirrored/forwarded.
`MirrorPortRegion`	`Collection(EthernetSwitchPort.EthernetSwitchPort)`	True	Group of interfaces (ports) which should be mirrored.
`MirrorType`	`EthernetSwitchACLRule.v1_0_0.MirrorType`	True	Type of mirroring that should be use for the `Mirror` action.
`RuleId`	`Edm.Int64`	True	This is ACL rule ID which determine rule priority. If not provided during creation, service will assign default next free Id
`Condition`	`EthernetSwitchACLRule.v1_0_0.ConditionType`	True	Property contain set of conditions that should be met to trigger the `Rule` action.

Table 105. ConditionType Attributes

Attribute	Type	Nullable	Description
`IPSource`	`EthernetSwitchACLRule.v1_0_0.IPConditionType`	True	Provides packet source IPv4 address.
`IPDestination`	`EthernetSwitchACLRule.v1_0_0.IPConditionType`	True	Provides packet destination IPv4 address.
`MACSource`	`EthernetSwitchACLRule.v1_0_0.MACConditionType`	True	Provides packet source MAC address.
`MACDestination`	`EthernetSwitchACLRule.v1_0_0.MACConditionType`	True	Provides packet destination MAC address.
`VLANId`	`EthernetSwitchACLRule.v1_0_0.VlanIdConditionType`	True	Provides packet VLAN tag ID.
`L4SourcePort`	`EthernetSwitchACLRule.v1_0_0.PortConditionType`	True	IP layer 4 source port.
`L4DestinationPort`	`EthernetSwitchACLRule.v1_0_0.PortConditionType`	True	IP layer 4 destination port.

Attribute	Type	Nullable	Description
L4Protocol	Edm.Int64	True	IP layer 4 protocol number as defined in *Protocol Numbers* (refer to Table 2).

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule2
Content-Type: application/json
{
  "RuleId": 1,
  "Action": "Permit",
  "ForwardMirrorInterface": null,
  "MirrorPortRegion": [],
  "MirrorType": null,
  "Condition": {
    "IPSource": {
      "IPv4Address": "192.168.6.0",
      "Mask": "0.0.0.255"
    },
    "IPDestination": null,
    "MACSource": null,
    "MACDestination": null,
    "VLANId": null,
    "L4SourcePort": null,
    "L4DestinationPort": null,
    "L4Protocol": null
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.45.1.4 POST

Operation is not allowed on this resource.

4.45.1.5 DELETE

Request:

```
DELETE redfish/v1/EthernetSwitches/Switch1/ACLs/ACL1/Rules/Rule2
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
```

```
  "Messages": []
}
```

4.46 Ethernet Switch Port Static MAC Collection

The Ethernet Switch Port Static MAC Collection resource provides collection of all static MAC forwarding table entries.

Note: In the current PSME implementation, ACL Collection will always be empty. No `StaticMAC` can be created as this functionality is no longer supported.

Detailed info about this resource's properties can be obtained from metadata file:
`EthernetSwitchACLRuleCollection_v1.xml`

Table 106. EthernetSwitchACLRuleCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(EthernetSwitchACLRule.v1_0_0.EthernetSwitchACLRule)`	True	Contains the members of this collection.

4.46.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.46.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports/Members/StaticMACs",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs",
  "@odata.type": "#StaticMACCollection.StaticMACCollection",
  "Name": "Static MAC Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/1"
    }
  ]
}
```

4.46.1.2 PUT

Operation is not allowed on this resource.

4.46.1.3 PATCH

Operation is not allowed on this resource.

4.46.1.4 POST

Table 107. Attributes of POST action to create new static MAC entry

Attribute	Type	Required	Description
MACaddress	EthernetInterface.v1_0_0.MACAddress	Yes	MAC address that should be forwarded to this port.
VLANId	Edm.Int32	No	Defines which packets tagged with specific VLAN Id, should be forwarded to this port.

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs
Content-Type: application/json
{
  "MACAddress": "00:11:22:33:44:55",
  "VLANId": 69
}
```

Response:

```
HTTP/1.1 201 Created
Location:
http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/2
((created resource body))
```

4.46.1.5 DELETE

Operation is not allowed on this resource.

4.47 Ethernet Switch Port Static MAC

The Ethernet Switch port static MAC resource provides detailed information about a static MAC address forward table entry.

Detailed info about this resource's properties can be obtained from metadata file: EthernetSwitchStaticMAC_v1.xml.

Table 108. EthernetSwitchStaticMAC Attributes

Attribute	Type	Nullable	Description
MACAddress	EthernetInterface.v1_0_0.MACAddress	True	MAC address that should be forwarded to this port.
VLANId	Edm.Int32	True	Defines which packets tagged with specific VLANId should be forwarded to this port.

4.47.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.47.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports/Members/StaticMACs/Membe
rs/$entity",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/1",
  "@odata.type": "#StaticMAC.v1_0_0.StaticMAC",
  "Id": "1",
  "Name": "StaticMAC",
  "Description": "description-as-string",
  "MACAddress": "00:11:22:33:44:55",
  "VLANId": 112,
  "Oem": {}
}
```

4.47.1.2 PUT

Operation is not allowed on this resource.

4.47.1.3 PATCH

Attributes of static MAC that can be modified by the `PATCH` method:

Table 109. StaticMac Attributes

Attribute	Type	Required	Description
`MACaddress`	`String`	Yes	MAC address that should be forwarded to this port
`VLANId`	`Number, null`	No	This if specified defines which packets tagged with specific VLANId should be forwarded to this port.

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/2
Content-Type: application/json
{
  "MACAddress": "AA:11:22:33:44:55",
  "VLANId": 697
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.47.1.4 POST

Operation is not allowed on this resource.

4.47.1.5 DELETE

Request:

```
DELETE redfish/v1/EthernetSwitches/Switch1/Ports/Port1/StaticMACs/2
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.48 Ethernet Interface Collection

The Ethernet Interface Collection resource provides collection of all Ethernet interfaces supported by a manager identified by `{managerID}` or included in a blade identified by `{bladeID}`.

Table 110. EthernetInterfaceCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(EthernetInterface.EthernetInterface)`	True	Contains the members of this collection.

4.48.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.48.1.1 GET

Request:

```
GET /redfish/v1/Managers/PSME/EthernetInterfaces
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EthernetInterfaceCollection.EthernetInterfaceCollection",
  "@odata.id": "/redfish/v1/Managers/PSME/EthernetInterfaces",
  "@odata.type": "#EthernetInterfaceCollection.EthernetInterfaceCollection",
  "Name": "Ethernet Network Interface Collection",
  "Description": "Collection of EthernetInterfaces for this Manager",
  "Members@odata.count": 1,
  "Members": [
    {
```

```
      "@odata.id": "/redfish/v1/Managers/PSME/EthernetInterfaces/LAN1"
    }
  ]
}
```

4.48.1.2 PUT

Operation is not allowed on this resource.

4.48.1.3 PATCH

Operation is not allowed on this resource.

4.48.1.4 POST

Operation is not allowed on this resource.

4.48.1.5 DELETE

Operation is not allowed on this resource.

4.49 Ethernet Interface

The Ethernet Interface resource provides detailed information about an Ethernet interface identified by `{nicID}`.

For the current API version, this resource is identical with the one described in Section 4.28, System Network Interface.

4.50 VLAN Network Interface Collection

The VLAN Network Interface Collection resource provides collection of all VLAN Network Interfaces existing on a switch port identified by `{portID}` or network interface identified by `{nicID}`.

Table 111. VLanNetworkInterfaceCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(VLanNetworkInterface.VLanNetworkInterface)`	True	Contains the members of this collection.

4.50.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.50.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#VLanNetworkInterfaceCollection.VLanNetworkInterfaceCollection",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs",
  "@odata.type": "#VLanNetworkInterfaceCollection.VLanNetworkInterfaceCollection",
  "Name": "VLAN Network Interface Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1"
    }
  ]
}
```

4.50.1.2 PUT

Operation is not allowed on this resource.

4.50.1.3 PATCH

Operation is not allowed on this resource.

4.50.1.4 POST

Table 112. Attributes of POST Action to Create VLAN Network Interface

Attribute	Type	Required	Description
Oem	Object	Yes	OEM defined object “Intel_RackScale” extensions: "Tagged" attribute of type Boolean - Indicates if VLAN is tagged (as defined in IEEE 802.1Q) – required property.
VLANEnable	Boolean	Yes	Indicates if this VLAN is enabled
VLANId	Number	Yes	VLAN identifier for this NIC

Request:

```
POST /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs
Content-Type: application/json
{
  "VLANId": 101,
  "VLANEnable": true,
  "Oem": {
    "Intel_RackScale": {
      "Tagged": false
    }
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location:
http://<IP>:<PORT>/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN2
((created resource body))
```

4.50.1.5 DELETE

Operation is not allowed on this resource.

4.51 VLAN Network Interface

The VLAN Network Interface resource provides detailed information about a VLAN network interface identified by `{vlanID}`.

Details of this resource are described in metadata file: `VLanNetworkInterface_v1.xml`, OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 113. VLANNetworkInterface Attributes

Attribute	Type	Nullable	Description
`VLANEnable`	`Edm.Boolean`	True	The value of this property shall be used to indicate if this VLAN is enabled for this interface.
`VLANId`	`VLanNetworkInterface.v1_0_0.VLANId`	True	The value of this property shall be used to indicate the VLAN identifier for this VLAN.
`Actions`	`VLanNetworkInterface.v1_1_0.Actions`	False	The Actions property shall contain the available actions for this resource.

4.51.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.51.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#VLanNetworkInterface.VLanNetworkInterface",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1",
  "@odata.type": "#VLanNetworkInterface.v1_0_0.VLanNetworkInterface",
  "Id": "VLAN1",
  "Name": "VLAN Network Interface",
  "Description": "Switch Port NIC 1 VLAN",
```

```
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "VLANEnable": true,
  "VLANId": 101,
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.VLanNetworkInterface",
      "Tagged": false
    }
  }
}
```

4.51.1.2 PUT

Operation is not allowed on this resource.

4.51.1.3 PATCH

The following properties can be updated by `PATCH` operation:

Attribute	Type	Required	Description
`VLANId`	Number	No	VLAN identifier for this VLAN. ***Note***: Ability to write this property value is implementation specific. May not work, or work on only some types of VLANs (for example, only untagged VLANs).

Request:

```
PATCH /redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN1
Content-Type: application/json
{
  "VLANId": 202
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or:

```
HTTP/1.1 204 No Content
```

Or (when task is created):

```
HTTP/1.1 204 No Content202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.51.1.4 POST

Operation is not allowed on this resource.

4.51.1.5 DELETE

Request:

```
DELETE redfish/v1/EthernetSwitches/Switch1/Ports/Port1/VLANs/VLAN2
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.52 Event Service

The event service resource is responsible for sending events to subscribers. Table 114 shows the `EventService` attributes.

Table 114. EventService Attributes

Attribute	Type	Nullable	Description
`ServiceEnabled`	`Edm.Boolean`	True	The value of this property shall be a Boolean indicating whether this service is enabled.

Attribute	Type	Nullable	Description
DeliveryRetryAttempts	Edm.Int64	False	The value of this property shall be the number of retrys attempted for any given event to the subscription destination before the subscription is terminated. This retry is at the service level, meaning the HTTP POST to the Event Destination was returned by the HTTP operation as unsuccessful (4xx or 5xx return code) or an HTTP timeout occurred this many times before the Event Destination subscription is terminated.
DeliveryRetryIntervalSeconds	Edm.Int64	False	The value of this property shall be the interval in seconds between the retry attempts for any given event to the subscription destination.
EventTypesForSubscription	Collection(Event.EventType)	False	The value of this property shall be the types of events that subscriptions can subscribe to. The semantics associated with the enumerations values are defined in the Redfish specification.
Actions	EventService.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Status	Resource.Status	False	-
Subscriptions	EventDestinationCollection.EventDestinationCollection	False	The value of this property shall contain the link to a collection of type EventDestinationCollection.
ServerSentEventUri	Edm.String	False	The value of this property shall be a URI that specifies an HTML5 Server-Sent Event conformant endpoint.

Attribute	Type	Nullable	Description
RegistryPrefixes	Collection(Edm.String)	True	The value of this property is the array of the Prefixes of the Message Registries that shall be allowed for an Event Subscription.
ResourceTypes	Collection(Edm.String)	True	The value of this property shall specify an array of the valid @odata.type values that can be used for an Event Subscription.
SubordinateResourcesSupported	Edm.Boolean	True	When set to true, the service is indicating that it supports the SubordinateResource property on Event Subscriptions and on generated Events.
EventFormatTypes	Collection(EventDestination.EventFormatType)	True	The value of this property shall indicate the content types of the message that this service can send to the event destination. If this property is not present, the EventFormatType shall be assumed to be Event.
SSEFilterPropertiesSupported	EventService.v1_2_0.SSEFilterPropertiesSupported	False	The value of this property shall contain a set of properties that indicate which properties are supported in the $filter query parameter for the URI indicated by the ServerSentEventUri property.

4.52.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.52.1.1 GET

Request:

```
GET /redfish/v1/EventService
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EventService.EventService",
  "@odata.id": "/redfish/v1/EventService",
  "@odata.type": "#EventService.v1_1_0.EventService",
```

```
  "Id": "EventService",
  "Name": "Event Service",
  "Description": "Event Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": null
  },
  "ServiceEnabled": true,
  "DeliveryRetryAttempts": 3,
  "DeliveryRetryIntervalSeconds": 60,
  "EventTypesForSubscription": [
    "StatusChange",
    "ResourceUpdated",
    "ResourceAdded",
    "ResourceRemoved",
    "Alert"
  ],
  "Subscriptions": {
    "@odata.id": "/redfish/v1/EventService/Subscriptions"
  },
  "Actions": {
    "#EventService.SendTestEvent": {
      "target": "/redfish/v1/EventService/Actions/EventService.SendTestEvent",
      "EventType@Redfish.AllowableValues": [
        "StatusChange",
        "ResourceUpdated",
        "ResourceAdded",
        "ResourceRemoved",
        "Alert"
      ]
    },
    "Oem": {}
  },
  "Oem": {}
}
```

4.52.1.2 PUT

The `PUT` operation is not allowed on the event service resource.

4.52.1.3 PATCH

The `PATCH` operation is not allowed on the event service resource.

4.52.1.4 POST

The `POST` operation is not allowed on the event service resource.

4.52.1.5 DELETE

The `DELETE` operation is not allowed on the event service resource.

4.53 Event Subscription Collection

The event subscription collection is a collection of event destination resources. Table 115 shows the `EventDestinationCollection` attributes.

Table 115. EventDestinationCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(EventDestination.EventDestination)	True	Contains the members of this collection.

4.53.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.53.1.1 GET

Request:

```
GET /redfish/v1/EventService/Subscriptions
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#EventDestinationCollection.EventDestinationCollection",
  "@odata.type": "#EventDestinationCollection.EventDestinationCollection",
  "@odata.id": "/redfish/v1/EventService/Subscriptions",
  "Name": "Event Subscriptions Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EventService/Subscriptions/1"
    }
  ]
}
```

4.53.1.2 PUT

The PUT operation is not allowed on the event subscription collection of resources.

4.53.1.3 PATCH

The PATCH operation is not allowed on the event subscription collection of resources.

4.53.1.4 POST

Request:

```
POST /redfish/v1/EventService/Subscriptions
Content-Type: application/json
{
  "Name": "EventSubscription 2",
  "Destination": "http://10.0.0.1/Destination1",
  "EventTypes": [
    "ResourceAdded",
    "ResourceRemoved"
  ],
  "Context": "HotSwap events",
  "Protocol": "Redfish",
  "SubscriptionType": "RedfishEvent"
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/EventService/Subscriptions/2
((created resource body))
```

4.53.1.5 DELETE

The `DELETE` operation is not allowed on the event subscription collection of resources.

4.54 Event Subscription

The event subscription contains information about the types of events a user subscribed for and should be sent. Table 116 describes the `EventDestination` attributes.

Table 116. EventDestination Attributes

Attribute	Type	Nullable	Description
`Destination`	`Edm.String`	False	This property shall contain a URI to the destination where the events will be sent.
`EventTypes`	`Collection(Event.EventType)`	False	This property shall contain the types of events that shall be sent to the destination.
`Context`	`Edm.String`	True	This property shall contain a client supplied context that will remain with the connection through the connections lifetime.
`Protocol`	`EventDestination.v1_0_0.EventDestinationProtocol`	False	This property shall contain the protocol type that the event will use for sending the event to the destination. A value of Redfish* shall be used to indicate that the event type shall adhere to that defined in the Redfish specification.
`HttpHeaders`	`Collection(EventDestination.v1_0_0.HttpHeaderProperty)`	False	This property shall contain an object consisting of the names and values of HTTP header to be included with every event `POST` to the Event Destination. This property shall be null on a `GET`.

Attribute	Type	Nullable	Description
MessageIds	Collection(Edm.String)	True	The value of this property shall specify an array of MessageIds that are the only allowable values for the MessageId property within an EventRecord sent to the subscriber. Events with MessageIds not contained in this array shall not be sent to the subscriber. If this property is absent or the array is empty, the service shall send Events with any MessageId to the subscriber.
OriginResources	Collection(Resource.ItemOrCollection)	True	The value of this property shall specify an array of Resources, Resource Collections, or Referenceable Members that are the only allowable values for the OriginOfCondition property within an EventRecord sent to the subscriber. Events originating from Resources, Resource Collections, or Referenceable Members not contained in this array shall not be sent to the subscriber. If this property is absent or the array is empty, the service shall send Events originating from any Resource, Resource Collection, or Referenceable Member to the subscriber.
Actions	EventDestination.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.
SubscriptionType	EventDestination.v1_3_0.SubscriptionType	True	The value of this property shall indicate the type of subscription for events. If this property is not present, the SubscriptionType shall be assumed to be RedfishEvent.

Attribute	Type	Nullable	Description
RegistryPrefixes	Collection(Edm.String)	True	The value of this property is the array of the Prefixes of the Message Registries that contain the MessageIds in the Events that shall be sent to the EventDestination. If this property is absent or the array is empty, the service shall send Events with MessageIds from any Message Registry.
ResourceTypes	Collection(Edm.String)	True	The value of this property shall specify an array of Resource Type values. When an event is generated, if the OriginOfCondition's Resource Type matches a value in this array, the event shall be sent to the event destination (unless it would be filtered by other property conditions such as RegistryPrefix). If this property is absent or the array is empty, the service shall send Events from any Resource Type to the subscriber. The value of this property shall be only the general namespace for the type and not the versioned value. For example, it shall not be Task.v1_2_0.Task and instead shall just be Task.
SubordinateResources	Edm.Boolean	True	When set to true and OriginResources is specifed, indicates the subscription shall be for events from the OriginsResources specified and all subordinate resources. When set to false and OriginResources is specified, indicates subscription shall be for events only from the OriginResources. If OriginResources is not specified, it has no relevenace.

Attribute	Type	Nullable	Description
EventFormatType	EventDestination.EventFormatType	True	The value of this property shall indicate the the content types of the message that this service will send to the EventDestination. If this property is not present, the EventFormatType shall be assumed to be Event.

Table 117. EventType Attributes

Member	Description
StatusChange	The status of this resource has changed.
ResourceUpdated	The value of this resource has been updated.
ResourceAdded	A resource has been added.
ResourceRemoved	A resource has been removed.
Alert	A condition exists which requires attention.
MetricReport	Events of type MetricReport shall be sent to a client in accordance with the MetricReport schema definition.

4.54.1 Metadata

The definition of the resource is available in the *http://redfish.dmtf.org/schemas/EventDestination_v1.xml* metadata file.

4.54.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.54.2.1 GET

Request:

```
GET /redfish/v1/EventService/Subscriptions/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EventDestination.EventDestination",
  "@odata.id": "/redfish/v1/EventService/Subscriptions/1",
  "@odata.type": "#EventDestination.v1_3_0.EventDestination",
  "Id": "1",
  "Name": "EventSubscription 1",
  "Description": "description-as-string",
  "Destination": "http://www.dnsname.com/Destination1",
  "EventTypes": [
    "Alert"
  ],
  "Context": "ABCDEFGHJLKJ",
  "Protocol": "Redfish",
  "SubscriptionType": "RedfishEvent",
  "Actions": {
    "Oem": {}
```

```
  }
}
```

4.54.2.2 PUT

The operation is not allowed on the event subscription resource.

4.54.2.3 PATCH

The operation is not allowed on the event subscription resource.

4.54.2.4 POST

The operation is not allowed on the event subscription resource.

4.54.2.5 DELETE

Request:

```
DELETE redfish/v1/EventService/Subscriptions/1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.55 Event Array

This resource represents the collection of events that are sent by the Event Service to active subscribers. It represents the properties for the events themselves and not subscriptions or other resources. Each event in the array has a set of properties that describe the event. Because this is an array, more than one event can be sent simultaneously. Table 118 describes the `Event` attributes.

Table 118. Event Attributes

Attribute	Type	Nullable	Description
`Events`	`Collection(Event.v1_0_0.EventRecord)`	True	The value of this resource shall be an array of Event objects used to represent the occurrence of one or more events.

Attribute	Type	Nullable	Description
Context	Edm.String	False	This property shall contain a client supplied context for the Event Destination to which this event is being sent.
Actions	Event.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.55.1 Metadata

The definition of the resource is available in the *http://redfish.dmtf.org/schemas/Event_v1.xml* metadata file.

4.55.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.55.2.1 GET

The GET operation is not allowed on the event array resource.

4.55.2.2 PUT

The PUT operation is not allowed on the event array resource.

4.55.2.3 PATCH

The PATCH operation is not allowed on the event array resource.

4.55.2.4 POST

Request:

```
POST http://192.168.1.1:7890/Destination1
Content-Type: application/json
{
  "@odata.context": "/redfish/v1/$metadata#EventService/Members/Events/1",
  "@odata.id": "/redfish/v1/EventService/Events/1",
  "@odata.type": "#Event.v1_2_0.Event",
  "Id": "1",
  "Name": "Event Array",
  "Description": "Events",
  "Events": [
    {
      "EventType": "ResourceRemoved",
      "EventId": "ABC132489713478812346",
      "Severity": "Ok",
      "EventTimestamp": "2015-02-23T14:44:44+00:00",
      "Message": "The Blade was removed",
      "MessageId": "Base.1.0.Success",
      "MessageArgs": [],
        "OriginOfCondition": {
          "@odata.id": "/redfish/v1/Systems/System1"
      },
      "Context": "HotSwap event"
```

```
    }
  ]
}
```

Response:

```
HTTP/1.1 204 No Content
```

4.55.2.5 DELETE

The `DELETE` operation is not allowed on the event array resource.

4.56 Fabric Collection

The property's details are available in `FabricCollection_v1.xml` metadata file.

Table 119. FabricCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Fabric.Fabric)`	True	Contains the members of this collection.

4.56.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.56.1.1 GET

Request:

```
GET /redfish/v1/Fabrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#FabricCollection.FabricCollection",
  "@odata.id": "/redfish/v1/Fabrics",
  "@odata.type": "#FabricCollection.FabricCollection",
  "Description": "Fabric Collection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe"
    },
    {
      "@odata.id": "/redfish/v1/Fabrics/FPGA-oF"
    }
  ],
  "Members@odata.count": 2,
  "Name": "Fabric Collection"
}
```

4.56.1.2 PUT

Operation is not allowed on this resource.

4.56.1.3 PATCH

Operation is not allowed on this resource.

4.56.1.4 POST

Operation is not allowed on this resource.

4.56.1.5 DELETE

Operation is not allowed on this resource.

4.57 Fabric

The property details are available in the `Fabric_v1.xml` metadata file.

Table 120. Fabric Attributes

Attribute	Type	Nullable	Description
`FabricType`	`Protocol.Protocol`	True	The value of this property shall contain the type of fabric being represented by this simple fabric.
`Status`	`Resource.Status`	False	This property shall contain any status or health properties of the resource
`MaxZones`	`Edm.Int64`	True	The value of this property shall contain the maximum number of zones the switch can currently configure. This value can change based on changes in the logical or physical configuration of the system.
`Links`	`Fabric.v1_0_0.Links`	False	The `Links` property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
`Actions`	`Fabric.v1_0_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.
`Zones`	`ZoneCollection.ZoneCollection`	False	The value of this property shall be a reference to the resources that this fabric uses and shall reference a resource of the `Zone` type.
`Endpoints`	`EndpointCollection.EndpointCollection`	False	The value of this property shall be a reference to the resources that this fabric uses and shall reference a resource of the `Endpoint` type.

Attribute	Type	Nullable	Description
Switches	SwitchCollection.SwitchCollection	False	The value of this property shall be a reference to the resources that this fabric uses and shall reference a resource of the Switch type.

4.57.1 Intel® RSD OEM Extensions

Table 121. Fabric Attributes

Attribute	Type	Nullable	Description
FabricType	Intel.Oem.Protocol	True	Additional specification for OEM FabricType. Shall be specified if the Redfish FabricType is OEM (refer to Table 2).

Table 122. FabricLinks Attributes

Attribute	Type	Nullable	Description
ManagedBy	Collection(Manager.Manager)	True	Collection of managers managing the service.

4.57.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.57.2.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Fabric.Fabric",
  "@odata.id": "/redfish/v1/Fabrics/PCIe",
  "@odata.type": "#Fabric.v1_0_0.Fabric",
  "Id": "PCIe",
  "Name": "PCIe Fabric",
  "FabricType": "PCIe",
  "Description": "PCIe Fabric",
  "MaxZones": 8,
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollup": "OK"
  },
  "Zones": {
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones"
  },
  "Endpoints": {
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints"
  },
```

```
  "Switches": {
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches"
  },
  "Links": {
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.FabricLinks",
        "ManagedBy": [
          {
            "@odata.id": "/redfish/v1/Managers/PSME"
          }
        ]
      }
    }
  },
  "Actions": {
    "Oem": {}
  },
  "Oem": {}
}
```

4.57.2.1.1 PUT

Operation is not allowed on this resource.

4.57.2.1.2 PATCH

Operation is not allowed on this resource.

4.57.2.1.3 POST

Operation is not allowed on this resource.

4.57.2.1.4 DELETE

Operation is not allowed on this resource.

4.58 Switch Collection

The property's details are available in the `SwitchCollection_v1.xml` metadata file.

Table 123. SwitchCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Switch.Switch)`	True	Contains the members of this collection.

4.58.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.58.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#SwitchCollection.SwitchCollection",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches",
  "@odata.type": "#SwitchCollection.SwitchCollection",
  "Name": "Switch Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1"
    }
  ]
}
```

4.58.1.2 PUT

Operation is not allowed on this resource.

4.58.1.3 PATCH

Operation is not allowed on this resource.

4.58.1.4 POST

Operation is not allowed on this resource.

4.58.1.5 DELETE

Operation is not allowed on this resource.

4.59 Switch

The property's details are available in the `Switch_v1.xml` metadata file.

Table 124. Switch Attributes

Attribute	Type	Nullable	Description
`SwitchType`	`Protocol.Protocol`	True	The value of this property shall contain the type of switch being represented by this simple switch.
`Status`	`Resource.Status`	False	-

Attribute	Type	Nullable	Description
Manufacturer	Edm.String	True	The value of this property shall be the name of the organization responsible for producing the switch. This organization might be the entity from whom the switch is purchased, but this is not necessarily true.
Model	Edm.String	True	This property shall indicate the model information as provided by the manufacturer of this switch.
SKU	Edm.String	True	The value of this property shall be the stock-keeping unit number for this switch.
SerialNumber	Edm.String	True	The value of this property shall be a manufacturer-allocated number used to identify the switch.
PartNumber	Edm.String	True	The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the switch.
AssetTag	Edm.String	True	The value of this property shall be an identifying string used to track the drive for inventory purposes.
DomainID	Edm.Int64	True	The value of this property shall have a scope of uniqueness within the fabric of which the switch is a member.
IsManaged	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether this switch is in a managed or unmanaged state.
TotalSwitchWidth	Edm.Int64	True	The value of this property shall be the number of physical transport lanes, phys, or other physical transport links that this switch contains. For PCIe*, this shall be lane count.
IndicatorLED	Resource.IndicatorLED	True	This value of this property shall contain the indicator light state for the indicator light associated with this switch.

Attribute	Type	Nullable	Description
PowerState	Resource.PowerState	True	The value of this property shall contain the power state of the switch.
Links	Switch.v1_0_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	Switch.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Ports	PortCollection.PortCollection	False	The value of this property shall be a reference to the resources that this switch contains and shall reference a resource of type Port.
Redundancy	Collection(Redundancy.Redundancy)	True	Redundancy information for the switches.
LogServices	LogServiceCollection.LogServiceCollection	True	The value of this property shall be a link to a collection of type LogServiceCollection
Location	Resource.Location	False	-

4.59.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.59.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Switch.Switch",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1",
  "@odata.type": "#Switch.v1_0_0.Switch",
  "Id": "1",
  "Name": "PCIe Switch",
  "Description": "PCIe Switch",
  "SwitchType": "PCIe",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Manufacturer": "Manufacturer Name",
  "Model": "Model Name",
  "SKU": "SKU",
  "SerialNumber": "1234567890",
```

```
  "PartNumber": "997",
  "AssetTag": "Customer Asset Tag",
  "DomainID": 1,
  "IsManaged": true,
  "TotalSwitchWidth": 97,
  "IndicatorLED": null,
  "PowerState": "On",
  "Ports": {
    "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports"
  },
  "Redundancy": [],
  "Links": {
    "Chassis": {
      "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1"
    },
    "ManagedBy": [],
    "Oem": {}
  },
  "Actions": {
    "#Switch.Reset": {
      "target": "/redfish/v1/Fabrics/PCIe/Switches/1/Actions/Switch.Reset",
      "ResetType@Redfish.AllowableValues": [
        "GracefulRestart"
      ]
    },
    "Oem": {}
  },
  "Oem": {}
}
```

4.59.1.2 PUT

Operation is not allowed on this resource.

4.59.1.3 PATCH

Operation is not allowed on this resource.

4.59.1.4 POST

Request:

```
POST /redfish/v1/Fabrics/PCIe/Switches/1/Actions/Switch.Reset
Content-Type: application/json
{
  "ResetType": "GracefulRestart"
}
```

Response:

```
HTTP/1.1 204 No Content
```

4.59.1.5 DELETE

Operation is not allowed on this resource.

4.60 Collection

The property's details are available in the `PortCollection_v1.xml` metadata file.

Table 125. PortCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(Port.Port)	True	Contains the members of this collection.

4.60.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.60.1.1 GET

Request:

```
GET /redfish/v1/EthernetSwitches/Switch1/Ports
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EthernetSwitches/Members/Switch1/Ports",
  "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports",
  "@odata.type": "#EthernetSwitchPortCollection.EthernetSwitchPortCollection",
  "Name": "Ethernet  Switch Port Collection",
  "Description": "Switch Port Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/EthernetSwitches/Switch1/Ports/Port1"
    }
  ]
}
```

4.60.1.2 PUT

Operation is not allowed on this resource.

4.60.1.3 PATCH

Operation is not allowed on this resource.

4.60.1.4 POST

Operation is not allowed on this resource.

4.60.1.5 DELETE

Operation is not allowed on this resource.

4.61 Port

The property's details are available in the Port_v1.xml metadata file. OEM extensions details available in IntelRackScaleOem_v1.xml.

Table 126. Port Attributes

Attribute	Type	Nullable	Description
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
PortId	Edm.String	True	The value of this property shall be the name of the switch port as indicated on the outside of the switch.
PortProtocol	Protocol.Protocol	True	The value of this property shall contain the protocol being sent over this port.
PortType	Port.v1_0_0.PortType	True	The value of this property shall be the port type for this port.
CurrentSpeedGbps	Edm.Decimal	True	The value of this property shall be the speed of this port currently negotiated and running.
MaxSpeedGbps	Edm.Decimal	True	The value of this property shall be the maximum speed of which this port is capable of configuring. If capable of auto-negotiation, the system shall attempt to negotiate at the maximum speed set.
Width	Edm.Int64	True	The value of this property shall be the number of physical transport links that this port contains.
Links	Port.v1_0_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	Port.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.
Location	Resource.Location	False	This property shall contain location information of the associated port.

Table 127. Port Attributes

Attribute	Type	Nullable	Description
PCIeConnectionId	Collection(Edm.String)	True	An array of references to the PCIe connection identifiers (for example, cable ID).
Metrics	PortMetrics.PortMetrics	False	A reference to the Metrics associated with this Port.

4.61.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.61.1.1 GET

4.61.1.1.1 Upstream Port

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Port.Port",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1",
  "@odata.type": "#Port.v1_1_0.Port",
  "Id": "Up1",
  "Name": "PCIe Upstream Port 1",
  "Description": "PCIe Upstream Port 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PortId": "1",
  "PortProtocol": "PCIe",
  "PortType": "UpstreamPort",
  "CurrentSpeedGbps": 32,
  "Width": 4,
  "MaxSpeedGbps": 64,
  "Actions": {
    "#Port.Reset": {
      "target":
"/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Actions/PCIePort.Reset",
      "ResetType@Redfish.AllowableValues": [
        "ForceOff",
        "ForceRestart",
        "ForceOn"
      ]
    },
    "Oem": {}
  },
  "Links": {
    "AssociatedEndpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2"
      }
    ],
    "ConnectedSwitches": [],
    "ConnectedSwitchPorts": []
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Port",
      "PCIeConnectionId": [
        "XYZ1234567890"
      ],
      "Metrics": {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Metrics"
```

```
      }
    }
  }
}
```

4.61.1.1.2 Downstream Port

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Port.Port",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1",
  "@odata.type": "#Port.v1_1_0.Port",
  "Id": "Down1",
  "Name": "PCIe Downstream Port 1",
  "Description": "PCIe Downstream Port 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PortId": "1",
  "PortProtocol": "PCIe",
  "PortType": "DownstreamPort",
  "CurrentSpeedGbps": 32,
  "Width": 4,
  "MaxSpeedGbps": 64,
  "Actions": {
    "#Port.Reset": {
      "target":
"/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1/Actions/PCIePort.Reset",
      "ResetType@Redfish.AllowableValues": [
        "ForceOff",
        "ForceRestart",
        "ForceOn"
      ]
    },
    "Oem": {}
  },
  "Links": {
    "AssociatedEndpoints": [],
    "ConnectedSwitches": [],
    "ConnectedSwitchPorts": []
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Port",
      "PCIeConnectionId": [
        "XYZ1234567890"
      ],
      "Metrics": {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1/Metrics"
      }
    }
  }
}
```

4.61.1.2 PUT

Operation is not allowed on this resource.

4.61.1.3 PATCH

Operation is not allowed on this resource.

4.61.1.4 POST

Request:

```
POST /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Actions/PCIePort.Reset
Content-Type: application/json
{
  "ResetType": "ForceRestart"
}
```

Response:

```
HTTP/1.1 204 No Content
```

4.61.2 DELETE

Operation is not allowed on this resource.

4.62 Port Metrics

The property's details are available in the `PortMetrics_v1.xml` metadata file.

Table 128. PortMetrics Attributes

Attribute	Type	Nullable	Description
`Health`	`Edm.String`	True	The value of this property shall be Port health as a discrete sensor reading.
`Actions`	`PortMetrics.v1_0_0.Actions`	True	The `Actions` property shall contain the available actions for this resource.

4.62.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.62.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Systems/Members/1/Port/Metrics/$entity",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1/Metrics ",
  "@odata.type": "#PortMetrics.v1_0_0.PortMetrics",
  "Name": "Fabric Port Metrics for Up1",
```

```
  "Description": "description-as-string",
  "Id": "Metrics for Up1",
  "Health": "OK"
}
```

4.62.1.2 PUT

Operation is not allowed on this resource.

4.62.1.3 PATCH

Operation is not allowed on this resource.

4.62.1.4 POST

Operation is not allowed on this resource.

4.62.1.5 DELETE

Operation is not allowed on this resource.

4.63 Zone Collection

The property's details are available in the `ZoneCollection_v1.xml` metadata file.

Attribute	Type	Nullable	Description
`Members`	`Collection(Zone.Zone)`	True	This property shall contain an array of references to the members of this collection.

4.63.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.63.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Zones
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ZoneCollection.ZoneCollection",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones",
  "@odata.type": "#ZoneCollection.ZoneCollection",
  "Name": "PCIe Zone Collection",
  "Description": "PCIe Zone Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/Zone1"
    }
  ]
}
```

4.63.1.2 PUT

Operation is not allowed on this resource.

4.63.1.3 PATCH

Operation is not allowed on this resource.

4.63.1.4 POST

To create new Fabric zone, initial zone structure should be provided in `POST` operation.

Request:

```
POST /redfish/v1/Fabrics/PCIe/Zones
Content-Type: application/json
{
  "Links": {
    "Endpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1"
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2"
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Zones/2
((created resource body))
```

Or (when task is created):

```
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.63.1.5 DELETE

Operation is not allowed on this resource.

4.63.1.6 OPTIONS

This operation can be used to determine the HTTP methods allowed on this resource. The response will depend on the service's implementation.

Request:

```
OPTIONS redfish/v1/Fabrics/PCIe/Zones
```

Response:

```
HTTP/1.1 200 No Content
Allow: OPTIONS, GET, POST
```

4.64 Zone

The property's details are available in the `Zone_v1.xml` metadata file.

Table 129. Zone Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	False	This property shall contain any status or health properties of the resource.
`Links`	`Zone.v1_0_0.Links`	False	The `Links` property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
`Actions`	`Zone.v1_1_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.
`Identifiers`	`Collection(Resource.Identifier)`	True	Identifiers for this zone shall be unique in the context of other zones.

4.64.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.64.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Zones/Zone1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Zone.Zone",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/Zone1",
  "@odata.type": "#Zone.v1_2_0.Zone",
  "Id": "Zone1",
  "Name": "PCIe Zone 1",
  "Description": "PCIe Zone 1",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "Links": {
    "Endpoints": [
```

```
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1"
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2"
      }
    ],
    "InvolvedSwitches": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1"
      }
    ],
    "Oem": {}
  },
  "Actions": {
    "Oem": {}
  }
}
```

4.64.1.2 PUT

The `PUT` operation is not allowed on the zones resource.

4.64.1.3 PATCH

Note: `PATCH` operation on Zone is not Redfish* compliant. Refer to Redfish issue #2912 in the *Redfish Bug Tracker* (refer to Table 2).

`PATCH` method can be used to add or remove Endpoints from a Zone. Service require to always provide complete representation of `Endpoints` array. A partial update is not supported.

The following properties can be updated by the `PATCH` operation:

Table 130. Links Attributes

Attribute	Type	Nullable	Description
`Endpoints`	`Collection(Endpoint.Endpoint)`	True	The value of this property shall be a reference to the resources that this zone is associated with and shall reference a resource of type Endpoint.

Request:

```
PATCH /redfish/v1/Fabrics/PCIe/Zones/Zone1
Content-Type: application/json
{
  "Links": {
    "Endpoints": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1"
      },
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2"
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or:

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.64.1.4 POST

The `POST` operation is not allowed on the zones resource.

4.64.1.5 DELETE

Request:

```
DELETE redfish/v1/Fabrics/PCIe/Zones/Zone1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.64.1.6 OPTIONS

This operation can be used to determine the HTTP methods allowed on this resource. The response will depend on the service's implementation.

Request:

```
OPTIONS redfish/v1/Fabrics/PCIe/Zones/Zone1
```

Response:

```
HTTP/1.1 200 No Content
Allow: OPTIONS, GET, PATCH, DELETE
```

4.65 Endpoint Collection

The property's details are available in the `EndpointCollection_v1.xml` metadata file.

Table 131. EndpointCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Endpoint.Endpoint)`	True	This property shall contain an array of references to the members of this collection.

4.65.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.65.1.1 GET

Request:

```
GET /redfish/v1/Fabrics/PCIe/Endpoints
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#EndpointCollection.EndpointCollection",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints",
  "@odata.type": "#EndpointCollection.EndpointCollection",
  "Name": "PCIe Endpoint Collection",
  "Members@odata.count": 3,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/NVMeDrivePF1"
    },
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/NVMeDrivePF2"
    },
    {
      "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/HostRootComplex1"
    }
  ]
}
```

4.65.1.2 PUT

Operation is not allowed on this resource.

4.65.1.3 PATCH

Operation is not allowed on this resource.

4.65.1.4 POST

Table 132 describes the Endpoint POST properties. In addition, Table 133 shows the Identifiers `POST` properties, Table 134 shows `ConnectedEntities` POST properties, Table 135 shows the `IPTransportDetails` POST properties, Table 136 shows the `DurableNameFormat` attributes, and Table 137 shows the `EntityRole` attributes.

Table 132. Endpoint Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	True	-
`EndpointProtocol`	`Protocol.Protocol`	True	The value of this property shall contain the protocol this endpoint uses to communicate with other endpoints on this fabric.
`ConnectedEntities`	`Collection(Endpoint.v1_0_0.ConnectedEntity)`	True	This value of this property shall contain all the entities which this endpoint allows access to.
`Identifiers`	`Collection(Resource.Identifier)`	True	Identifiers for this endpoint shall be unique in the context of other endpoints that can reached over the connected network.
`PciId`	`Endpoint.v1_0_0.PciId`	True	The value of this property shall be the PCI ID of the endpoint.
`HostReservationMemoryBytes`	`Edm.Int64`	True	The value of this property shall be the amount of memory, in bytes, that the Host should allocate to connect to this endpoint.
`Links`	`Endpoint.v1_0_0.Links`	False	The `links` object contains the links to other resources that are related to this resource.
`Actions`	`Endpoint.v1_0_0.Actions`	False	The `Actions` object contains the available custom actions on this resource.
`Redundancy`	`Collection(Redundancy.Redundancy)`	True	Redundancy information for the lower level endpoints supporting this endpoint.
`IPTransportDetails`	`Collection(Endpoint.v1_1_0.IPTransportDetails)`	True	This array shall contain the details for each IP transport supported by this endpoint.

Table 133. Identifier Attributes

Attribute	Type	Nullable	Description
DurableName	Edm.String	True	This property shall contain the world wide unique identifier for the resource. The string shall be in the format described by the value of the Identifier DurableNameFormat property.
DurableNameFormat	Resource.v1_1_0.DurableNameFormat	True	This property shall represent the format of the DurableName property.

Table 134. ConnectedEntity Attributes

Attribute	Type	Nullable	Description
EntityType	Endpoint.v1_0_0.EntityType	True	The value of this property shall indicate if type of connected entity.
EntityRole	Endpoint.v1_0_0.EntityRole	True	The value of this property shall indicate if the specified entity is an initiator, target, or both.
EntityPciId	Endpoint.v1_0_0.PciId	True	The value of this property shall be the PCI ID of the connected PCIe entity.
PciFunctionNumber	Edm.Int64	True	The value of this property shall be the PCI Function Number of the connected PCIe entity.
PciClassCode	Edm.String	True	The value of this property shall be the PCI Class Code, Subclass code, and Programming Interface code of the PCIe device function.
Identifiers	Collection(Resource.Identifier)	True	Identifiers for the remote entity shall be unique in the context of other resources that can reached over the connected network.
Oem	Resource.Oem	True	This object represents the Oem property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification.
EntityLink	Resource.Resource	True	This property shall be a reference to an entity of the type specified by the description of the value of the EntityType property.

Table 135. IPTransportDetails Attributes

Attribute	Type	Nullable	Description
TransportProtocol	Protocol.Protocol	False	The value shall be the protocol used by the connection entity.
IPv4Address	IPAddresses.IPv4Address	False	The value of this property shall specify the IPv4Address.
IPv6Address	IPAddresses.IPv6Address	False	The value of this property shall specify the IPv6Address.
Port	Edm.Decimal	False	The value of this property shall be a specific UDP or TCP port number used for communication with the Endpoint.

Table 136. DurableNameFormat Attributes

Member	Description
NAA	This durable name shall be a hexadecimal representation of the Name Address Authority structure as defined in *Fibre Channel Framing and Signaling - 4* (refer to Table 2).
iQN	This durable name shall be in the iSCSI Qualified Name format as defined in RFC 3720 and RFC 3721.
FC_WWN	This durable name shall be a hexadecimal representation of the World Wide Name format as defined in the T11 Fibre Channel Physical and Signaling Interface Specification.
UUID	This durable name shall be the hexadecimal representation of the Universal Unique Identifier as defined in the Internation Telecom Union's OSI networking and system aspects - Naming, Addressing and Registration Specification.
EUI	This durable name shall be the hexadecimal representation of the IEEE-defined 64-bit Extended Unique Identifier as defined in the IEEE's Guidelines for 64-bit Global Identifier (EUI-64) Specification.
NQN	This durable name shall be in the Non-Volatile Memory express* (NVMe*) Qualified Name format as defined in the NVN Express over Fabric Specification.
NSID	This durable name shall be in the NVM Namespace Identifier format as defined in the NVN Express Specification.

Table 137. EntityRole Attributes

Member	Description
Initiator	The entity is acting as an initiator.
Target	The entity is acting as a target.
Both	The entity is acting as both an initiator and a target.

4.65.1.4.1 PNC Initiator Endpoint

This example shows a POST operation to create Initiator endpoint for FPGA to specified port.

Note: The field Links is mandatory for a PNC Initiator endpoint and must contain a link to a port.

Request:

```
POST /redfish/v1/Fabrics/PCIe/Endpoints
Content-Type: application/json
{
  "EndpointProtocol": "PCIe",
  "ConnectedEntities": [
    {
      "EntityRole": "Initiator",
```

```
      "EntityLink": null
    }
  ],
  "Links": {
    "Ports": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1"
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Endpoints/3
((created resource body))
```

4.65.1.4.2 FPGA over PCIe* Target Endpoint

This example shows a `POST` operation to create Target endpoint for FPGA over PCIe*.

Request:

```
POST /redfish/v1/Fabrics/PCIe/Endpoints
Content-Type: application/json
{
  "EndpointProtocol": "PCIe",
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
      }
    }
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Endpoints/3
((created resource body))
```

4.65.1.4.3 FPGA-oF Initiator Endpoint

This example shows a `POST` operation to create Initiator endpoint for FPGA-oF.

Note: The Identifier should be the Host ID used by FPGA-oF software running on the initiator host.

Request:

```
POST /redfish/v1/Fabrics/FPGA-oF/Endpoints
Content-Type: application/json
{
  "EndpointProtocol": "OEM",
  "ConnectedEntities": [
    {
      "EntityRole": "Initiator",
      "EntityLink": null
    }
  ],
  "Identifiers": [
```

```
    {
      "DurableName": "12345678-90ab-cdef-0000-000000000000",
      "DurableNameFormat": "UUID"
    }
  ],
  "Oem": {
    "Intel_RackScale": {
      "EndpointProtocol": "FPGA-oF"
    }
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Endpoints/3
((created resource body))
```

4.65.1.4.4 FPGA-oF Target Endpoint

This example shows a `POST` operation to create Target endpoint for FPGA-oF.

Request:

```
POST /redfish/v1/Fabrics/FPGA-oF/Endpoints
Content-Type: application/json
{
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
      }
    }
  ],
  "Identifiers": [
    {
      "DurableName": "123e4567-e89b-12d3-a456-426655440000",
      "DurableNameFormat": "UUID"
    }
  ],
  "IPTransportDetails": [
    {
      "TransportProtocol": "RoCEv2",
      "IPv4Address": {
        "Address": "192.168.0.10"
      },
      "IPv6Address": {},
      "Port": 4424
    }
  ],
  "EndpointProtocol": "OEM",
  "Oem": {
    "Intel_RackScale": {
      "EndpointProtocol": "FPGA-oF"
    }
  }
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT>/redfish/v1/Fabrics/PCIe/Endpoints/3
((created resource body))
```

4.65.1.5 DELETE

Operation is not allowed on this resource.

4.65.1.6 OPTIONS

This operation can be used to determine the HTTP methods allowed on this resource. The response will depend on the service's implementation.

Request:

```
OPTIONS redfish/v1/Fabrics/PCIe/Endpoints
```

Response:

```
HTTP/1.1 200 No Content
Allow: OPTIONS, GET, POST
```

4.66 Endpoint

The property's details are available in the `Endpoint_v1.xml` metadata file.

Note: `EntityLink` property may not present or may be null on PSME. This property may be filled by PODM if all resources are available.

Table 138. Endpoint Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	True	-
`EndpointProtocol`	`Protocol.Protocol`	True	The value of this property shall contain the protocol this endpoint uses to communicate with other endpoints on this fabric.
`ConnectedEntities`	`Collection(Endpoint.v1_0_0.ConnectedEntity)`	True	This value of this property shall contain all the entities which this endpoint allows access to.
`Identifiers`	`Collection(Resource.Identifier)`	True	Identifiers for this endpoint shall be unique in the context of other endpoints that can reached over the connected network.
`PciId`	`Endpoint.v1_0_0.PciId`	True	The value of this property shall be the PCI ID of the endpoint.
`HostReservationMemoryBytes`	`Edm.Int64`	True	The value of this property shall be the amount of memory in bytes that the Host should allocate to connect to this endpoint.

Attribute	Type	Nullable	Description
Links	Endpoint.v1_0_0.Links	false	The links object contains the links to other resources that are related to this resource.
Actions	Endpoint.v1_0_0.Actions	false	The Actions object contains the available custom actions on this resource.
Redundancy	Collection(Redundancy.Redundancy)	True	Redundancy information for the lower level endpoints supporting this endpoint.
IPTransportDetails	Collection(Endpoint.v1_1_0.IPTransportDetails)	True	This array shall contain the details for each IP transport supported by this endpoint.

4.66.1 Intel® RSD OEM extensions:

Table 139. Endpoint Attributes

Attribute	Type	Nullable	Description
Authentication	Intel.Oem.EndpointAuthentication	True	This property provides information about the required credentials for endpoint authentication.
EndpointProtocol	Intel.Oem.Protocol	True	Additional specification for OEM EndpointProtocol. Shall be specified if the Redfish EndpointProtocol is OEM.

4.66.2 Operations

The following sections specify the HTTP methods available on this endpoint.

4.66.2.1 GET

4.66.2.1.1 NVMe* Drive Over PCIe* Target Endpoint

Request:

```
GET /redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "NVMeDrivePF1",
  "Name": "NVMe Drive",
  "Description": "The PCIe Physical function of an 850GB NVMe drive",
  "Status": {
    "State": "Enabled",
```

```
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "EndpointProtocol": "PCIe",
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableNameFormat": "UUID",
      "DurableName": "00000000-0000-0000-0000-000000000000"
    }
  ],
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1/Drives/Disk.Bay.0"
      },
      "EntityPciId": {
        "FunctionNumber": 0,
        "ClassCode": "0x010802"
      },
      "Identifiers": [],
      "Oem": {}
    }
  ],
  "Redundancy": [],
  "HostReservationMemoryBytes": null,
  "Links": {
    "Ports": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Down1"
      }
    ]
  },
  "Oem": {},
  "Actions": {
    "Oem": {}
  }
}
```

4.66.2.1.2 FPGA over PCIe* Target Endpoint

Request:

```
GET /redfish/v1/Fabrics/PCIe/Endpoints/Endpoint3
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "Endpoint1",
  "Name": "Fabric Endpoint",
  "Description": "Fabric Endpoint",
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
      },
```

```
      "EntityPciId": {
        "FunctionNumber": 0,
        "ClassCode": "0x010802"
      },
      "Identifiers": [],
      "Oem": {}
    }
  ],
  "EndpointProtocol": "PCIe",
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableNameFormat": "UUID",
      "DurableName": "00000000-0000-0000-0000-000000000000"
    }
  ],
  "Links": {
    "Ports": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1"
      }
    ],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EndpointLinks",
        "Zones": [
          {
            "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/Zone1"
          }
        ],
        "Interfaces": []
      }
    }
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Endpoint",
      "Authentication": null
    }
  }
}
```


4.66.2.1.3 PNC Initiator Endpoint

Request:

```
GET /redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/PCIe/Endpoints/Endpoint2",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "Endpoint2",
  "Name": "Fabric Endpoint",
```

```
  "Description": "Fabric Initiator Endpoint",
  "ConnectedEntities": [
    {
      "EntityLink": null,
      "EntityRole": "Initiator"
    }
  ],
  "EndpointProtocol": "PCIe",
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableName": "12345678-90ab-cdef-0000-000000000000",
      "DurableNameFormat": "UUID"
    }
  ],
  "Links": {
    "Ports": [
      {
        "@odata.id": "/redfish/v1/Fabrics/PCIe/Switches/1/Ports/Up1"
      }
    ],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EndpointLinks",
        "Zones": [
          {
            "@odata.id": "/redfish/v1/Fabrics/PCIe/Zones/Zone1"
          }
        ],
        "Interfaces": []
      }
    }
  },
  "Status": {
    "Health": null,
    "HealthRollup": null,
    "State": null
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Endpoint",
      "Authentication": null
    }
  }
}
```


4.66.2.1.4 FPGA-oF Target Endpoint

Request:

```
GET /redfish/v1/Fabrics/FPGA-oF/Endpoints/Target
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Endpoints/Target",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "Target",
  "Name": "Fabric Endpoint",
  "Description": "Fabric Endpoint",
```

```
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
      },
      "Oem": {}
    }
  ],
  "EndpointProtocol": "OEM",
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableName": "123e4567-e89b-12d3-a456-426655440000",
      "DurableNameFormat": "UUID"
    }
  ],
  "IPTransportDetails": [
    {
      "TransportProtocol": "RoCEv2",
      "IPv4Address": {
        "Address": "192.168.0.10"
      },
      "IPv6Address": {},
      "Port": 4424
    }
  ],
  "Links": {
    "Ports": [],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EndpointLinks",
        "Zones": [
          {
            "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Zones/Zone1"
          }
        ],
        "Interfaces": [
          {
            "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces/LAN1"
          }
        ]
      }
    }
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Endpoint",
      "Authentication": null,
      "EndpointProtocol": "FPGA-oF"
    }
  }
}
```

```
*!*!*!*!*!*!*
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Endpoints/Target",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "Target",
  "Name": "Fabric Endpoint",
  "Description": "Fabric Endpoint",
  "ConnectedEntities": [
    {
      "EntityRole": "Target",
      "EntityLink": {
        "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
      },
      "Oem": {}
    }
  ],
  "EndpointProtocol": "OEM",
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableName": "123e4567-e89b-12d3-a456-426655440000",
      "DurableNameFormat": "UUID"
    }
  ],
  "IPTransportDetails": [
    {
      "TransportProtocol": "RoCEv2",
      "IPv4Address": {
        "Address": "192.168.0.10"
      },
      "IPv6Address": {},
      "Port": 4424
    }
  ],
  "Links": {
    "Ports": [],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EndpointLinks",
        "Zones": [
          {
            "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Zones/Zone1"
          }
        ],
        "Interfaces": [
          {
            "@odata.id": "/redfish/v1/Systems/System1/EthernetInterfaces/LAN1"
          }
        ]
      }
    }
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Oem": {
    "Intel_RackScale": {
```

```
      "@odata.type": "#Intel.Oem.Endpoint",
      "Authentication": null,
      "EndpointProtocol": "FPGA-oF"
    }
  }
}
```

4.66.2.1.5 FPGA-oF Initiator Endpoint

Request:

```
GET /redfish/v1/Fabrics/FPGA-oF/Endpoints/Initiator
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Endpoint.Endpoint",
  "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Endpoints/Initiator",
  "@odata.type": "#Endpoint.v1_1_0.Endpoint",
  "Id": "Initiator",
  "Name": "Fabric Endpoint",
  "Description": "Fabric Initiator Endpoint",
  "ConnectedEntities": [
    {
      "EntityLink": null,
      "EntityRole": "Initiator"
    }
  ],
  "EndpointProtocol": "OEM",
  "Identifiers": [
    {
      "@odata.type": "#Resource.v1_1_0.Identifier",
      "DurableName": "12345678-90ab-cdef-0000-000000000000",
      "DurableNameFormat": "UUID"
    }
  ],
  "Links": {
    "Ports": [],
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.EndpointLinks",
        "Zones": [
          {
            "@odata.id": "/redfish/v1/Fabrics/FPGA-oF/Zones/Zone1"
          }
        ],
        "Interfaces": []
      }
    }
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.Endpoint",
      "Authentication": null,
      "EndpointProtocol": "FPGA-oF"
    }
```

```
  }
}
```

4.66.2.2 PUT

Operation is not allowed on this resource.

4.66.2.3 PATCH

Operation is not allowed on this resource.

4.66.2.4 POST

Operation is not allowed on this resource.

4.66.2.5 DELETE

Request:

```
DELETE redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.66.2.6 OPTIONS

This operation can be used to determine the HTTP methods allowed on this resource. The response will depend on the service's implementation.

Request:

```
OPTIONS redfish/v1/Fabrics/PCIe/Endpoints/Endpoint1
```

Response:

```
HTTP/1.1 200 No Content
Allow: OPTIONS, GET, DELETE
```

4.67 PCIe* Device

The property's details are available in the `PCIeDevice_v1.xml` metadata file. This resource is required for Pooled Node Controller (PNC) service.

Note: Chassis property in the Links section in Rack Scale Design implementation shall point to single Chassis (array contain only one element).

Table 140. PCIeDevice Attributes

Attribute	Type	Nullable	Description
Manufacturer	Edm.String	True	The value of this property shall be the name of the organization responsible for producing the PCIe device. This organization might be the entity from whom the PCIe device is purchased, but this is not necessarily true.
Model	Edm.String	True	The value of this property shall be the name by which the manufacturer generally refers to the PCIe device.
SKU	Edm.String	True	The value of this property shall be the stock-keeping unit number for this PCIe device.
SerialNumber	Edm.String	True	The value of this property shall be a manufacturer-allocated number used to identify the PCIe device.
PartNumber	Edm.String	True	The value of this property shall be a part number assigned by the organization that is responsible for producing or manufacturing the PCIe device.
AssetTag	Edm.String	True	The value of this property shall be an identifying string used to track the PCIe device for inventory purposes.
DeviceType	PCIeDevice.v1_0_0.DeviceType	False	The value of this property shall be the device type of the PCIe device such as `SingleFunction` or `MultiFunction`.
FirmwareVersion	Edm.String	True	The value of this property shall be the firmware version of the PCIe device.
Status	Resource.Status	True	-
Links	PCIeDevice.v1_0_0.Links	False	The `links` object contains the links to other resources that are related to this resource.
Actions	PCIeDevice.v1_1_0.Actions	False	The `Actions` property shall contain the available actions for this resource.

Attribute	Type	Nullable	Description
Assembly	Assembly.Assembly	False	The value of this property shall be a link to a resource of the Assembly type.
PCIeInterface	PCIeDevice.v1_3_0.PCIeInterface	True	This object shall contain details on the PCIe interface used to connect this PCIe Device to its host or upstream switch.

4.67.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.67.1.1 GET

Request:

```
GET /redfish/v1/Chassis/1/PCIeDevices/Device1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#PCIeDevice.PCIeDevice",
  "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1",
  "@odata.type": "#PCIeDevice.v1_2_0.PCIeDevice",
  "Id": " Device1",
  "Name": "NVMe SSD Drive",
  "Description": "Simple NVMe Drive",
  "AssetTag": "free form asset tag",
  "Manufacturer": "Intel",
  "Model": "Model Name",
  "SKU": "",
  "SerialNumber": "SN123456",
  "PartNumber": "",
  "DeviceType": "SingleFunction",
  "FirmwareVersion": "XYZ1234",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Links": {
    "Chassis": [
      {
        "@odata.id": "/redfish/v1/Chassis/1"
      }
    ],
    "PCIeFunctions": [
      {
        "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1/Functions/1"
      }
    ],
    "Oem": {}
  },
  "Oem": {}
}
```

4.67.1.2 PUT

Operation is not allowed on this resource.

4.67.1.3 PATCH

Table 141 describes the properties that can be updated by the `PATCH` operation:

Table 141. PCIeDevice Attributes

Attribute	Type	Nullable	Description
`AssetTag`	`Edm.String`	True	The value of this property shall be an identifying string used to track the PCIe device for inventory purposes.

Request:

```
PATCH /redfish/v1/Chassis/1/PCIeDevices/Device1
Content-Type: application/json
{
  "AssetTag": "NVMe drive #1"
}
```

Response:

```
HTTP/1.1 204 No Content
```

Or:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.67.1.4 POST

Operation is not allowed on this resource.

4.67.1.5 DELETE

Operation is not allowed on this resource.

4.68 PCIe* Device Function

The property's details are available in the `PCIeFunction_v1.xml` metadata file. This resource is required for the PNC service.

Table 142. PCIeFunction Attributes

Attribute	Type	Nullable	Description
`FunctionId`	`Edm.Int64`	True	The value of this property shall the PCIe device function number within a given PCIe device.
`FunctionType`	`PCIeFunction.v1_0_0.FunctionType`	False	The value of this property shall be the function type of the PCIe device function such as Physical or Virtual.

Attribute	Type	Nullable	Description
DeviceClass	PCIeFunction.v1_0_0.DeviceClass	False	The value of this property shall be the device class of the PCIe device function such as Storage, Network, Memory etc.
DeviceId	Edm.String	True	The value of this property shall be the PCI Device ID of the PCIe device function.
VendorId	Edm.String	True	The value of this property shall be the PCI Vendor ID of the PCIe device function.
ClassCode	Edm.String	True	The value of this property shall be the PCI Class Code of the PCIe device function.
RevisionId	Edm.String	True	The value of this property shall be the PCI Revision ID of the PCIe device function.
SubsystemId	Edm.String	True	The value of this property shall be the PCI Subsystem ID of the PCIe device function.
SubsystemVendorId	Edm.String	True	The value of this property shall be the PCI Subsystem Vendor ID of the PCIe device function.
Status	Resource.Status	True	-
Links	PCIeFunction.v1_0_0.Links	False	The `links` object contains the links to other resources that are related to this resource.
Actions	PCIeFunction.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.68.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.68.1.1 GET

Request:

```
GET /redfish/v1/Chassis/1/PCIeDevices/Device1/Functions/1
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#PCIeFunction.PCIeFunction",
  "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1/Functions/1",
  "@odata.type": "#PCIeFunction.v1_2_0.PCIeFunction",
  "Id": "1",
  "Name": "SSD",
  "Description": "SSD Drive",
  "FunctionId": 1,
  "FunctionType": "Physical",
  "DeviceClass": "MassStorageController",
  "DeviceId": "0xABCD",
  "VendorId": "0x8086",
  "ClassCode": "0x10802",
  "RevisionId": "0x00",
  "SubsystemId": "0xABCD",
  "SubsystemVendorId": "0xABCD",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "Links": {
    "Drives": [
      {
        "@odata.id": "/redfish/v1/Chassis/PCIeSwitch1/Drives/Disk.Bay.1"
      }
    ],
    "PCIeDevice": {
      "@odata.id": "/redfish/v1/Chassis/1/PCIeDevices/Device1"
    },
    "Oem": {
      "Intel_RackScale": {
        "@odata.type": "#Intel.Oem.PCIeFunctionLinks",
        "Processors": [
          {
            "@odata.id": "/redfish/v1/Systems/System1/Processors/FPGA1"
          }
        ]
      }
    }
  },
  "Oem": {}
}
```


4.68.1.2 PUT

Operation is not allowed on this resource.

4.68.1.3 PATCH

Operation is not allowed on this resource.

4.68.1.4 POST

Operation is not allowed on this resource.

4.68.1.5 DELETE

Operation is not allowed on this resource.

4.69 Task Service

This resource represent task service that contains all actual tasks created by service. This resource is required to be supported by services supporting asynchronous operations (refer to Section 4.2).

The property's details are available in the `TaskService_v1.xml` metadata file.

Table 143. TaskService Attributes

Attribute	Type	Nullable	Description
`CompletedTaskOverWritePolicy`	`TaskService.v1_0_0.OverWritePolicy`	False	The value of this property shall indicate how completed tasks are handled, should the task service need to track more tasks.
`DateTime`	`Edm.DateTimeOffset`	True	The value of this property shall represent the current `DateTime` value for the `TaskService`, with offset from UTC, in Redfish* Timestamp format.
`LifeCycleEventOnTaskStateChange`	`Edm.Boolean`	False	The value of this property, if set to **true**, shall indicate that the service shall send a Life cycle event to Event Destinations Subscriptions registered for such events upon change of task state. Life cycle events are defined in the Eventing section of the Redfish Specification.
`ServiceEnabled`	`Edm.Boolean`	True	The value of this property shall be a Boolean indicating whether this service is enabled.
`Status`	`Resource.Status`	False	This property shall contain any status or health properties of the resource.
`Tasks`	`TaskCollection.TaskCollection`	False	The value of this property shall be a link to a resource of the `TaskCollection` type.
`Actions`	`TaskService.v1_1_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.

4.69.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.69.1.1 GET

Request:

```
GET /redfish/v1/TaskService
Content-Type: application/json
```

Response:

```
{
  "@Redfish.Copyright": "Copyright 2014-2016 Distributed Management Task Force, Inc.
(DMTF). All rights reserved.",
  "@odata.context": "/redfish/v1/$metadata/TaskService.TaskService",
  "@odata.id": "/redfish/v1/TaskService",
  "@odata.type": "#TaskService.v1_0_0.TaskService",
  "Id": "TaskService",
  "Name": "Tasks Service",
  "DateTime": "2015-03-13T04:14:33+06:00",
  "OverWritePolicy": "Never",
  "LifeCycleEventOnTaskStateChange": true,
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "Tasks": {
    "@odata.id": "/redfish/v1/TaskService/Tasks"
  },
  "Oem": {}
}
```

4.69.1.2 PUT

Operation is not allowed on this resource.

4.69.1.3 PATCH

Operation is not allowed on this resource.

4.69.1.4 POST

Operation is not allowed on this resource.

4.69.1.5 DELETE

Operation is not allowed on this resource.

4.70 Task Collection

This resource represent collection of resources of the Task type.

The property's details are available in the `TaskCollection_v1.xml` metadata file.

Table 144. TaskCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(Task.Task)	True	Contains the members of this collection.

4.70.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.70.1.1 GET

Request:

```
GET /redfish/v1/TaskService/Tasks
Content-Type: application/json
```

Response:

```
{
  "@Redfish.Copyright": "Copyright 2014-2016 Distributed Management Task Force, Inc.
(DMTF). All rights reserved.",
  "@odata.context": "/redfish/v1/$metadata#TasksCollection.TaskCollection",
  "@odata.id": "/redfish/v1/TaskService/Tasks",
  "@odata.type": "#TasksCollection.TaskCollection",
  "Name": "Task Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/TaskService/Tasks/1"
    }
  ]
}
```

4.70.1.2 PUT

Operation is not allowed on this resource.

4.70.1.3 PATCH

Operation is not allowed on this resource.

4.70.1.4 POST

Operation is not allowed on this resource.

4.70.1.5 DELETE

Operation is not allowed on this resource.

4.71 Task

This resource contains information about a specific Task scheduled by or being executed by a Redfish* service's Task Service.

Details of this resource are described in the Task_v1.xml metadata file.

Table 145. Task Attributes

Attribute	Type	Nullable	Description
TaskState	Task.v1_0_0.TaskState	False	The value of this property shall indicate the state of the task. "New" shall be used to indicate that the task is a new task which has just been instantiated and is in the initial state and indicates it has never been started. Starting shall be used to indicate that the task is moving from the New, Suspended, or Service states into the Running state. Running shall be used to indicate that the Task is running. Suspended shall be used to indicate that the Task is stopped (for example, by a user), but can be restarted in a seamless manner. Interrupted shall be used to indicate that the Task was interrupted (for example, by a server crash) in the middle of processing, and the user should either re-run or restart the Task. Pending shall be used to indicate that the Task has been queued and will be scheduled for processing as soon as resources are available to handle the request. Stopping shall be used to indicate that the Task is in the process of moving to a Completed, Killed, or Exception state. Completed shall be used to indicate that the task has completed normally. Killed shall be used to indicate that the task has been stopped by a Kill state change request (non-graceful shutdown). Exception shall be used to indicate that the Task is in an abnormal state that might be indicative of an error condition. Service shall be used to indicate that the Task is in a state that supports problem discovery, or resolution, or both. This state is used when a corrective action is possible.
StartTime	Edm.DateTimeOffset	False	The value of this property shall indicate the time the task was started.
EndTime	Edm.DateTimeOffset	False	The value of this property shall indicate the time the task was completed.
TaskStatus	Resource.Health	False	The value of this property shall be the completion status of the task, as defined in the Status section of the Redfish specification and shall not be set until the task has completed.
Messages	Collection(Message.Message)	False	The value of this property shall be an array of messages associated with the task.
Actions	Task.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.
TaskMonitor	Edm.String	False	This property shall contain a URI to Task Monitor as defined in the Redfish Specification.
Payload	Task.v1_3_0.Payload	false	This object shall contain information detailing the HTTP and JSON payload information for executing this task. This object shall not be included in the response if the HidePayload property is set to **True**.
HidePayload	Edm.Boolean	false	This property shall be set to **True** if the Payload object shall not be returned on GET operations, and set to **False** if the contents can be returned normally. If this property is not specified when the Task is created, the default value shall be False.
PercentComplete	Edm.Int64	True	The value of this property shall indicate the completion progress of the task, reported in percent of completion. If the task has not been started, the value shall be zero.

4.71.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.71.1.1 GET

Request:

```
GET /redfish/v1/TaskService/Tasks/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_2_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "Completed",
  "StartTime": "2016-08-18T12:00+01:00",
  "EndTime": "2016-08-18T13:13+01:00",
  "TaskMonitor": "http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor",
  "TaskStatus": "OK",
  "Messages": [
    {
      "MessageId": "Base.1.0.Created",
      "RelatedProperties": [],
      "Message": "The resource has been created successfully",
      "MessageArgs": [],
      "Severity": "OK"
    }
  ]
}
```

4.71.1.2 PUT

Operation is not allowed on this resource.

4.71.1.3 PATCH

Operation is not allowed on this resource.

4.71.1.4 POST

Operation is not allowed on this resource.

4.71.1.5 DELETE

Request:

```
DELETE redfish/v1/TaskService/Tasks/1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
```

```
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```


4.72 Account Service

The Account Service resource contains properties common to all user accounts, such as password requirements, and control features such as account lockout.

It also contains links to the collections of Manager Accounts and Roles. In Rack Scale Design v2.5, there is always one Role ("Administrator") and one Account with this role.

Table 146 shows the AccountService attributes.

Table 146. AccountService Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	False	This property shall contain any status or health properties of the resource.
`ServiceEnabled`	`Edm.Boolean`	True	The value of this property shall be a Boolean indicating whether this service is enabled. If this is set to false, the `AccountService` is disabled. This means no users can be created, deleted or modified. Any service attempting to access the Account Service, like the Session Service, will fail accessing. New sessions cannot be started with the service disabled (though established sessions may still continue operating). ***Note:→*** This does not affect Basic AUTH connections.
`AuthFailureLoggingThreshold`	`Edm.Int64`	False	This property shall reference the threshold for when an authorization failure is logged. This represents a modulo function value, thus the failure shall log every occurrence.

Attribute	Type	Nullable	Description
MinPasswordLength	Edm.Int64	False	This property shall reference the minimum password length that the implementation will allow a password to be set to.
MaxPasswordLength	Edm.Int64	False	This property shall reference the maximum password length that the implementation will allow a password to be set to.
AccountLockoutThreshold	Edm.Int64	True	This property shall reference the threshold of failed login attempts at which point the user's account is locked. If set to **0**, no lockout shall ever occur.
AccountLockoutDuration	Edm.Int64	True	This property shall reference the period of time in seconds that an account is locked after the number of failed login attempts reaches the threshold referenced by AccountLockoutThreshold, within the window of time referenced by AccountLockoutCounterResetAfter. The value shall be greater than or equal to the value of AccountLockoutResetAfter. If set to **0**, no lockout shall occur.
AccountLockoutCounterResetAfter	Edm.Int64	False	This property shall reference the threshold of time in seconds from the last failed login attempt at which point the AccountLockoutThreshold counter (that counts number of failed login attempts) is reset back to zero (at which point AccountLockoutThreshold failures would be required before the account is locked). This value shall be less than or equal to AccountLockoutDuration. The threshold counter also resets to zero after each successful login.

Attribute	Type	Nullable	Description
Accounts	ManagerAccountCollection.ManagerAccountCollection	False	This property shall contain the link to a collection of type ManagerAccountCollection.
Roles	RoleCollection.RoleCollection	False	This property shall contain the link to a collection of type RoleCollection.
PrivilegeMap	PrivilegeRegistry.PrivilegeRegistry	False	The value of this property shall be a link to a resource of type PrivilegeMappoing that defines the privileges a user context needs in order to perform a requested operation on a URI associated with this service.
Actions	AccountService.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.
LocalAccountAuth	AccountService.v1_3_0.LocalAccountAuth	False	This property shall govern how the service uses the Accounts collection within this AccountService as part of authentication. Details about each of the modes are found in the description of the enum values.
LDAP	AccountService.v1_3_0.ExternalAccountProvider	False	This property shall contain the first LDAP external account provider this AccountService supports. If the AccountService supports 1 or more LDAP services as an external account provider this entity must be populated by default. This entity shall not be present in the AdditionalExternalAccountProviders collection.

Attribute	Type	Nullable	Description
ActiveDirectory	AccountService.v1_3_0.ExternalAccountProvider	False	This property shall contain the first ActiveDirectory external account provider this AccountService supports. If the AccountService supports one or more ActiveDirectory services as an external account provider, this entity must be populated by default. This entity shall not be present in the AdditionalExternalAccountProviders collection.
AdditionalExternalAccountProviders	ExternalAccountProviderCollection.ExternalAccountProviderCollection	False	This property shall contain an additional external account providers this AccountService is using.

4.72.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.72.1.1 GET

Request:

```
GET /redfish/v1/AccountService
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#AccountService.AccountService",
  "@odata.id": "/redfish/v1/AccountService",
  "@odata.type": "#AccountService.v1_3_0.AccountService",
  "Id": "AccountService",
  "Name": "Account Service",
  "Description": "Account Service",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "LocalAccountAuth": "Enabled",
  "Accounts": {
    "@odata.id": "/redfish/v1/AccountService/Accounts"
  },
  "Roles": {
    "@odata.id": "/redfish/v1/AccountService/Roles"
  }
}
```

4.72.1.2 PUT

The `PUT` operation is not allowed on the Account Service resource.

4.72.1.3 PATCH

Implementation of this action is not required in Intel® Rack Scale Design v2.5.

4.72.1.4 POST

The `POST` operation is not allowed on the Account Service resource.

4.72.1.5 DELETE

The `DELETE` operation is not allowed on the Account Service resource.

4.73 Manager Account Collection

The Manager Account Collection contains a collection of `ManagerAccount` resource instances.

Table 147 shows the `ManagerAccountCollection` attributes.

Table 147. ManagerAccountCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(ManagerAccount.ManagerAccount)`	True	Contains the members of this collection.

4.73.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.73.1.1 GET

Request:

```
GET /redfish/v1/AccountService/Accounts
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#ManagerAccountCollection.ManagerAccountCollection",
  "@odata.id": "/redfish/v1/AccountService/Accounts",
  "@odata.type": "#ManagerAccountCollection.ManagerAccountCollection",
  "Name": "Accounts Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/AccountService/Accounts/Account1"
    }
  ]
}
```

4.73.1.2 PUT

The `PUT` operation is not allowed on the Manager Account Collection resource.

4.73.1.3 PATCH

The `PATCH` operation is not allowed on the Manager Account Collection resource.

4.73.1.4 POST

Implementation of this action is not required in Intel® Rack Scale Design v2.5.

4.73.1.5 DELETE

The `DELETE` operation is not allowed on the Manager Account Collection resource.

4.74 Manager Account

The Manager Account resource defines the user accounts.

Table 148 shows the `ManagerAccount` attributes.

Table 148. ManagerAccount Attributes

Attribute	Type	Nullable	Description
`Password`	`Edm.String`	True	The value of this property shall be the password for this account. The value shall be null for `GET` requests.
`UserName`	`Edm.String`	False	The value of this property shall be the user name for this account.
`RoleId`	`Edm.String`	False	The value of this property shall be the ID (the `RoleId`) of the Role resource that configured for this account. The service shall reject `POST`, `PATCH`, or `PUT` operations that provide a `RoleId` that does not exist by returning HTTP 400 (Bad Request).
`Locked`	`Edm.Boolean`	False	This property (when set to true) shall indicate that the account service has automatically locked the account due to the `accountLockoutThreshold` having been exceeded. If set to true, the account is locked. If set to false, the account is not locked. A user admin shall be able to write a false to the property to clear the lockout condition, prior to the lockout duration period.
`Enabled`	`Edm.Boolean`	False	This property shall enable (if set to **true**) or disable (if set to **false**) the account for future logins. The value of Enable over-rides the locked property.

Attribute	Type	Nullable	Description
Links	ManagerAccount.v1_0_0.Links	False	The Links property, as described by the Redfish Specification, shall contain references to resources that are related to, but not contained by (subordinate to), this resource.
Actions	ManagerAccount.v1_1_0.Actions	False	The Actions property shall contain the available actions for this resource.
Certificates	CertificateCollection.CertificateCollection	False	The value of this property shall be a link to a collection of type CertificateCollection.

4.74.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.74.1.1 GET

Request:

```
GET /redfish/v1/AccountService/Accounts/Account1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#ManagerAccount.ManagerAccount",
  "@odata.id": "/redfish/v1/AccountService/Accounts/Account1",
  "@odata.type": "#ManagerAccount.v1_1_2.ManagerAccount",
  "Id": "Account1",
  "Name": "User Account",
  "Description": "User Account",
  "Enabled": true,
  "Password": null,
  "UserName": "Administrator",
  "RoleId": "Administrator",
  "Locked": false,
  "Links": {
    "Role": {
      "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
    }
  }
}
```

4.74.1.2 PUT

The PUT operation is not allowed on the Manager Account resource.

4.74.1.3 PATCH

Implementation of this action is not required in Intel® Rack Scale Design v2.5.

4.74.1.4 POST

The `POST` operation is not allowed on the Manager Account resource.

4.74.1.5 DELETE

Implementation of this action is not required in Intel® Rack Scale Design v2.5

4.75 Role Collection

The Role Collection contains a collection of Role resource instances.

Table 153 shows the `RoleCollection` attributes.

Table 149. RoleCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Role.Role)`	True	Contains the members of this collection.

4.75.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.75.1.1 GET

Request:

```
GET /redfish/v1/AccountService/Roles
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#RoleCollection.RoleCollection",
  "@odata.id": "/redfish/v1/AccountService/Roles",
  "@odata.type": "#RoleCollection.RoleCollection",
  "Name": "Roles Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/AccountService/Roles/Administrator"
    }
  ]
}
```

4.75.1.2 PUT

The `PUT` operation is not allowed on the Role Collection resource.

4.75.1.3 PATCH

The `PATCH` operation is not allowed on the Role Collection resource.

4.75.1.4 POST

Implementation of this action is not required in Intel® Rack Scale Design v2.5.

4.75.1.5 DELETE

The `DELETE` operation is not allowed on the Role Collection resource.

4.76 Role

The Role resource defines a user role to be used in conjunction with an Account.

Table 150 shows the `Role` attributes.

Table 150. Role Attributes

Attribute	Type	Nullable	Description
`IsPredefined`	`Edm.Boolean`	False	The value of this property shall indicate if the role is a predefined role.
`AssignedPrivileges`	`Collection(Privileges.PrivilegeType)`	False	The value of this property shall be the Redfish privileges that the role includes. For pre-defined roles, this property shall be `readOnly`. For custom roles some implementations may not allow writing this property.
`OemPrivileges`	`Collection(Edm.String)`	False	The value of this property shall be the OEM privileges that this role includes. For pre-defined roles, this property shall be `readOnly`. For custom roles some implementations may not allow writing this property.
`Actions`	`Role.v1_1_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.
`RoleId`	`Edm.String`	False	This property shall contain the string name of the Role. This property shall contain the same value as the Id property.

4.76.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.76.1.1 GET

Request:

```
GET /redfish/v1/AccountService/Roles/Administrator
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Role.Role",
  "@odata.id": "/redfish/v1/AccountService/Roles/Administrator",
  "@odata.type": "#Role.v1_2_1.Role",
  "Id": "Administrator",
  "RoleId": "Administrator",
  "Name": "User Role",
  "Description": "Administrator Role",
  "IsPredefined": true,
  "AssignedPrivileges": [
    "Login",
    "ConfigureManager",
    "ConfigureUsers",
    "ConfigureSelf",
    "ConfigureComponents"
  ],
  "OemPrivileges": []
}
```

4.76.1.2 PUT

The operation is not allowed on the Role resource.

4.76.1.3 PATCH

Implementation of this action is not required in Intel® Rack Scale Design v2.5.

Table 151 shows the RoleCollection attributes.

Table 151. Role Attributes

Attribute	Type	Nullable	Description
`OemPrivileges`	`Collection(Edm.String)`	False	The value of this property shall be the OEM privileges that this role includes. For pre-defined roles, this property shall be `readOnly`. For custom roles, some implementations may not allow writing this property.
`AssignedPrivileges`	`Collection(Privileges.PrivilegeType)`	False	The value of this property shall be the Redfish privileges that the role includes. For pre-defined roles, this property shall be `readOnly`. For custom roles, some implementations may not allow writing this property.

Request:

```
PATCH /redfish/v1/AccountService/Roles/Administrator
Content-Type: application/json
{
  "AssignedPrivileges": [
    "Login",
    "ConfigureManager",
    "ConfigureUsers",
    "ConfigureSelf",
    "ConfigureComponents"
  ],
  "OemPrivileges": []
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or:

```
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.76.1.4 POST

The operation is not allowed on the Role resource.

4.76.1.5 DELETE

The operation is not allowed on the Role resource.

4.77 Session Service

The Session Service resource represents the properties for the service itself and has links to the actual list of sessions.

Table 152 shows the `SessionService` attributes.

Table 152. SessionService Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	False	-

Attribute	Type	Nullable	Description
ServiceEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether this service is enabled. This means new sessions cannot be created and old sessions cannot be deleted, though established sessions may continue operating.
SessionTimeout	Edm.Int64	False	This property shall reference the threshold of time in seconds between requests on a specific session at which point the session service shall close the session due to inactivity. The session service shall support any value between the Validation.Minimum and Validation.Maximum.
Sessions	SessionCollection.SessionCollection	False	This property shall contain the link to a collection of Sessions.
Actions	SessionService.v1_1_0.Actions	False	The Actions object contains the available custom actions on this resource.

4.77.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.77.1.1 GET

Request:

```
GET /redfish/v1/SessionService
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#SessionService.SessionService",
  "@odata.id": "/redfish/v1/SessionService",
  "@odata.type": "#SessionService.v1_1_3.SessionService",
  "Id": "SessionService",
  "Name": "Session Service",
  "Description": "Session Service",
  "Status": {
    "State": "Enabled",
```

```
    "Health": "OK"
  },
  "ServiceEnabled": true,
  "SessionTimeout": 30,
  "Sessions": {
    "@odata.id": "/redfish/v1/SessionService/Sessions"
  }
}
```

4.77.1.2 PUT

The `PUT` operation is not allowed on the Session Service resource.

4.77.1.3 PATCH

Implementation of this action is not required in Intel® Rack Scale Design v2.5.

The properties in Table 153 can be updated by `PATCH` operation:

Table 153. SessionService Attributes

Attribute	Type	Nullable	Description
`SessionTimeout`	`Edm.Int64`	False	This property shall reference the threshold of time in seconds between requests on a specific session at which point the session service shall close the session due to inactivity. The session service shall support any value between the `Validation.Minimum` and `Validation.Maximum`.
`ServiceEnabled`	`Edm.Boolean`	True	The value of this property shall be a Boolean indicating whether this service is enabled. This means new sessions cannot be created, old sessions cannot be deleted though established sessions may continue operating.

Request:

```
PATCH /redfish/v1/SessionService
Content-Type: application/json
{
  "ServiceEnabled": true,
  "SessionTimeout": "30"
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

Or:

```
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.77.1.4 POST

The `POST` operation is not allowed on the Session Service resource.

4.77.1.5 DELETE

The `DELETE` operation is not allowed on the Session Service resource.

4.78 Session Collection

The Session Collection contains a collection of Session resource instances.

Table 154 shows the `SessionCollection` attributes.

Table 154. SessionCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Session.Session)`	True	This property shall contain an array of references to the members of this collection.

4.78.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.78.1.1 GET

Request:

```
GET /redfish/v1/SessionService/Sessions
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#SessionCollection.SessionCollection",
  "@odata.id": "/redfish/v1/SessionService/Sessions",
  "@odata.type": "#SessionCollection.SessionCollection",
  "Name": "Session Collection",
  "Members@odata.count": 1,
  "Members": [
```

```
    {
      "@odata.id": "/redfish/v1/SessionService/Sessions/Session1"
    }
  ]
}
```

4.78.1.2 PUT

The `PUT` operation is not allowed on the Session Collection resource.

4.78.1.3 PATCH

The `PATCH` operation is not allowed on the Session Collection resource.

4.78.1.4 POST

The properties shown in Table 155 can be provided as body to a `POST` operation to create a new session.

Table 155. Session Attributes

Attribute	Type	Nullable	Description
`Password`	`Edm.String`	True	The value of this property shall be the password for this session. The value shall be null for `GET` requests.
`UserName`	`Edm.String`	True	The value of this property shall be the `UserName` that matches a registered account identified by a `ManagerAccount` resource registered with the Account Service.

Request:

```
POST /redfish/v1/SessionService/Sessions
Content-Type: application/json
{
  "UserName": "Administrator",
  "Password": "password"
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/SessionService/Sessions/Session1
X-Auth-Token: <session-auth-token>
{
  "@odata.context": "/redfish/v1/$metadata#Session.Session",
  "@odata.id": "/redfish/v1/SessionService/Sessions/Session1",
  "@odata.type": "#Session.v1_1_0.Session",
  "Id": "Session1",
  "Name": "User Session",
  "Description": "User Session",
  "UserName": "Administrator",
  "Password": null,
```

```
  "Oem": {}
}
```

4.78.1.5 DELETE

The `DELETE` operation is not allowed on the Session Collection resource.

4.79 Session

The Session resource describes a single connection (session) between a client and a Redfish* service instance.

Table 156 shows the `Session` attributes.

Table 156. Session Attributes

Attribute	Type	Nullable	Description
`Password`	`Edm.String`	True	The value of this property shall be the password for this session. The value shall be null for `GET` requests.
`UserName`	`Edm.String`	True	The value of this property shall be the `UserName` that matches a registered account identified by a `ManagerAccount` resource registered with the Account Service.
`Actions`	`Session.v1_1_0.Actions`	false	The Actions property shall contain the available actions for this resource.

4.79.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.79.1.1 GET

Request:

```
GET /redfish/v1/SessionService/Sessions/Session1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Session.Session",
  "@odata.id": "/redfish/v1/SessionService/Sessions/Session1",
  "@odata.type": "#Session.v1_1_0.Session",
  "Id": "Session1",
  "Name": "User Session",
  "Description": "User Session",
  "UserName": "Administrator",
  "Password": null,
  "Oem": {}
}
```

4.79.1.2 PUT

The `PUT` operation is not allowed on the Session resource.

4.79.1.3 PATCH

Implementation of this action is not required in Intel® Rack Scale Design v2.5.

4.79.1.4 POST

The `POST` operation is not allowed on the Session resource.

4.79.1.5 DELETE

Request:

```
DELETE redfish/v1/SessionService/Sessions/Session1
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.80 Registries (MessageRegistryFileCollection)

This resource represent collection of Schema File locator resources.

The property's details are available in the `MessageRegistryFileCollection_v1.xml` metadata file.

Table 157. MessageRegistryFileCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(MessageRegistryFile.MessageRegistryFile)`	True	Contains the members of this collection.

4.80.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.80.1.1 GET

Request:

```
GET /redfish/v1/Registries
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#MessageRegistryFileCollection.MessageRegistryFileCollection",
  "@odata.id": "/redfish/v1/Registries",
  "@odata.type": "#MessageRegistryFileCollection.MessageRegistryFileCollection",
  "Name": "Registry File Collection",
  "Description": "Registry Repository",
  "Members@odata.count": 2,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Registries/Base"
    },
    {
      "@odata.id": "/redfish/v1/Registries/Intel_RackScale"
    }
  ]
}
```

4.80.1.2 PUT

Operation is not allowed on this resource.

4.80.1.3 PATCH

Operation is not allowed on this resource.

4.80.1.4 POST

Operation is not allowed on this resource.

4.80.1.5 DELETE

Operation is not allowed on this resource.

4.81 Message Registry File

This resource shall be used to represent the Schema File locator resource for a Redfish* implementation.

The property's details are available in the `MessageRegistryFile_v1.xml` metadata file.

Table 158. MessageRegistryFile Attributes

Attribute	Type	Nullable	Description
`Languages`	`Collection(Edm.String)`	False	The value of this property shall be a string consisting of an RFC 5646, *Tags for Identifying Languages*, language code (refer to Table 2).
`Registry`	`Edm.String`	False	The value of this property shall be the value of the `Registry` `Name`, `Major` and `Minor` version and shall conform to the syntax specified in the Redfish specification for the `MessageId` property without the `MessageKey`.
`Location`	`Collection(MessageRegistryFile.v1_0_0.Location)`	False	Location information for this schema file.
`Actions`	`MessageRegistryFile.v1_1_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.

4.81.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.81.1.1 GET

4.81.1.1.1 Redfish Base Registry

Request:

```
GET /redfish/v1/Registries/Base
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Registries/Members/$entity",
  "@odata.id": "/redfish/v1/Registries/Base",
  "@odata.type": "#MessageRegistryFile.v1_1_0.MessageRegistryFile",
  "Id": "Base",
  "Name": "Base Message Registry File",
  "Description": "Base Message Registry File locations",
  "Languages": [
    "en"
  ],
  "Registry": "Base.1.0.0",
  "Location": [
    {
      "Language": "en",
```

```
      "Uri": null,
      "ArchiveUri": null,
      "PublicationUri":
"https://www.dmtf.org/sites/default/files/standards/documents/DSP8011_1.0.0a.json",
      "ArchiveFile": null
    }
  ],
  "Oem": {}
}
```

4.81.1.1.2 Intel RackScale Registry

Request:

```
GET /redfish/v1/Registries/Intel_RackScale
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Registries/Members/$entity",
  "@odata.id": "/redfish/v1/Registries/Intel_RackScale",
  "@odata.type": "#MessageRegistryFile.v1_1_0.MessageRegistryFile",
  "Id": "Intel_RackScale.1.0.0",
  "Name": "Intel RackScale Message Registry File",
  "Description": "Message Registry File for Intel RackScale Message Registry",
  "Languages": [
    "en"
  ],
  "Registry": "Intel_RackScale.1.0.0",
  "Location": [
    {
      "Language": "en",
      "Uri": "/registries/Intel_RackScale.1.0.0.json",
      "ArchiveUri": null,
      "PublicationUri": null,
      "ArchiveFile": null
    }
  ],
  "Oem": {}
}
```

4.81.1.2 PUT

Operation is not allowed on this resource.

4.81.1.3 PATCH

Operation is not allowed on this resource.

4.81.1.4 POST

Operation is not allowed on this resource.

4.81.1.5 DELETE

Operation is not allowed on this resource.

4.82 Telemetry Service

Property details are available in in TelemetryService_v1.xml metadata file.

Table 159. TelemetryService Attributes

Attribute	Type	Nullable	Description
Status	Resource.Status	True	-
MaxReports	Edm.Int64	True	If present, the value shall specify the maximum number of metric collectors that can be supported by this service.
MinCollectionInterval	Edm.String	True	If present, the value shall be an ISO 8601 duration specifying the minimum time between collections.
SupportedCollectionFunctions	Collection(TelemetryService.v1_0_0.CollectionFunction)	True	If present, the value shall define the function to apply over the collection duration.
Actions	TelemetryService.v1_0_0.Actions	False	The Actions object contains the available custom actions on this resource.
MetricDefinitions	MetricDefinitionCollection.MetricDefinitionCollection	True	The entries of shall be resources of type MetricDefinitionCollection.
MetricReportDefinitions	MetricReportDefinitionCollection.MetricReportDefinitionCollection	True	The value shall be a link to a resource of type MetricReportDefinitionCollection.
MetricReports	MetricReportCollection.MetricReportCollection	True	The value shall be a link to a resource of type MetricReportCollection.
Triggers	TriggersCollection.TriggersCollection	True	The value shall be a link to a resource of type TriggersCollection.
LogService	LogService.LogService	False	The value of this property shall contain a reference to a LogService for the use by this Telemetry Service.

4.82.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.82.1.1 GET

Request:

```
GET /redfish/v1/TelemetryService
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#TelemetryService.TelemetryService",
  "@odata.type": "#TelemetryService.v1_0_0.TelemetryService",
  "@odata.id": "/redfish/v1/TelemetryService",
  "Id": "TelemetryService",
  "Name": "Telemetry Service",
  "MetricDefinitions": {
    "@odata.id": "/redfish/v1/MetricDefinitions"
  }
}
```

4.82.1.2 PUT

Operation is not allowed on this resource.

4.82.1.3 PATCH

Operation is not allowed on this resource.

4.82.1.4 POST

Operation is not allowed on this resource.

4.82.1.5 DELETE

Operation is not allowed on this resource.

4.83 Metric Definition Collection

The property's details are available in the `MetricDefinitionCollection_v1.xml` metadata file.

Table 160. MetricDefinitionCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(MetricDefinition.MetricDefinition)`	True	This property shall contain an array of references to the members of this collection.

4.83.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.83.1.1 GET

Request:

```
GET /redfish/v1/TelemetryService/MetricDefinitions
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#MetricDefinitionCollection.MetricDefinitionCollection",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions",
  "@odata.type": "#MetricDefinitionCollection.MetricDefinitionCollection",
  "Name": "Metric Definitions Collection",
  "Description": "description-as-string",
  "Members@odata.count": 5,
  "Members": [
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUTemperature"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUHealth"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUBandwidth"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/SLEDTemperatures"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/MemoryHealth"
    }
  ]
}
```

4.83.1.2 PUT

Operation is not allowed on this resource.

4.83.1.3 PATCH

Operation is not allowed on this resource.

4.83.1.4 POST

Operation is not allowed on this resource.

4.83.1.5 DELETE

Operation is not allowed on this resource.

4.84 Metric Definition

The property's details are available in the `MetricDefinition_v1.xml` metadata file. Metric Definition describes either `Metric` associated with physical sensor (for example, exposed by BMC) or metric associated with specific resource (for example, statistics of Ethernet Switch Port). This resource is optional for metrics and required for sensors.

Table 161. MetricDefinition Attributes

Attribute	Type	Nullable	Description
Implementation	MetricDefinition.v1_0_0.ImplementationType	True	The value of this property shall designate how the sensor is implemented.
Calculable	MetricDefinition.v1_0_0.Calculable	True	The value shall define the calculability of this metric.
Units	Edm.String	True	The value shall be consistent with the case sensitive Unified Code for Units of Measure as defined at *http://unitsofmeasure.org/ucum.html*. ***Note:***→The units of measure are not covered in UCUM.
DataType	MetricDefinition.v1_0_0.DataType	True	The value shall specify the data type of the corresponding metric values.
IsLinear	Edm.Boolean	True	The value shall specify that the corresponding metric values shall be linear or non-linear. Performance metrics are an example of linear metrics. Examples of non-linear metrics include error codes or operational states. Linear metrics may be compared using a greater than relation.
MetricType	MetricDefinition.v1_0_0.MetricType	True	The value of this property shall designate the type of metric provided.
MetricDataType	MetricDefinition.v1_0_0.MetricDataType	True	The value shall specify the data-type of the metric.
Wildcards	Collection(MetricDefinition.v1_0_0.Wildcard)	True	The property shall contain an array of wildcards and their replacements strings, which are to applied to the AppliesTo or Caculates array.

Attribute	Type	Nullable	Description
MetricProperties	Collection(Edm.String)	True	Each value may contain one or more Wildcard names enclosed in curly braces. Wildcard value entries shall be substituted for each Wildcard name found. If two or more wild names are found, the same Wildcard index is used for each in one substitution pass. After substituting the WildCard values entries, each value shall be a URI for a property in a resource that matches a property declaration in the corresponding MetricDefinition.
CalculationParameters	Collection(MetricDefinition.v1_0_0.CalculationParamsType)	True	The value of each list element share be a reference to the resource property which is characterized by this definition.
PhysicalContext	PhysicalContext.v1_0_0.PhysicalContext	True	The value of this property shall designate the physical context of the sensor.
SensorType	LogEntry.v1_0_0.SensorType	True	The value of this property shall describe the type of sensor.
SensingInterval	Edm.String	True	The value of the property shall specify the time interval between metric or sensor reading updates. The value shall be in the format specified in ISO 8601.
DiscreteValues	Collection(Edm.String)	True	The values of the property shall specify the possible values of the discrete metric. This property shall have values when the MetricType property has the value 'Discrete'.
Precision	Edm.Int64	True	The value of the property shall specify the number of significant digits in the metric reading described by MetricProperties field. A value shall not be present if MetricType is Discrete.

Attribute	Type	Nullable	Description
Accuracy	Edm.Decimal	True	The value of the property shall be the percent error +/- of the measured vs. actual values. A value shall not be present if MetricType is **Discrete**.
Calibration	Edm.Decimal	True	The value shall be the value which has been added to the Reading value to make the reading more accurate. The value shall have the units specified in the property Units. A value shall not be present if MetricType is **Discrete**.
TimeStampAccuracy	Edm.String	True	The value of property shall specify the expected + or - variability of the timestamp. The format of the property shall conformant to ISO 8601 duration format.
MinReadingRange	Edm.Decimal	True	If present, the value shall indicate the lowest possible value for a related MetricValue. The value shall have the units specified in the property Units. A value shall not be present if MetricType is **Discrete**.
MaxReadingRange	Edm.Decimal	True	If present, the value shall indicate the highest possible value for a related MetricValue. The value shall have the units specified in the property Units. A value shall not be present if MetricType is **Discrete**.
CalculationAlgorithm	MetricDefinition.v1_0_0.CalculationAlgorithmEnum	True	The value of this property shall specify the calculation which is performed on a source metric to obtain the metric being defined.
CalculationTimeInterval	Edm.String	True	The value of the property shall specify the time interval over which a calculated metric algorithm is performed. The value shall be in the format specified in ISO 8601.

Attribute	Type	Nullable	Description
Actions	MetricDefinition.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.

Table 162. MetricDefinition attributes extending the WIP model

Attribute	Type	Nullable	Description
`CalculationPrecision`	`Edm.Double`	True	The value of the property shall specify the precision of a calculated metric (calculated metric shall be aligned to a value specified by this property)
`DiscreteMetricType`	`Intel.Oem.MetricValueType`	True	The values of the property shall specify type of the discrete metric. It specifies whether single or multiple values defined in `DiscreteValues` array are valid for specific metric, metric property shall be defined accordingly. This property shall be defined only when the `MetricType` property has the value `'Discrete'`.

4.84.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.84.1.1 GET (Metric Definition for Discrete Sensor)

Request:

```
GET /redfish/v1/TelemetryService/MetricDefinitions/CPUHealth
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#MetricDefinition.MetricDefinition",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUHealth",
  "@odata.type": "#MetricDefinition.v1_0_0.MetricDefinition",
  "Id": "CPUHealth1",
  "Name": "CPU1 IPMI Health Sensor",
  "MetricType": "Discrete",
  "Implementation": "PhysicalSensor",
  "SensingInterval": "PT1S",
  "PhysicalContext": "CPU",
  "DiscreteValues": [
    "OK",
    "Internal Error",
```

```
    "Thermal Trip",
    "FRB1 BIST Failure",
    "FRB2 Hang in Post",
    "FRB3 Startup Failure",
    "Config Error",
    "SMBIOS Uncorrectable Error",
    "Processor Presence Detected",
    "Processor Disabled",
    "Terminator Presence Detected",
    "Processor Throttled",
    "Machine Check Exception",
    "Correctable Machine Check Error"
  ],
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/Oem/Intel_RackScale/Health"
  ],
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.MetricDefinition",
      "DiscreteMetricType": "Multiple"
    }
  }
}
```

4.84.1.2 GET (Metric Definition for Numeric Sensor)

Request:

```
GET /redfish/v1/TelemetryService/MetricDefinitions/CPUTemperature
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#MetricDefinition.MetricDefinition",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUTemperature",
  "@odata.type": "#MetricDefinition.v1_0_0.MetricDefinition",
  "Description": "CPU1 Temperature MetricDefinition",
  "Name": "Temperature MetricDefinition",
  "Id": "TEMP1",
  "Implementation": "Physical",
  "SensingInterval": "PT1S",
  "MetricType": "Numeric",
  "PhysicalContext": "CPU",
  "Units": "Cel",
  "MinReadingRange": 0,
  "MaxReadingRange": 80,
  "Precision": 1,
  "Calibration": 2,
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
  ]
}
```

4.84.1.3 GET (Metric Definition for Counter or metric not associated with Sensor)

Request:

```
GET /redfish/v1/TelemetryService/MetricDefinitions/CPUBandwidth
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#MetricDefinition.MetricDefinition",
  "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUBandwidth",
  "@odata.type": "#MetricDefinition.v1_0_0.MetricDefinition",
  "Id": "CPUBandwidth",
  "Name": "CPU Bandwidth type",
  "MetricType": "Numeric",
  "Implementation": "DigitalMeter",
  "PhysicalContext": "CPU",
  "SensingInterval": "PT1S",
  "Units": "%",
  "MinReadingRange": 0,
  "MaxReadingRange": 100,
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Metrics#/ProcessorBandwidthPercent"
  ],
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.MetricDefinition",
      "CalculationPrecision": 5
    }
  }
}
```

4.84.1.4 PUT

Operation is not allowed on this resource.

4.84.1.5 PATCH

Operation is not allowed on this resource.

4.84.1.6 POST

Operation is not allowed on this resource.

4.84.1.7 DELETE

Operation is not allowed on this resource.

4.85 Metric Report Definition Collection

Property details are available in `MetricReportDefinitionCollection_v1.xml` metadata file.

Note: In the current PSME implementation, the Metric Report Definition Collection resource is not implemented.

Table 163. MetricReportDefinitionCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(MetricReportDefinition.MetricReportDefinition)	True	This property shall contain an array of references to the members of this collection.

4.85.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.85.1.1 GET

Request:

```
GET /redfish/v1/TelemetryService/MetricReportDefinitions
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#MetricReportDefinitionCollection.MetricReportDefinitionCollecti
on",
  "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions",
  "@odata.type": "#MetricReportDefinitionCollection.MetricReportDefinitionCollection",
  "Name": "MetricReportDefinition Collection",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/CPU1Metrics"
    }
  ]
}
```

4.85.1.2 PUT

Operation is not allowed on this resource.

4.85.1.3 PATCH

Operation is not allowed on this resource.

4.85.1.4 POST

Request:

```
POST /redfish/v1/TelemetryService/MetricReportDefinitions
Content-Type: application/json
{
  "Name": "CPU1 Metric Publisher",
  "Schedule": {
    "RecurrenceInterval": "PT1M"
  },
  "MetricReportType": "Periodic",
  "CollectionTimeScope": "Interval",
  "MetricReport": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReports/TransmitCPU1Metrics"
  },
  "ReportActions": [
    "Transmit"
  ],
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/BandwidthPercent",
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/Oem/Intel_RackScale/Health",
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/TelemetryService/MetricReportDefinitions/1
((created resource body))
```

4.85.1.5 DELETE

Operation is not allowed on this resource.

4.86 Metric Report Definition

The property's details are available in the `MetricReportDefinition_v1.xml` metadata file.

Note: In the current PSME implementation, the Metric Report Definition resource is not implemented.

Table 164. MetricReportDefinition Attributes

Attribute	Type	Nullable	Description
Schedule	Schedule.v1_1_0.Schedule	True	If present, metric values are collected starting at each scheduled interval and for the time specified by Duration. No more than Schedule.MaxOccurrences values shall be collected for this metric. If not present, the corresponding metric values shall be collected when the related metric report is retrieved.
MetricReportType	MetricReportDefinition.v1_0_0.MetricReportType	True	The value shall specify the collection type for the corresponding metric values.
CollectionTimeScope	MetricReportDefinition.v1_0_0.CollectionTimeScope	True	The value shall specify the time scope for collecting the corresponding metric values.
ReportActions	Collection(MetricReportDefinition.v1_0_0.ReportActionEnum)	False	The value of this property shall specify the action to perform when the metric report is generated. When a metric report is generated, place the metric information in the resource specified by the MetricReport property. The Volatile property will specify the behavior if MetricReport resource already exists.

Attribute	Type	Nullable	Description
Volatile	Edm.Boolean	True	If the Volatile property is true, the value in the Metric report is overwritten with the latest value. If the Volatile property is "false", metric values are appended to the metric value collection. Them metric value collection shall have no more than the value of the Schedule.MaxOccurrences property. A management application may establish a time series by retrieving the metric value collection and sorting them according to their TimeStamp.
Status	Resource.Status	False	-
Wildcards	Collection(MetricReportDefinition.v1_0_0.Wildcard)	True	The property shall contain an array of wildcards and their replacements strings, which are to applied to the MetricProperties array property.
MetricProperties	Collection(Edm.String)	True	This property shall list the metric properties to include in the metric report. Each value may contain one or more Wildcard names enclosed in curly braces. Wildcard value entries shall be substituted for each Wildcard name found. If two or more wild names are found, the same Wildcard index is used for each in one substitution pass. After substituting the WildCard values entries, each value shall be a URI for a property in a resource that matches a property to include in the metric report.
Metrics	Collection(Metric.v1_0_0.Metric)	True	The value shall be a collection of metrics to collect.
MetricReport	MetricReport.v1_0_0.MetricReport	False	References the related MetricReport.

Attribute	Type	Nullable	Description
MetricReportDefinitionType	MetricReportDefinition.v1_0_0.MetricReportDefinitionType	True	The value shall specify when the metric report is generated. If the value of the property is 'Periodic', then the Schedule property shall be present.
Actions	MetricReportDefinition.v1_0_0.Actions	false	The Actions property shall contain the available actions for this resource.

4.86.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.86.1.1 GET

Request:

```
GET /redfish/v1/TelemetryService/MetricReportDefinitions/CPU1Metrics
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#MetricReportDefinition.MetricReportDefinition",
  "@odata.type": "#MetricReportDefinition.1.0.0.MetricReportDefinition",
  "@odata.id": "/redfish/v1/TelemetryService/MetricReportDefinitions/CPU1Metrics",
  "Id": "CPUEventPublish",
  "Name": "CPU1 Metric Publisher",
  "Schedule": {
    "RecurrenceInterval": "PT1M"
  },
  "MetricReportType": "Periodic",
  "CollectionTimeScope": "Interval",
  "MetricReportActions": [
    "LOG"
  ],
  "MetricReport": {
    "@odata.id": "/redfish/v1/TelemetryService/MetricReports/TransmitCPU1Metrics"
  },
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/BandwidthPercent",
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/Oem/Intel_RackScale/Health",
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
  ]
}
```

4.86.1.2 PUT

Operation is not allowed on this resource.

4.86.1.3 PATCH

In current PSME implementation `PATCH` operation is not implemented.

4.86.1.4 POST

Operation is not allowed on this resource.

4.86.1.5 DELETE

Request:

```
DELETE redfish/v1/TelemetryService/MetricReportDefinitions/CPUEventPublish
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.87 Metric Report

The property's details are available in the `MetricReport_v1.xml` metadata file.

Note: In the current PSME implementation, the Metric Report resource is not implemented.

Table 165. MetricReport Attributes

Attribute	Type	Nullable	Description
`ReportSequence`	`Edm.String`	false	The value shall be the current sequence identifier for this metric report.
`MetricValues`	`Collection(MetricReport.v1_0_0.MetricValue)`	True	The values shall be metric values for this `MetricReport`.
`Actions`	`MetricReport.v1_0_0.Actions`	false	The `Actions` property shall contain the available actions for this resource.
`MetricReportDefinition`	`MetricReportDefinition.MetricReportDefinition`	false	The value shall be reference to the definition for this metric report.

			Deprecated: This type has been Deprecated in favor of Redfish `MetricReport`.
`Timestamp`	`Edm.DateTimeOffset`	True	The value shall be the time when the metric report was generated.

4.87.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.87.1.1 GET

Operation is not allowed on this resource.

4.87.1.2 PUT

Operation is not allowed on this resource.

4.87.1.3 PATCH

Operation is not allowed on this resource.

4.87.1.4 POST

Operation is not allowed on this resource.

4.87.1.5 DELETE

Operation is not allowed on this resource.

4.88 Triggers Collection

The property's details are available in the `TriggersCollection_v1.xml` metadata file.

Note: In current PSME implementation Triggers Collection resource is not implemented.

Table 166. TriggersCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(Triggers.Triggers)`	True	This property shall contain an array of references to the members of this collection.

4.88.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.88.1.1 GET

Request:

```
GET /redfish/v1/TelemetryService/Triggers
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#TriggersCollection.TriggersCollection",
  "@odata.id": "/redfish/v1/TelemetryService/Triggers",
  "@odata.type": "#TriggersCollection.TriggersCollection",
  "Name": "Triggers Collection",
  "Members@odata.count": 6,
  "Members": [
    {
      "@odata.id": "/redfish/v1/TelemetryService/Triggers/ProcessorCatastrophicError"
    },
    {
      "@odata.id":
"/redfish/v1/TelemetryService/Triggers/ProcessorInitializationError"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/Triggers/ProcessorMachineCheckError"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/Triggers/ProcessorPOSTFailure"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/Triggers/ProcessorTemperature"
    },
    {
      "@odata.id": "/redfish/v1/TelemetryService/Triggers/ProcessorThermalTrip"
    }
  ]
}
```

4.88.1.2 PUT

Operation is not allowed on this resource.

4.88.1.3 PATCH

Operation is not allowed on this resource.

4.88.1.4 POST (Numeric Trigger)

Note: The `MetricDefinition` property associated with the given `Metric` within `POST` request on `Trigger` resource can be `Null`, which means the Intel® RSD software has to complete this property upon creation.

Request:

```
POST /redfish/v1//TelemetryService/Triggers
Content-Type: application/json
{
  "Name": "Triggers for Processor Temperature Malfunction",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
```

```
  "MetricType": "Numeric",
  "TriggerActions": [
    "Transmit"
  ],
  "NumericTriggers": [
    {
      "Name": "CPU_TEMPERATURE_ABOVE_UPPER_THRESHOLD",
      "DirectionOfCrossing": "Increasing",
      "Value": "72",
      "DwellTimeMsec": "1"
    },
    {
      "Name": "CPU_TEMPERATURE_BELOW_LOWER_THRESHOLD",
      "DirectionOfCrossing": "Decreasing",
      "Value": "12",
      "DwellTimeMsec": "4"
    }
  ],
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/TelemetryService/Triggers/1
((created resource body))
```

4.88.1.5 POST (Discrete Trigger)

Note: The `MetricDefinition` property associated with given Metric within the `POST` request on the Trigger resource can be `Null`, which means RSD software has to complete this property upon creation.

Request:

```
POST /redfish/v1/TelemetryService/Triggers
Content-Type: application/json
{
  "Name": "Trigger for Processor Machine Check Error",
  "Description": "Triggers for System1 Processor Machine Check Error",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "MetricType": "Discrete",
  "TriggerActions": [
    "Transmit"
  ],
  "DiscreteTriggerCondition": "Specified",
  "DiscreteTriggers": [
    {
      "Name": "Discrete Trigger",
      "Value": "Machine Check Exception",
      "DwellTimeMsec": "1",
      "Severity": "Critical"
    }
  ],
  "MetricProperties": [
    "/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/Oem/Intel_RackScale/Health"
  ]
}
```

Response:

```
HTTP/1.1 201 Created
Location: http://<IP>:<PORT/redfish/v1/TelemetryService/Triggers/2
((created resource body))
```

4.88.1.6 DELETE

Operation is not allowed on this resource.

4.89 Triggers

The properties' details are available in the `Triggers_v1.xml` metadata file.

Note: In the current PSME implementation, the Triggers resource is not implemented.

Table 167. Triggers Attributes

Attribute	Type	Nullable	Description
`MetricType`	`Triggers.v1_0_0.MetricTypeEnum`	True	The value of this property shall specific the type of trigger.
`TriggerActions`	`Collection(Triggers.v1_0_0.TriggerActionEnum)`	False	The value of this property shall specify the action to perform when the `MetricTrigger` occurs.
`NumericTriggers`	`Collection(Triggers.v1_0_0.NumericTrigger)`	False	This property shall contain list of triggers to which a sensor reading will be compared.
`DiscreteTriggerCondition`	`Triggers.v1_0_0.DiscreteTriggerConditionEnum`	True	The value of this property shall specify the type of trigger.
`DiscreteTriggers`	`Collection(Triggers.v1_0_0.DiscreteTrigger)`	False	This property shall contains a list of value to which a sensor reading will be compared. This property shall be present when the `DiscreteTriggerCondition` property has a value of "Specified".
`Status`	`Resource.Status`	False	This property shall contain any status or health properties of the resource.
`Wildcards`	`Collection(Triggers.v1_0_0.Wildcard)`	True	The property shall contain an array of wildcards and their replacements strings, which are to applied to the MetricProperties array.

Attribute	Type	Nullable	Description
MetricProperties	Collection(Edm.String)	True	Each value may contain one or more Wildcard names enclosed in curly braces. Wildcard value entries shall be substituted for each Wildcard name found. If two or more wild names are found, the same Wildcard index is used for each in one substitution pass. After substituting the WildCard values entries, each value shall be a URI for a property in a resource that matches a property declaration in the corresponding MetricDefinition.
Actions	Triggers.v1_0_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.89.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.89.1.1 GET (Numeric Trigger)

Request:

```
GET /redfish/v1/TelemetryService/Triggers/ProcessorTemperature
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$$metadata#Trigger.Trigger",
  "@odata.id": "/redfish/v1/TelemetryService/Triggers/ProcessorTemperature",
  "@odata.type": "#Trigger.v1_0_0.Trigger",
  "Id": "ProcessorTemperature",
  "Name": "Triggers for Processor Temperature Malfunction",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PollingIntervalMilliSeconds": "4000",
  "TriggerType": "Numeric",
  "TriggerActions": [
    "Transmit"
  ],
  "MetricReportDestination": "http://192.168.1.1/Destination1",
  "NumericTriggers": [
    {
      "Name": "CPU_TEMPERATURE_ABOVE_UPPER_THRESHOLD",
      "DirectionOfCrossing": "Increasing",
```

```
      "Value": "72"
    },
    {
      "Name": "CPU_TEMPERATURE_BELOW_LOWER_THRESHOLD",
      "DirectionOfCrossing": "Decreasing",
      "Value": "12"
    }
  ],
  "Links": {
    "Metrics": [
      {
        "MetricValue": {
          "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
        },
        "MetricDefinition": {
          "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/TempSensor"
        }
      }
    ]
  }
}
```


4.89.1.2 GET (Discrete Trigger)

Request:

```
GET /redfish/v1/TelemetryService/Triggers/ProcessorMachineCheckError
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Trigger.Trigger",
  "@odata.id": "/redfish/v1/TelemetryService/Triggers/ProcessorMachineCheckError",
  "@odata.type": "#Trigger.v1_0_0.Trigger",
  "Id": "ProcessorMachineCheckError",
  "Name": "CPU_MACHINE_CHECK_ERROR",
  "Description": "Triggers for System1/CPU1 Processor Machine Check Error",
  "Status": {
    "State": "Enabled",
    "Health": "OK"
  },
  "PollingIntervalMilliSeconds": "4000",
  "TriggerType": "Discrete",
  "TriggerActions": [
    "Transmit"
  ],
  "MetricReportDestination": "http://192.168.1.1/Destination1",
  "DiscreteTriggers": [
    "Machine Check Exception"
  ],
  "Links": {
    "Metrics": [
      {
        "MetricValue": {
          "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/Oem/Intel_RackScale/Health"
        },
        "MetricDefinition": {
          "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUHealth"
```

```
        }
      }
    ]
  }
}
```

4.89.1.3 PUT

Operation is not allowed on this resource.

4.89.1.4 PATCH (Numeric Trigger)

Request:

```
PATCH /redfish/v1/TelemetryService/Triggers/ProcessorTemperature
Content-Type: application/json
{
  "PollingIntervalMilliSeconds": "8000",
  "NumericTriggers": [
    {
      "Name": "CPU_TEMPERATURE_ABOVE_UPPER_THRESHOLD",
      "DirectionOfCrossing": "Increasing",
      "Value": "72"
    }
  ],
  "Links": {
    "Metrics": [
      {
        "MetricValue": {
          "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/TemperatureCelsius"
        },
        "MetricDefinition": {
          "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/TempSensor"
        }
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.89.1.5 PATCH (Discrete Trigger)

Request:

```
PATCH /redfish/v1/TelemetryService/Triggers/ProcessorMachineCheckError
Content-Type: application/json
{
  "PollingIntervalMilliSeconds": "6000",
  "DiscreteTriggers": [
    "Machine Check Exception",
    "Correctable Machine Check Error"
  ],
  "Links": {
    "Metrics": [
      {
        "MetricValue": {
          "@odata.id":
"/redfish/v1/Systems/System1/Processors/CPU1/Metrics#/Oem/Intel_RackScale/Health"
        },
        "MetricDefinition": {
          "@odata.id": "/redfish/v1/TelemetryService/MetricDefinitions/CPUHealth"
        }
      }
    ]
  }
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.89.1.6 POST

Operation is not allowed on this resource.

4.89.1.7 DELETE

Request:

```
DELETE redfish/v1/TelemetryService/Triggers/ProcessorMachineCheckError
```

Response:

```
HTTP/1.1 204 No Content
```

Or (when a task is created):

```
HTTP/1.1 202 Accepted
Location: http://<ip:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "Task 1",
  "TaskState": "New",
  "StartTime": "2017-12-06T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.90 Power

Power metrics resource. It represents the properties for Power Consumption and Power Limiting.

Detailed info about these resource properties can be obtained from metadata file: `Power`. OEM extensions details available in `IntelRackScaleOem_v1.xml`.

Table 168. Power Attributes

Attribute	Type	Nullable	Description
`PowerControl`	`Collection(Power.v1_0_0.PowerControl)`	True	These properties shall be the definition for power control (power reading and limiting) for a Redfish* implementation.
`Voltages`	`Collection(Power.v1_0_0.Voltage)`	True	These properties shall be the definition for voltage sensors for a Redfish* implementation.
`PowerSupplies`	`Collection(Power.v1_0_0.PowerSupply)`	True	This object shall contain details of the power supplies associated with this system or device.
`Redundancy`	`Collection(Redundancy.Redundancy)`	True	Redundancy information for the power subsystem of this system or device.
`Actions`	`Power.v1_3_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.

Table 169. PowerControl Attributes

Attribute	Type	Nullable	Description
`Name`	`Edm.String`	True	The value of this property shall be the name of the Voltage sensor.
`PowerConsumedWatts`	`Edm.Decimal`	True	The value of this property shall represent the actual power being consumed (in watts) by the chassis.
`PowerRequestedWatts`	`Edm.Decimal`	True	The value of this property shall represent the amount of power (in watts) that the chassis resource is currently requesting be budgeted to it for future use.

Attribute	Type	Nullable	Description
PowerAvailableWatts	Edm.Decimal	True	The value of this property shall represent the amount of power capacity (in watts) not already allocated and shall equal PowerCapacityWatts - PowerAllocatedWatts.
PowerCapacityWatts	Edm.Decimal	True	The value of this property shall represent the total power capacity that is available for allocation to the chassis resources.
PowerAllocatedWatts	Edm.Decimal	True	The value of this property shall represent the total power currently allocated to chassis resources.
PowerMetrics	Power.v1_0_0.PowerMetric	False	This object shall contain power metrics for power readings (interval, min/max/ave power consumption) for the chassis.
PowerLimit	Power.v1_0_0.PowerLimit	False	This object shall contain power limit status and configuration information for this chassis.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource
RelatedItem	Collection(Resource.Item)	True	The value of this property shall be an array of IDs containing pointers consistent with JSON* pointer syntax to the resource that is being limited.
Actions	Power.v1_3_0.PowerControlActions	False	The Actions property shall contain the available actions for this resource.
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device(s) or region within the chassis to which this power control applies.

Table 170. Voltage Attributes

Attribute	Type	Nullable	Description
Name	Edm.String	True	The value of this property shall be the name of the Voltage sensor.
SensorNumber	Edm.Int64	True	The value of this property shall be a numerical identifier for this voltage sensor that is unique within this resource.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
ReadingVolts	Edm.Decimal	True	The value of this property shall be the present reading of the voltage sensor's reading.
UpperThreshold NonCritical	Edm.Decimal	True	The value of this property shall indicate the present reading is above the normal range but is not critical. Units shall use the same units as the related ReadingVolts propoerty.
UpperThreshold Critical	Edm.Decimal	True	The value of this property shall indicate the present reading is above the normal range but is not yet fatal. Units shall use the same units as the related ReadingVolts propoerty.
UpperThreshold Fatal	Edm.Decimal	True	The value of this property shall indicate the present reading is above the normal range and is fatal. Units shall use the same units as the related ReadingVolts propoerty.
LowerThreshold NonCritical	Edm.Decimal	True	The value of this property shall indicate the present reading is below the normal range but is not critical. Units shall use the same units as the related ReadingVolts propoerty.

Attribute	Type	Nullable	Description
LowerThresholdCritical	Edm.Decimal	True	The value of this property shall indicate the present reading is below the normal range but is not yet fatal. Units shall use the same units as the related ReadingVolts propoerty.
LowerThresholdFatal	Edm.Decimal	True	The value of this property shall indicate the present reading is below the normal range and is fatal. Units shall use the same units as the related ReadingVolts property.
MinReadingRange	Edm.Decimal	True	The value of this property shall indicate the lowest possible value for ReadingVolts. Units shall use the same units as the related ReadingVolts property.
MaxReadingRange	Edm.Decimal	True	The value of this property shall indicate the highest possible value for ReadingVolts. Units shall use the same units as the related ReadingVolts property.
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which this voltage measurement applies.
RelatedItem	Collection(Resource.Item)	True	The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the areas or devices to which this voltage measurement applies.
Actions	Power.v1_3_0.VoltageActions	false	The Actions property shall contain the available actions for this resource.

Table 171. PowerSupply Attributes

Attribute	Type	Nullable	Description
Name	Edm.String	True	This property shall contain a descriptive name for the associated power supply.
PowerSupplyType	Power.v1_0_0.PowerSupplyType	True	This property shall contain the input power type (AC or DC) of the associated power supply.
LineInputVoltageType	Power.v1_0_0.LineInputVoltageType	True	This property shall contain the type of input line voltage supported by the associated power supply.
LineInputVoltage	Edm.Decimal	True	This property shall contain the value in Volts of the line input voltage (measured or configured for) that the power supply has been configured to operate with or is currently receiving.
PowerCapacityWatts	Edm.Decimal	True	This property shall contain the maximum amount of power, in Watts, that the associated power supply is rated to deliver.
LastPowerOutputWatts	Edm.Decimal	True	This property shall contain the average power output, measured, in watts, of the associated power supply.
Model	Edm.String	True	This property shall contain the model information as defined by the manufacturer for the associated power supply.
FirmwareVersion	Edm.String	True	This property shall contain the firmware version as defined by the manufacturer for the associated power supply.
SerialNumber	Edm.String	True	This property shall contain the serial number as defined by the manufacturer for the associated power supply.
PartNumber	Edm.String	True	This property shall contain the part number as defined by the manufacturer for the associated power supply.

Attribute	Type	Nullable	Description
SparePartNumber	Edm.String	True	This property shall contain the spare or replacement part number as defined by the manufacturer for the associated power supply.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
RelatedItem	Collection(Resource.Item)	True	The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the resource that is being limited.
Redundancy	Collection(Redundancy.Redundancy)	True	The values of the properties in this array shall be used to show redundancy for power supplies and other elements in this resource. The use of IDs within these arrays shall reference the members of the redundancy groups.
Manufacturer	Edm.String	True	The value of this property shall be the name of the organization responsible for producing the power supply. This organization might be the entity from whom the power supply is purchased, but this is not necessarily true.
InputRanges	Collection(Power.v1_1_0.InputRange)	false	The value of this property shall be a collection of ranges usable by the power supply unit.
IndicatorLED	Resource.IndicatorLED	True	The value of this property shall contain the indicator light state for the indicator light associated with this power supply.
Actions	Power.v1_3_0.PowerSupplyActions	false	The Actions property shall contain the available actions for this resource.

Attribute	Type	Nullable	Description
Location	Resource.Location	false	This property shall contain location information of the associated power supply.
PowerInputWatts	Edm.Decimal	True	This property shall contain the value of the measured input power, in Watts, of the associated power supply.
PowerOutputWatts	Edm.Decimal	True	This property shall contain the value of the measured output power, in Watts, of the associated power supply.
EfficiencyPercent	Edm.Decimal	True	This property shall contain the value of the measured power efficiency, as a percentage, of the associated power supply.
HotPluggable	Edm.Boolean	True	The value of this property shall indicate whether the device can be inserted or removed while the underlying equipment otherwise remains in its current operational state. Devices indicated as hot-pluggable shall allow the device to become operable without altering the operational state of the underlying equipment. Devices that cannot be inserted or removed from equipment in operation, or devices that cannot become operable without affecting the operational state of that equipment, shall be indicated as not hot-pluggable.
Assembly	Assembly.Assembly	false	The value of this property shall be a link to a resource of type Assembly.

Table 172. Redundancy Attributes

Attribute	Type	Nullable	Description
Name	Edm.String	False	This object represents the Name property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word *Name*.
Mode	Redundancy.v1_0_0.RedundancyMode	True	The value of this property shall contain the information about the redundancy mode of this subsystem.
MaxNumSupported	Edm.Int64	True	The value of this property shall contain the maximum number of members allowed in the redundancy group.
MinNumNeeded	Edm.Int64	True	The value of this property shall contain the minimum number of members allowed in the redundancy group for the current redundancy mode to still be fault tolerant.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
RedundancySet	Collection(Resource.Item)	True	The value of this property shall contain the ids of components that are part of this redundancy set. The id values may or may not be differentiable.
RedundancyEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether the redundancy is enabled.
Actions	Redundancy.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.

4.90.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.90.1.1 GET (SLED Level Power Resource)

Request:

```
GET /redfish/v1/Chassis/Sled1/Power
Content-Type: application/json
```

Response:


```
{
  "@odata.context": "/redfish/v1/$metadata#Power.Power",
  "@odata.id": "/redfish/v1/Chassis/Sled1/Power",
  "@odata.type": "#Power.v1_5_0.Power",
  "Id": "Power",
  "Name": "Power",
  "PowerControl": [
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Power#/PowerControl/0",
      "@odata.type": "#Power.v1_5_0.PowerControl",
      "MemberId": "0",
      "Name": "System Power Control",
      "PowerConsumedWatts": 650,
      "PowerLimit": {
        "LimitInWatts": 1000,
        "LimitException": "NoAction",
        "CorrectionInMs": null
      },
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/Sled1"
        },
        {
          "@odata.id": "/redfish/v1/Systems/System1"
        }
      ],
      "Status": {
        "State": "Enabled",
        "Health": "OK",
        "HealthRollup": "OK"
      },
      "Oem": {}
    }
  ],
  "Voltages": [
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Power#/Voltages/0",
      "@odata.type": "#Power.v1_5_0.Voltage",
      "MemberId": "0",
      "Name": "Baseboard +12.0V",
      "SensorNumber": 208,
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "ReadingVolts": 12.212,
      "UpperThresholdNonCritical": null,
      "UpperThresholdCritical": null,
```

```
      "UpperThresholdFatal": null,
      "LowerThresholdNonCritical": null,
      "LowerThresholdCritical": null,
      "LowerThresholdFatal": null,
      "MinReadingRange": null,
      "MaxReadingRange": null,
      "PhysicalContext": "SystemBoard",
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/Sled1"
        },
        {
          "@odata.id": "/redfish/v1/Systems/System1"
        }
      ]
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Power#/Voltages/1",
      "@odata.type": "#Power.v1_5_0.Voltage",
      "MemberId": "1",
      "Name": "Baseboard +3.3V Vbat",
      "SensorNumber": 222,
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "ReadingVolts": 3.129,
      "UpperThresholdNonCritical": null,
      "UpperThresholdCritical": null,
      "UpperThresholdFatal": null,
      "LowerThresholdNonCritical": null,
      "LowerThresholdCritical": null,
      "LowerThresholdFatal": null,
      "MinReadingRange": null,
      "MaxReadingRange": null,
      "PhysicalContext": "SystemBoard",
      "RelatedItem": [
        {
          "@odata.id": "/redfish/v1/Chassis/Sled1"
        },
        {
          "@odata.id": "/redfish/v1/Systems/System1"
        }
      ]
    }
  ],
  "Oem": {
    "Intel_RackScale": {
      "InputACPowerWatts": 245
    }
  }
}
```


4.90.1.2 PUT

This operation is not allowed on this resource.

4.90.1.3 PATCH (SLED Level Power Resource)

Implementation of this method is not required in Intel® Rack Scale Design 2.5.

Request:

```
PATCH /redfish/v1/Chassis/Sled1/Power
Content-Type: application/json
{
  "PowerControl": [
    {
      "PowerLimit": {
        "LimitInWatts": 1000
      }
    }
  ]
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.90.1.4 POST

Operation is not allowed on this resource.

4.90.1.5 DELETE

Operation is not allowed on this resource.

4.91 Thermal

Thermal metrics resource represents the properties for Temperature and Cooling.

Detailed info about these resource properties can be obtained from the metadata file: `Thermal_v1.xml`. OEM extension details are available in `IntelRackScaleOem_v1.xml`.

Table 173. Thermal Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	False	This property shall contain any status or health properties of the resource.
`Temperatures`	`Collection(Thermal.v1_0_0.Temperature)`	True	These properties shall be the definition for temperature sensors for a Redfish implementation.
`Fans`	`Collection(Thermal.v1_0_0.Fan)`	True	These properties shall be the definition for fans for a Redfish* implementation.

Attribute	Type	Nullable	Description
Redundancy	Collection(Redundancy.Redundancy)	True	The values of the properties in this array shall be used to show redundancy for fans and other elements in this resource. The use of IDs within these arrays shall reference the members of the redundancy groups.
Actions	Thermal.v1_3_0.ThermalActions	False	The Actions property shall contain the available actions for this resource.

Table 174. Temperature Attributes

Attribute	Type	Nullable	Description
Name	Edm.String	True	The value of this property shall be the name of the temperature sensor.
SensorNumber	Edm.Int64	True	The value of this property shall be a numerical identifier for this temperature sensor that is unique within this resource.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
ReadingCelsius	Edm.Decimal	True	The value of this property shall be the current value of the temperature sensor's reading.
UpperThresholdNonCritical	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is above the normal range but is not critical. The units shall be the same units as the related ReadingCelsius property.

Attribute	Type	Nullable	Description
UpperThresholdCritical	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is above the normal range but is not yet fatal. The units shall be the same units as the related ReadingCelsius property.
UpperThresholdFatal	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is above the normal range and is fatal. The units shall be the same units as the related ReadingCelsius property.
LowerThresholdNonCritical	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is below the normal range but is not critical. The units shall be the same units as the related ReadingCelsius property.
LowerThresholdCritical	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is below the normal range but is not yet fatal. The units shall be the same units as the related ReadingCelsius property.
LowerThresholdFatal	Edm.Decimal	True	The value of this property shall indicate the ReadingCelsius is below the normal range and is fatal. The units shall be the same units as the related ReadingCelsius property.
MinReadingRangeTemp	Edm.Decimal	True	The value of this property shall indicate the lowest possible value for ReadingCelsius. The units shall be the same units as the related ReadingCelsius property.

Attribute	Type	Nullable	Description
MaxReadingRangeTemp	Edm.Decimal	True	The value of this property shall indicate the highest possible value for Read ReadingCelsius ingCelsius. The units shall be the same units as the related ReadingCelsius property.
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which this temperature measurement applies.
RelatedItem	Collection(Resource.Item)	True	The value of this property shall the array of IDs of areas or devices to which this temperature measurement applies.
Actions	Thermal.v1_3_0.TemperatureActions	False	The Actions property shall contain the available actions for this resource.
DeltaReadingCelsius	Edm.Decimal	True	The value of this property shall be the delta of the values of the temperature readings across this sensor and the sensor at DeltaPhysicalContext.
DeltaPhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which the DeltaReadingCelsius temperature measurement applies, relative to PhysicalContext.

Attribute	Type	Nullable	Description
MaxAllowableOperatingValue	Edm.Int64	True	The value of this property shall indicate the maximum allowable operating temperature for the equipment monitored by this temperature sensor, as specified by a standards body, manufacturer, or a combination.
MinAllowableOperatingValue	Edm.Int64	True	The value of this property shall indicate the minimum allowable operating temperature for the equipment monitored by this temperature sensor, as specified by a standards body, manufacturer, or a combination.
AdjustedMaxAllowableOperatingValue	Edm.Int64	True	The value of this property shall indicate the adjusted maximum allowable operating temperature for the equipment monitored by this temperature sensor, as specified by a standards body, manufacturer, or a combination, and adjusted based on environmental conditions present. For example, liquid inlet temperature may be adjusted based on the available liquid pressure.
AdjustedMinAllowableOperatingValue	Edm.Int64	True	The value of this property shall indicate the adjusted minimum allowable operating temperature for the equipment monitored by this temperature sensor, as specified by a standards body, manufacturer, or a combination, and adjusted based on environmental conditions present. For example, liquid inlet temperature may be adjusted based on the available liquid pressure.

Table 175. Fan Attributes

Attribute	Type	Nullable	Description
FanName	EDM.	True	The value of this property shall be the name of the fan.
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which this fan is associated.
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
Reading	Edm.Int64	True	The value of this property shall be the current value of the fan sensor's reading.
UpperThresholdNonCritical	Edm.Int64	True	The value of this property shall indicate the Reading is above the normal range but is not critical. The units shall be the same units as the related Reading property.
UpperThresholdCritical	Edm.Int64	True	The value of this property shall indicate the Reading is above the normal range but is not yet fatal. The units shall be the same units as the related Reading property.
UpperThresholdFatal	Edm.Int64	True	The value of this property shall indicate the Reading is above the normal range and is fatal. The units shall be the same units as the related Reading property.
LowerThresholdNonCritical	Edm.Int64	True	The value of this property shall indicate the Reading is below the normal range but is not critical. The units shall be the same units as the related Reading property.

Attribute	Type	Nullable	Description
FanName	EDM.	True	The value of this property shall be the name of the fan.
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which this fan is associated.
LowerThresholdCritical	Edm.Int64	True	The value of this property shall indicate the Reading is below the normal range but is not yet fatal. The units shall be the same units as the related Reading property.
LowerThresholdFatal	Edm.Int64	True	The value of this property shall indicate the Reading is below the normal range and is fatal. The units shall be the same units as the related Reading property.
MinReadingRange	Edm.Int64	True	The value of this property shall indicate the lowest possible value for Reading. The units shall be the same units as the related Reading property.
MaxReadingRange	Edm.Int64	True	The value of this property shall indicate the highest possible value for Reading. The units shall be the same units as the related Reading property.
RelatedItem	Collection(Resource.Item)	True	The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the resource that are being serviced by this fan.

Attribute	Type	Nullable	Description
FanName	EDM.	True	The value of this property shall be the name of the fan.
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which this fan is associated.
Redundancy	Collection(Redundancy.Redundancy)	True	The values of the properties in this array shall be used to show redundancy for fans and other elements in this resource. The use of IDs within these arrays shall reference the members of the redundancy groups.
ReadingUnits	Thermal.v1_0_1.ReadingUnits	True	The value of this property shall be the units in which the fan's reading and thresholds are measured.
Name	Edm.String	True	The value of this property shall be the name of the fan.
Manufacturer	Edm.String	True	The value of this property shall be the name of the organization responsible for producing the fan. This organization might be the entity from whom the fan is purchased, but this is not necessarily true.
Model	Edm.String	True	This property shall contain the model information as defined by the manufacturer for the associated fan.
SerialNumber	Edm.String	True	This property shall contain the serial number as defined by the manufacturer for the associated fan.
PartNumber	Edm.String	True	This property shall contain the part number as defined by the manufacturer for the associated fan.

Attribute	Type	Nullable	Description
FanName	EDM.	True	The value of this property shall be the name of the fan.
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which this fan is associated.
SparePartNumber	Edm.String	True	This property shall contain the spare or replacement part number as defined by the manufacturer for the associated fan.
IndicatorLED	Resource.IndicatorLED	True	The value of this property shall contain the indicator light state for the indicator light associated with this fan.
Actions	Thermal.v1_3_0.FanActions	False	The Actions property shall contain the available actions for this resource.
HotPluggable	Edm.Boolean	True	The value of this property shall indicate whether the device can be inserted or removed while the underlying equipment otherwise remains in its current operational state. Devices indicated as hot-pluggable shall allow the device to become operable without altering the operational state of the underlying equipment. Devices that cannot be inserted or removed from equipment in operation, or devices that cannot become operable without affecting the operational state of that equipment, shall be indicated as not hot-pluggable.
Location	Resource.Location	False	This property shall contain location information of the associated fan.

Attribute	Type	Nullable	Description
FanName	EDM.	True	The value of this property shall be the name of the fan.
PhysicalContext	PhysicalContext.PhysicalContext	False	The value of this property shall be a description of the affected device or region within the chassis to which this fan is associated.
Assembly	Assembly.Assembly	False	The value of this property shall be a link to a resource of type Assembly.
SensorNumber	Edm.Int64	True	The value of this property shall be a numerical identifier for this fan speed sensor that is unique within this resource.

Table 176. Redundancy Attributes

Attribute	Type	Nullable	Description
Name	Edm.String	False	This object represents the Name property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word *Name*.
Mode	Redundancy.v1_0_0.RedundancyMode	True	The value of this property shall contain the information about the redundancy mode of this subsystem.
MaxNumSupported	Edm.Int64	True	The value of this property shall contain the maximum number of members allowed in the redundancy group.
MinNumNeeded	Edm.Int64	True	The value of this property shall contain the minimum number of members allowed in the redundancy group for the current redundancy mode to still be fault tolerant.

Attribute	Type	Nullable	Description
Status	Resource.Status	False	This property shall contain any status or health properties of the resource.
RedundancySet	Collection(Resource.Item)	True	The value of this property shall contain the ids of components that are part of this redundancy set. The id values may or may not be differentiable.
RedundancyEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether the redundancy is enabled.
Actions	Redundancy.v1_2_0.Actions	False	The Actions property shall contain the available actions for this resource.
Name	Edm.String	False	This object represents the Name property. All values for resources described by this schema shall comply with the requirements as described in the Redfish specification. The value of this string shall be of the format for the reserved word *Name*.
Mode	Redundancy.v1_0_0.RedundancyMode	True	The value of this property shall contain the information about the redundancy mode of this subsystem.
MaxNumSupported	Edm.Int64	True	The value of this property shall contain the maximum number of members allowed in the redundancy group.
MinNumNeeded	Edm.Int64	True	The value of this property shall contain the minimum number of members allowed in the redundancy group for the current redundancy mode to still be fault tolerant.
Status	Resource.Status	False	-

Attribute	Type	Nullable	Description
RedundancySet	Collection(Resource.Item)	True	The value of this property shall contain the ids of components that are part of this redundancy set. The id values may or may not be differentiable.
RedundancyEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether the redundancy is **enabled**.
Actions	Redundancy.v1_2_0.Actions	false	The Actions property shall contain the available actions for this resource.

4.91.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.91.1.1 GET (SLED Level Thermal Metrics)

The SLED level Thermal Metrics differ from Rack level Thermal metrics. Therefore metadata definition file Thermal_v1.xml contain superset of all available Thermal metrics.

Request:

```
GET /redfish/v1/Chassis/Sled1/Thermal
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#Thermal.Thermal",
  "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal",
  "@odata.type": "#Thermal.v1_5_1.Thermal",
  "Id": "Thermal",
  "Name": "Thermal",
  "Temperatures": [
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal#/Temperatures/0",
      "@odata.type": "#Thermal.v1_5_1.Temperature",
      "MemberId": "0",
      "Name": "SLED inlet Temperature",
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "ReadingCelsius": 21
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal#/Temperatures/1",
      "@odata.type": "#Thermal.v1_5_1.Temperature",
      "MemberId": "1",
      "Name": "SLED Outlet Temperature",
      "Status": {
        "State": "Enabled",
```

```
        "Health": "OK"
      },
      "ReadingCelsius": 44
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal#/Temperatures/2",
      "@odata.type": "#Thermal.v1_5_1.Temperature",
      "MemberId": "2",
      "Name": "Baseboard Ambient Temperature",
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "ReadingCelsius": 37
    },
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal#/Temperatures/3",
      "@odata.type": "#Thermal.v1_5_1.Temperature",
      "MemberId": "3",
      "Name": "PSU Temperature",
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "ReadingCelsius": 57
    }
  ],
  "Fans": [
    {
      "@odata.id": "/redfish/v1/Chassis/Sled1/Thermal#/Fans/0",
      "@odata.type": "#Thermal.v1_5_1.Fan",
      "MemberId": "0",
      "Name": "SLED Fan 0",
      "Status": {
        "State": "Enabled",
        "Health": "OK"
      },
      "Reading": 3100,
      "ReadingUnits": "RPM",
      "Oem": {
        "Intel_RackScale": {
          "FanSpeedPolicy": "Manual",
          "ManualFanSpeed": 3100
        }
      }
    }
  ],
  "Oem": {
    "Intel_RackScale": {
      "VolumetricAirFlowCFM": 12
    }
  }
}
```


4.91.1.2 PUT

Operation is not allowed on this resource.

4.91.1.3 PATCH

Implementation of this method is not required in Intel® Rack Scale Design 2.5.

Request:

```
PATCH /redfish/v1/Chassis/Sled1/Thermal
Content-Type: application/json
{
  "Fans": [
    {
      "Oem": {
        "Intel_RackScale": {
          "FanSpeedPolicy": "Manual",
          "ManualFanSpeed": 2000
        }
      }
    }
  ]
}
```

Response:

```
HTTP/1.1 200 OK
((updated resource body))
```

4.91.1.4 POST

Operation is not allowed on this resource.

4.91.1.5 DELETE

Operation is not allowed on this resource.

4.92 Update Service

Update service resource represents the properties required to invoke the software/firmware update.

Note: In current release this functionality is not implemented.

Table 177. UpdateService Attributes

Attribute	Type	Nullable	Description
Status	Resource.Status	True	This property shall contain any status or health properties of the resource
ServiceEnabled	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether this service is enabled.
Actions	UpdateService.v1_0_0.Actions	False	The Actions object contains the available custom actions on this resource.
FirmwareInventory	SoftwareInventoryCollection.SoftwareInventoryCollection	True	The value of this property shall be a link to a resource of type SoftwareInventoryCollection.

Attribute	Type	Nullable	Description
SoftwareInventory	SoftwareInventoryCollection.SoftwareInventoryCollection	True	The value of this property shall be a link to a resource of type SoftwareInventoryCollection.
HttpPushUri	Edm.String	False	This property shall contain a URI at which the UpdateService supports an HTTP or HTTPS POST of a software image for the purpose of installing software contained within the image.
HttpPushUriTargets	Collection(Edm.String)	True	This property shall contain zero or more URIs indicating the targets for applying the update image when using HttpPushUri to push a software image. If this property is not present, the Service shall determine where to apply the software image.
HttpPushUriTargetsBusy	Edm.Boolean	True	This property shall be a Boolean that is set by client when the HttpPushUriTargets property is being used by a client for firmware updates. It shall provide multiple clients a way to negotiate its ownership. This will help clients to know if a firmware update using HttpPushUriTargets is used by another client.
HttpPushUriOptions	UpdateService.v1_4_0.HttpPushUriOptions	False	The value of this property shall contain options and requirements of the service for software update through HttpPushUri.

Attribute	Type	Nullable	Description
HttpPushUriOptionsBusy	Edm.Boolean	True	This property shall be a boolean that determines when the properties within the HttpPushUriOptions object are being used by a client for software updates. A client should set this property to True when it is using any properties in HttpPushUriOptions for software update, and should set it to False when it is no longer using HttpPushUriOptions properties for updates. The property can provide multiple clients a way to negotiate ownership of HttpPushUriOptions. This will help clients to know if a firmware update using HttpPushUriOptions is used by another client. This property has no functional requirements for the Service.

4.92.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.92.1.1 GET

Request:

```
GET /redfish/v1/UpdateService
Content-Type: application/json
```

Response:

```
{
  "@odata.type": "#UpdateService.v1_4_0.UpdateService",
  "@odata.context": "/redfish/v1/$metadata#UpdateService/$entity",
  "@odata.id": "/redfish/v1/UpdateService",
  "@odata.etag":
"W/\"27DD0F73B01DE06FE6F43C19E74B79792C2A633CF2AF6592D3F955E8FE3C412A\"",
  "Id": "UpdateService",
  "Name": "Update Service",
  "Status": {
    "State": "Disabled",
    "Health": null,
    "HealthRollup": null
  },
  "ServiceEnabled": false,
  "HttpPushUri": "/redfish/v1/UpdateService/PushUpdate",
  "HttpPushUriTargets": [
    "/redfish/v1/UpdateService/FirmwareInventory/1/"
  ],
  "HttpPushUriTargetsBusy": true,
  "HttpPushUriOptions": {
    "HttpPushUriApplyTime": {
```

```
      "ApplyTime": "Immediate"
    }
  },
  "HttpPushUriOptionsBusy": true,
  "Actions": {
    "Oem": {
      "#Intel.Oem.StartUpdate": {
        "target": "/redfish/v1/UpdateService/Actions/Intel.Oem.StartUpdate"
      }
    }
  },
  "FirmwareInventory": {
    "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory"
  },
  "SoftwareInventory": {
    "@odata.id": "/redfish/v1/UpdateService/SoftwareInventory"
  },
  "Oem": {
    "Intel_RackScale": {
      "@odata.type": "#Intel.Oem.UpdateService",
      "HttpPushUriOptions": {
        "HttpPushUriApplyTime": {
          "ApplyTimeOverride": "OnStartUpdateAction"
        }
      }
    }
  }
}
```

4.92.1.2 PUT

Operation is not allowed on this resource.

4.92.1.3 PATCH

When the resource is accessed by multiple clients, it is strongly recommended to expose @odata.etag on the resource. Client should provide its value in the `If-Match` header. `@odata.etag` is used here to ensure that only one client will modify `HttpPushUriTargetsBusy` and `HttpPushUriOptionsBusy`.

Request:

```
PATCH /redfish/v1/UpdateService
Content-Type: application/json
If-Match: 27DD0F73B01DE06FE6F43C19E74B79792C2A633CF2AF6592D3F955E8FE3C412A
{
  "HttpPushUriTargets" : ["/redfish/v1/UpdateService/FirmwareInventory/1/"],
  "HttpPushUriTargetsBusy": true,
  "HttpPushUriOptionsBusy": true,
  "Oem": {
    "Intel_RackScale": {
      "HttpPushUriOptions": {
        "HttpPushUriApplyTime": {
          "ApplyTimeOverride" : "OnStartUpdateAction"
        }
      }
    }
  }
}
```

Response:

```
HTTP/1.1 200 OK
{{updated resource body}}
```

4.92.1.4 POST

To initiate FW/SW update, send the binary to the `HttpPushUri` endpoint using HTTP POST mechanism. Due to asynchronous nature of FW/SW Update this operation creates a Task.

Note: DMTF is in the process of formalizing HttpPushUri tranport details. This API might change when this process is finished.

Request:

```
POST /redfish/v1/UpdateService/PushUpdate
Content-Type: multipart/form-datall
Content-Length: 9309; boundary=----FILE_BOUNDARY

------FILE_BOUNDARY
Content-Disposition: form-data; name="bios-update-package"; filename="bios.pkg"

(truncated binary data)
```

Response:

```
HTTP/1.1 202 Accepted
Location: http://<IP:port>/redfish/v1/TaskService/Tasks/1/TaskMonitor
{
  "@odata.context": "/redfish/v1/$metadata#Task.Task",
  "@odata.id": "/redfish/v1/TaskService/Tasks/1",
  "@odata.type": "#Task.v1_0_0.Task",
  "Id": "1",
  "Name": "BIOS Update",
  "TaskState": " New",
  "StartTime": "2016-09-01T04:45+01:00",
  "TaskStatus": "OK",
  "Messages": []
}
```

4.92.1.5 DELETE

Operation is not allowed on this resource.

4.92.2 SW/FW Update Configuration

The following properties are used to configure the update: * `HttpPushUriTargets` contains list of entities on which this update will be applied. * `HttpPushUriOptions` contains configuration for the push update, (for example, specifying the time of the update application). * `ExtendedPushUriOptions` contains Intel RackScale extensions to the `HttpPushUriOptions`.

`HttpPushUri` property contains endpoint where the update binary is pushed for further execution.

To facilitate access to the resource by multiple clients, schema contains two synchronization properties. Client must set `HttpPushUriTargetsBusy`, `HttpPushUriOptionsBusy` to **true** when changing `HttpPushUriTargets`, `HttpPushUriOptions`, and `Oem.Intel_RackScale.HttpPushUriOptions`. Client who set the `*Busy` property to true is the owner of the corresponding property and should be the only one to modify it. `*Busy` property should be set to **false** when the owner is no longer using corresponding property for the update purpose.

When `Oem.Intel_RackScale.HttpPushUriOptions.HttpPushUriApplyTime.ApplyTimeOverride` is not null, then its value overrides `HttpPushUriApplyTime.ApplyTime` in the following way: * OnStartUpdateAction - Update will start when `Intel.Oem.StartUpdate` action is triggered. * Inherit - Update will start as defined in `HttpPushUriApplyTime.ApplyTime`.

During the update execution process, the target system needs to be in the `Updating` state and must not accept any requests that could disrupt the update process (except cancelling the update task if possible).

4.92.3 Intel RackScale Actions Extensions to Update Service

Intel® RSD Extends Update Service by adding the `OEM Intel.Oem.StartUpdate` action.

These extensions provide way to orchestrate a manually-triggered two-step update process, where first step pushes the image to the target system but delays the update execution until the `Intel.Oem.StartUpdate` action is triggered.

4.93 Firmware Inventory Collection

Note: In current release this functionality is not implemented.

Table 178. SoftwareInventoryCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(SoftwareInventory.SoftwareInventory)`	True	This property shall contain an array of references to the members of this collection.

4.93.1 Operations

4.93.1.1 GET

Request:

```
GET /redfish/v1/UpdateService/FirmwareInventory
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#SoftwareInventoryCollection.SoftwareInventoryCollection",
  "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory",
  "@odata.type": "#SoftwareInventoryCollection.SoftwareInventoryCollection",
  "Description": "Firmware Inventory Collection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/1"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Firmware Inventory Collection"
}
```

4.93.1.2 PUT

Operation is not allowed on this resource.

4.93.1.3 PATCH

Operation is not allowed on this resource.

4.93.1.4 POST

Operation is not allowed on this resource.

4.93.1.5 DELETE

Operation is not allowed on this resource

4.94 Firmware Inventory

Update service resource represents the properties required to invoke software/firmware update.

Note: In current release this functionality is not implemented.

Table 179. SoftwareInventory Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	False	This property shall contain any status or health properties of the resource.
`Version`	`Edm.String`	True	The value of this property shall be a string representing the version of this software.
`Updateable`	`Edm.Boolean`	True	The value of this property shall be a Boolean indicating whether this software can be updated by the update service. If false, this software is for reporting purpose only.
`Actions`	`SoftwareInventory.v1_0_0.Actions`	False	The `Actions` property shall contain the available actions for this resource.

Attribute	Type	Nullable	Description
SoftwareId	Edm.String	False	The value of this property shall be a string representing an implementation-specific ID for identifying this software. This string is used for correlation to a component repository or database.
LowestSupportedVersion	Edm.String	True	The value of this property shall be a string representing the lowest supported version of this software. This string is formatted using the same format used for the Version property.
UefiDevicePaths	Collection(Edm.String)	True	The value of this property shall be a list of strings representing the UEFI Device Path(s) of the component(s) associated with this software inventory item. The UEFI Device Path string(s) shall be formatted as defined by the UEFI Specification.
RelatedItem	Collection(Resource.Item)	True	The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the resource that is associated with this software inventory item.
Manufacturer	Edm.String	True	The value of this property shall be a string representing the name of the manufacturer/producer of this software.

Attribute	Type	Nullable	Description
ReleaseDate	Edm.DateTimeOffset	True	The value of this property shall be the date of release or production for this software. The time of day portion of the property shall be **'00:00:00Z'** if the time of day is unknown.

4.94.1 Operations

4.94.1.1 GET

Request:

```
GET /redfish/v1/UpdateService/FirmwareInventory/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#SoftwareInventory.SoftwareInventory",
  "@odata.id": "/redfish/v1/UpdateService/FirmwareInventory/1",
  "@odata.type": "#SoftwareInventory.v1_2_1.SoftwareInventory",
  "Description": "Computer System BMC",
  "Id": "1",
  "Name": "BMC",
  "Oem": {},
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "Manufacturer": "Contosso",
  "ReleaseDate": "1.1.1970",
  "Version": "2.5.0"
}
```

4.94.1.2 PUT

Operation is not allowed on this resource.

4.94.1.3 PATCH

Operation is not allowed on this resource.

4.94.1.4 POST

Operation is not allowed on this resource.

4.94.1.5 DELETE

Operation is not allowed on this resource.

4.95 Software Inventory Collection

Update service resource represents the properties required to invoke software/firmware update.

Note: In current release this functionality is not implemented.

Table 180. SoftwareInventoryCollection Attributes

Attribute	Type	Nullable	Description
Members	Collection(SoftwareInventory.SoftwareInventory)	True	This property shall contain an array of references to the members of this collection.

4.95.1 Operations

4.95.1.1 GET

Request:

```
GET /redfish/v1/UpdateService/SoftwareInventory
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#SoftwareInventoryCollection.SoftwareInventoryCollection",
  "@odata.id": "/redfish/v1/UpdateService/SoftwareInventory",
  "@odata.type": "#SoftwareInventoryCollection.SoftwareInventoryCollection",
  "Description": "Firmware Inventory Collection",
  "Members": [
    {
      "@odata.id": "/redfish/v1/UpdateService/SoftwareInventory/1"
    }
  ],
  "Members@odata.count": 1,
  "Name": "Software Inventory Collection"
}
```

4.95.1.2 PUT

Operation is not allowed on this resource.

4.95.1.3 PATCH

Operation is not allowed on this resource.

4.95.1.4 POST

Operation is not allowed on this resource.

4.95.1.5 DELETE

Operation is not allowed on this resource.

4.96 Software Inventory

Update service resource represents the properties required to invoke software/firmware update.

Note: In current release this functionality is not implemented

Table 181. SoftwareInventory Attributes

Attribute	Type	Nullable	Description
Status	Resource.Status	false	This property shall contain any status or health properties of the resource.
Version	Edm.String	True	The value of this property shall be a string representing the version of this software.
Updateable	Edm.Boolean	True	The value of this property shall be a Boolean indicating whether this software can be updated by the update service. If **false**, this software is for reporting purpose only.
Actions	SoftwareInventory.v1_0_0.Actions	false	The Actions property shall contain the available actions for this resource.
SoftwareId	Edm.String	false	The value of this property shall be a string representing an implementation-specific ID for identifying this software. This string is used for correlation to a component repository or database.
LowestSupportedVersion	Edm.String	True	The value of this property shall be a string representing the lowest supported version of this software. This string is formatted using the same format used for the Version property.

Attribute	Type	Nullable	Description
UefiDevicePaths	Collection(Edm.String)	True	The value of this property shall be a list of strings representing the UEFI Device Path(s) of the component(s) associated with this software inventory item. The UEFI Device Path string(s) shall be formatted as defined by the UEFI Specification.
RelatedItem	Collection(Resource.Item)	True	The value of this property shall be an array of IDs containing pointers consistent with JSON pointer syntax to the resource that is associated with this software inventory item.
Manufacturer	Edm.String	True	The value of this property shall be a string representing the name of the manufacturer/producer of this software.
ReleaseDate	Edm.DateTimeOffset	True	The value of this property shall be the date of release or production for this software. The time of day portion of the property shall be **'00:00:00Z'** if the time of day is unknown.

4.96.1 Operations

4.96.1.1 GET

Request:

```
GET /redfish/v1/UpdateService/SoftwareInventory/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#SoftwareInventory.SoftwareInventory",
  "@odata.id": "/redfish/v1/UpdateService/SoftwareInventory/1",
  "@odata.type": "#SoftwareInventory.v1_2_1.SoftwareInventory",
  "Description": "PSME",
  "Id": "1",
  "Name": "PSME",
  "Oem": {},
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "Manufacturer": "Contosso",
  "ReleaseDate": "1.1.1970",
  "Version": "2.5.0"
}
```

4.96.1.2 PUT

Operation is not allowed on this resource.

4.96.1.3 PATCH

Operation is not allowed on this resource.

4.96.1.4 POST

Operation is not allowed on this resource.

4.96.1.5 DELETE

Operation is not allowed on this resource.

4.97 Network Interface Collection

This property's details are available in `NetworkInterfaceCollection_v1.xml` metadata file.

Table 182. NetworkInterfaceCollection Attributes

Attribute	Type	Nullable	Description
`Members`	`Collection(NetworkInterface.NetworkInterface)`	True	Contains the members of this collection.

4.97.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.97.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/NetworkInterfaces
Content-Type: application/json
```

Response:

```
{
  "@odata.context":
"/redfish/v1/$metadata#NetworkInterfaceCollection.NetworkInterfaceCollection",
  "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces",
  "@odata.type": "# NetworkInterfaceCollection.NetworkInterfaceCollection",
  "Name": "Network Interface Collection",
  "Description": "description-as-string",
  "Members@odata.count": 1,
  "Members": [
    {
      "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces/1"
    }
  ]
}
```

4.97.1.2 PUT

Operation is not allowed on this resource.

4.97.1.3 PATCH

Operation is not allowed on this resource.

4.97.1.4 POST

Operation is not allowed on this resource.

4.97.1.5 DELETE

Operation is not allowed on this resource.

4.98 Network Interface

`NetworkInterface` contains references linking `NetworkDeviceFunction` resources and represents the network functionality available to the containing system.

Table 183. NetworkInterface Attributes

Attribute	Type	Nullable	Description
`Status`	`Resource.Status`	True	-
`Links`	`NetworkInterface.v1_0_0.Links`	False	Links for this controller.
`NetworkPorts`	`NetworkPortCollection.NetworkPortCollection`	False	Contains the members of this collection.
`NetworkDeviceFunctions`	`NetworkDeviceFunctionCollection.NetworkDeviceFunctionCollection`	False	Contains the members of this collection.
`Actions`	`NetworkInterface.v1_1_0.Actions`	False	The Actions property shall contain the available actions for this resource.

4.98.1 Operations

The following sections specify the HTTP methods available on this endpoint.

4.98.1.1 GET

Request:

```
GET /redfish/v1/Systems/System1/NetworkInterfaces/1
Content-Type: application/json
```

Response:

```
{
  "@odata.context": "/redfish/v1/$metadata#NetworkInterface.NetworkInterface",
  "@odata.id": "/redfish/v1/Systems/System1/NetworkInterfaces/1",
  "@odata.type": "# NetworkInterface.v1_1_0.NetworkInterface",
  "Id": "1",
  "Name": "Network Device View",
  "Description": "Network Device View",
  "Status": {
    "State": "Enabled",
    "Health": "OK",
    "HealthRollUp": "OK"
  },
  "NetworkDeviceFunctions": {
    "@odata.id":
"/redfish/v1/Systems/System1/NetworkInterfaces/1/NetworkDeviceFunctions"
  },
  "Links": {},
  "Oem": {}
}
```

4.98.1.2 PUT

Operation is not allowed on this resource.

4.98.1.3 PATCH

Operation is not allowed on this resource.

4.98.1.4 POST

Operation is not allowed on this resource.

4.98.1.5 DELETE

Operation is not allowed on this resource.

§

5.0 Required Resources Per Service Type

Below table show what types of resources are required per service type:

R – Required

O – Optional/recommended

Table 184. Required Resources

Resource	PSME Compute	PSME Storage	PSME Network	PSME PNC	PSME RMM	PSME FPGA-oF
$metadata.xml	R	R	R	R	R	R
AccountService_v1.xml	R	R	R	R	R	R
Bios_v1.xml	O	-	-	-	-	-
Chassis_v1.xml	R	R	-	R	R	-
ChassisCollection_v1.xml	R	R	-	R	R	-
ComposedNode_v1.xml	-	-	-	-	-	-
ComposedNodeCollection_v1.xml	-	-	-	-	-	-
ComputerSystem_v1.xml	R	R	-	R	-	R
ComputerSystemCollection_v1.xml	R	R	-	R	-	R
ComputerSystemMetrics_v1.xml	R	-	-	-	-	-
Drive_v1.xml	R	R	-	R	-	-
Endpoint_v1.xml	-	R	-	R	-	R
EndpointCollection_v1.xml	-	R	-	R	-	R
EthernetInterface_v1.xml	R	R	-	-	R	R
EthernetInterfaceCollection_v1.xml	R	R	-	-	R	R
EthernetSwitch_v1.xml	-	-	R	-	-	-
EthernetSwitchACL_v1.xml	-	-	O	-	-	-
EthernetSwitchACLCollection_v1.xml	-	-	O	-	-	-
EthernetSwitchACLRule_v1.xml	-	-	O	-	-	-
EthernetSwitchACLRuleCollection_v1.xml	-	-	O	-	-	-
EthernetSwitchCollection_v1.xml	-	-	R	-	-	-
EthernetSwitchMetrics_v1.xml	-	-	O	-	-	-
EthernetSwitchPort_v1.xml	-	-	R	-	-	-
EthernetSwitchPortCollection_v1.xml	-	-	R	-	-	-
EthernetSwitchPortMetrics_v1.xml	-	-	O	-	-	-
EthernetSwitchStaticMAC_v1.xml	-	-	O	-	-	-
EthernetSwitchStaticMACCollection_v1.xml	-	-	O	-	-	-
Event_v1.xml	R	R	R	R	R	R
EventDestination_v1.xml	R	R	R	R	R	R
EventDestinationCollection_v1.xml	R	R	R	R	R	R
EventService_v1.xml	R	R	R	R	R	R
Fabric_v1.xml	-	R	-	R	-	R
FabricCollection_v1.xml	-	R	-	R	-	R
LogEntry_v1.xml	R	-	-	-	-	-
LogEntryCollection_v1.xml	R	-	-	-	-	-
LogService_v1.xml	R	-	-	-	-	-
LogServiceCollection_v1.xml	R	-	-	-	-	-

Resource	PSME Compute	PSME Storage	PSME Network	PSME PNC	PSME RMM	PSME FPGA-oF
IntelRackScaleOem_v1.xml	R	R	R	R	R	R
Manager_v1.xml	R	R	R	R	R	R
ManagerAccount_v1.xml	R	R	R	R	R	R
ManagerAccountCollection_v1.xml	R	R	R	R	R	R
ManagerCollection_v1.xml	R	R	R	R	R	R
ManagerNetworkProtocol_v1.xml	R	R	R	R	R	R
Memory_v1.xml	R	-	-	-	-	-
MemoryCollection_v1.xml	R	-	-	-	-	-
MemoryMetrics_v1.xml	R	-	-	-	-	-
Message_v1.xml	O	O	O	O	O	O
MessageRegistry_v1.xml	O	O	O	O	O	O
MessageRegistryCollection_v1.xml	O	O	O	O	O	O
MessageRegistryFile_v1.xml	R	R	R	R	R	R
MessageRegistryFileCollection_v1.xml	R	R	R	R	R	R
MetricDefinition_v1.xml	R	R	O	R	R	O
MetricDefinitionCollection_v1.xml	R	R	O	R	R	O
MetricReport_v1.xml	O	O	O	O	O	O
MetricReportDefinition_v1.xml	O	O	O	O	O	O
MetricReportDefinitionCollection_v1.xml	O	O	O	O	O	O
NetworkAdapter_v1.xml	O	-	-	-	-	-
NetworkAdapterCollection_v1.xml	O	-	-	-	-	-
NetworkDeviceFunction_v1.xml	O	-	-	-	-	-
NetworkDeviceFunctionCollection_v1.xml	O	-	-	-	-	-
PCIeDevice_v1.xml	R	-	-	R	-	-
PCIeFunction_v1.xml	R	-	-	R	-	-
Port_v1.xml	-	-	-	R	-	-
PortCollection_v1.xml	-	-	-	R	-	-
PortMetrics_v1.xml	-	-	-	R	-	-
Power_v1.xml	R	-	-	-	R	-
Privileges_v1.xml	R	R	R	R	R	R
Processor_v1.xml	R	-	-	R	-	R
ProcessorCollection_v1.xml	R	-	-	R	-	R
ProcessorMetrics_v1.xml	R	-	-	-	-	-
Role_v1.xml	R	R	R	R	R	R
RoleCollection_v1.xml	R	R	R	R	R	R
ServiceRoot_v1.xml	R	R	R	R	R	R
Session_v1.xml	R	R	R	R	R	R
SessionCollection_v1.xml	R	R	R	R	R	R
SessionService_v1.xml	R	R	R	R	R	R
Settings_v1.xml	O	-	-	-	-	-
SoftwareInventoryCollection_v1.xml	O	-	-	-	-	-
SoftwareInventory_v1.xml	O	-	-	-	-	-
Storage_v1.xml	R	-	-	R	-	-
StorageCollection_v1.xml	R	-	-	R	-	-
StoragePool_v1.xml	-	R	-	-	-	-

Resource	PSME Compute	PSME Storage	PSME Network	PSME PNC	PSME RMM	PSME FPGA-oF
StoragePoolCollection_v1.xml	-	R	-	-	-	-
StorageService_v1.xml	-	R	-	-	-	-
StorageServiceCollection_v1.xml	-	R	-	-	-	-
Switch_v1.xml	-	-	-	R	-	-
SwitchCollection_v1.xml	-	-	-	R	-	-
Task_v1.xml	R	R	O	R	R	R
TaskCollection_v1.xml	R	R	O	R	R	R
TaskService_v1.xml	R	R	O	R	R	R
TelemetryService_v1.xml	R	R	O	R	R	O
Thermal_v1.xml	R	-	-	-	R	-
Triggers_v1.xml	O	O	O	O	O	O
TriggersCollection_v1.xml	O	O	O	O	O	O
UpdateService_v1.xml	O	-	-	-	R	-
VLanNetworkInterface_v1.xml	-	-	R	-	R	-
VLanNetworkInterfaceCollection_v1.xml	-	-	R	-	R	-
Volume_v1.xml	-	R	-	-	-	-
VolumeCollection_v1.xml	-	R	-	-	-	-
Zone_v1.xml	-	R	-	R	-	R
ZoneCollection_v1.xml	-	R	-	R	-	R

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6.0 Common Property Description

6.1 Status

Table 185. Status Attributes

Attribute	Type	Nullable	Description
State	String	Yes	This indicates the known state of the resource, such as if it is enabled. Allowed values: refer to Section 6.2.
Health	String	Yes	This represents the health state of this resource in the absence of its dependent resources. Allowed values: refer to Section 6.3.
HealthRollup	String	Yes	This represents the overall health state from the view of this resource. Allowed values: refer to Section 6.3.

6.2 Status->State

Table 186. State Attributes

Member	Description
Enabled	This function or resource has been enabled.
Disabled	This function or resource has been disabled.
StandbyOffline	This function or resource is enabled, but awaiting an external action to activate it.
StandbySpare	This function or resource is part of a redundancy set and is awaiting a failover or other external action to activate it.
InTest	This function or resource is undergoing testing.
Starting	This function or resource is starting.
Absent	This function or resource is not present or not detected.
UnavailableOffline	This function or resource is present but cannot be used.
Deferring	The element will not process any commands but will queue new requests.
Quiesced	The element is enabled but only processes a restricted set of commands.
Updating	The element is updating and may be unavailable or degraded.

6.3 Status->Health

Table 187. Health Attributes

Member	Description
OK	Normal.
Warning	A condition exists that requires attention.
Critical	A critical condition exists that requires immediate attention.

6.4 ComputerSystem.Reset

Note: Some Reset Types defined by Redfish* are not accepted by Intel® RSD software. The following table includes them for completeness.

Table 188. ResetType Attributes

Member	Description
`On`	Turn the unit on.
`ForceOff`	Turn the unit off immediately (non-graceful shutdown).
`GracefulShutdown`	Perform a graceful shutdown and power off.
`GracefulRestart`	Perform a graceful shutdown followed by a restart of the system.
`ForceRestart`	Perform an immediate (non-graceful) shutdown, followed by a restart.
`Nmi`	Generate a Diagnostic Interrupt (usually an NMI on x86 systems) to cease normal operations, perform diagnostic actions and typically halt the system.
`ForceOn`	Turn the unit on immediately.
`PushPowerButton`	Simulate the pressing of the physical power button on this unit.
`PowerCycle`	Perform a power cycle of the unit.

6.5 BootSourceOverrideTarget/Supported

Member	Description
`None`	Boot from the normal boot device.
`Pxe`	Boot from the Pre-Boot EXecution (PXE) environment.
`Floppy`	Boot from the floppy disk drive.
`Cd`	Boot from the CD/DVD disc.
`Usb`	Boot from a USB device as specified by the system BIOS.
`Hdd`	Boot from a hard drive.
`BiosSetup`	Boot to the BIOS Setup Utility.
`Utilities`	Boot the manufacturer's Utilities program(s).
`Diags`	Boot the manufacturer's Diagnostics program.
`UefiShell`	Boot to the UEFI Shell.
`UefiTarget`	Boot to the UEFI Device specified in the `UefiTargetBootSourceOverride` property.
`SDCard`	Boot from an SD Card.
`UefiHttp`	Boot from a UEFI HTTP network location.
`RemoteDrive`	Boot from a remote drive (e.g. iSCSI).
`UefiBootNext`	Boot to the UEFI Device specified in the `BootNext` property.

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