

# Base Metrics Profile

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| Document Number    | DCIM1036      |
| Document Type:     | Specification |
| Document Status:   | Published     |
| Document Language: | E             |
| Date:              | 2017-07-07    |
| Version:           | 4.0.0         |

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# 1. Scope

The DCIM Base Metrics Profile extends the DMTF Base Metrics Profile to add Dell specific implementation requirements for power related metrics. The profile standardizes the units and description for the metrics as well as provides static methodology for the clients to query the metrics without substantial traversal of the model.

The metrics covered in this profile are:

- For power:
  - o Maximum power consumption metric in Watts,
  - o Maximum power consumption metric in Amperes,
  - o Minimum power consumption metric in Watts,
  - o Energy consumption metric in kilowatt-hours (kWh),
  - o Maximum power consumption metric in Watts for last hour, day, week,
  - o Minimum power consumption metric in Watts for last hour, day, week,
  - o Average power consumption metric in Watts for last hour, day, week,
  - o Maximum headroom power consumption metric,
  - o Instantaneous headroom power consumption metric,
- For inlet temperature
  - o Maximum inlet temperature metric for last hour, day, week, month and year,
  - o Average inlet temperature metric for last hour, day, week, month and year,
  - o Inlet temperature time spent above thresholds.
- For Out-of Band sensors i.e., CPU, Memory, IO Utilization & System Utilization
  - o Maximum utilization metric in percentage for last hour, day and week,
  - o Minimum utilization metric in percentage for last hour, day and week,
  - o Average utilization metric in percentage for last hour, day and week,
  - o Peak Values in percentage.

## 2. Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

DMTF DSP1033, Profile Registration Profile 1.0.0

DMTF DSPxxxxx, Base Metric Profile 1.0.0

Dell Lifecycle Controller Best Practices Guide v1.0

## 3. Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1. Conditional

indicates requirements to be followed strictly in order to conform to the document when the specified conditions are met

## 3.2. Mandatory

indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

## 3.3. May

indicates a course of action permissible within the limits of the document

## 3.4. Optional

indicates a course of action permissible within the limits of the document

## 3.5. Referencing profile

indicates a profile that owns the definition of this class and can include a reference to this profile in its “Related Profiles” table

## 3.6. Shall

indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

# 4. Symbols and Abbreviated Terms

## 4.1. CIM

Common Information Model

## 4.2. iDRAC

integrated Dell Remote Access Controller – management controller for blades and monolithic servers

## 4.3. CMC

Chassis Manager Controller – management controller for the modular chassis

# 5. Synopsis

Profile Name: Base Metrics

Version: 4.0.0

Organization: Dell

CIM Schema Version: 2.41 Final

Central Class: CIM\_MetricService

Scoping Class: CIM\_ComputerSystem

The Dell Base Metrics Profile is derived from the DMTF Base Metrics Profile and contains additional Dell specific implementation requirements.

Table 1 identifies profiles that are related to this profile.

**Table 1.** Related Profiles

| Profile Name         | Organization | Version | Relationship |
|----------------------|--------------|---------|--------------|
| Base Metrics Profile | DMTF         | 1.0     | Specializes  |

## 6. Description

The Dell Base Metrics Profile describes platform's power related metrics required to represent power monitoring information using the CIM model. The metrics represented by the CIM instrumentations should be the same as presented in the GUI.

Figure 1 represents the class diagram of the profile.

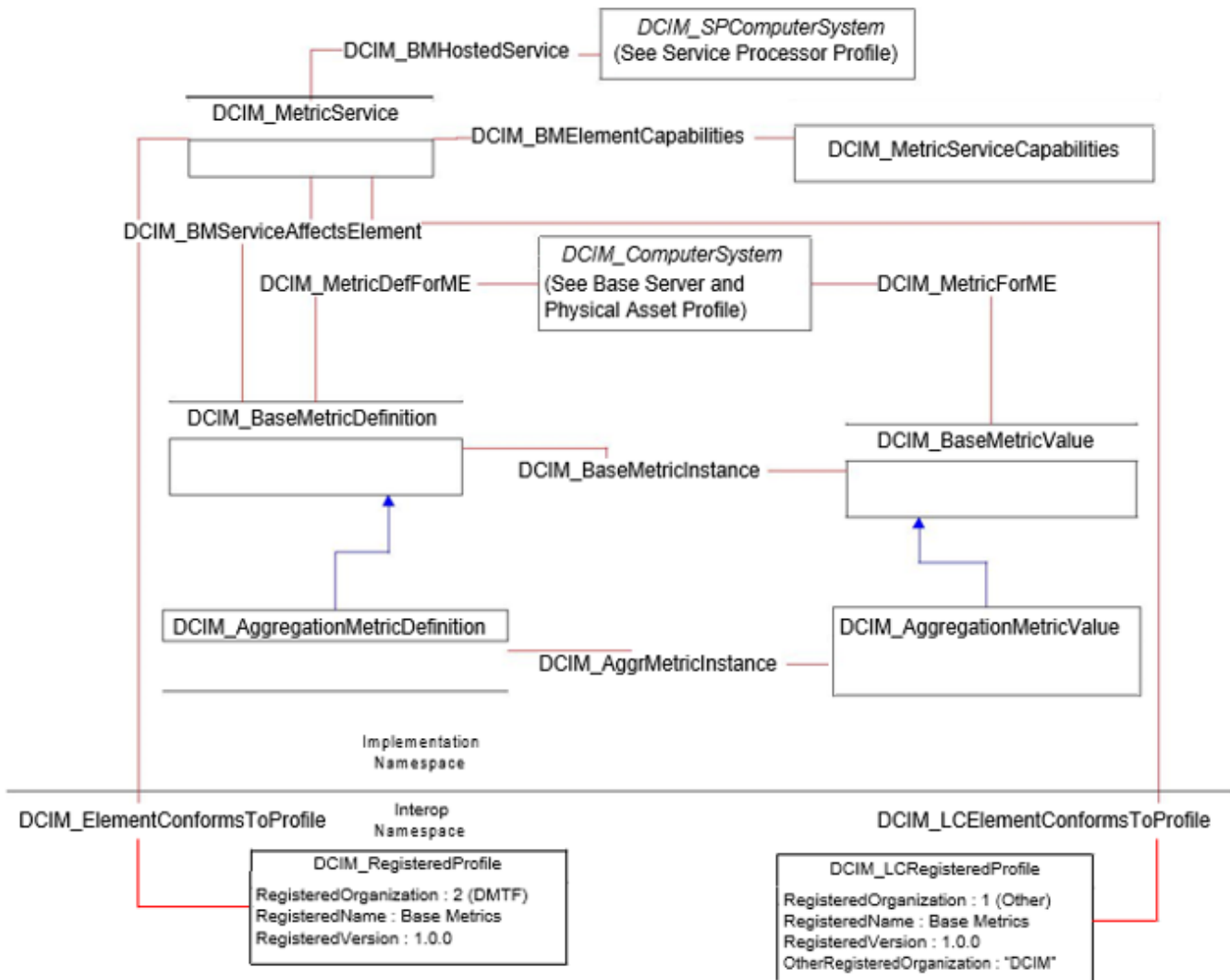


Figure 1. Class Diagram

[illegible]

The below figures describe the maximum, minimum and average power consumption for the last hour, day and week.

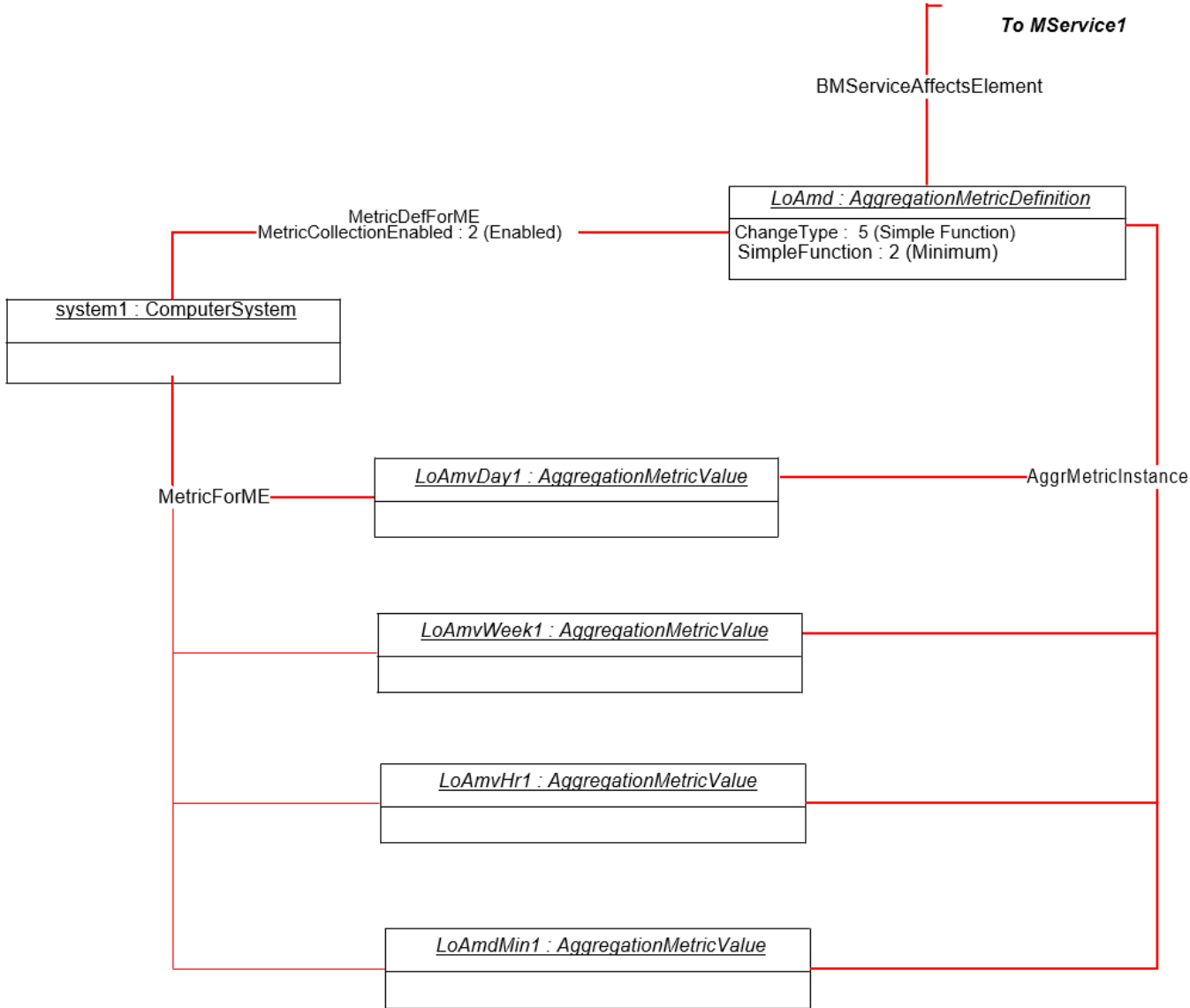
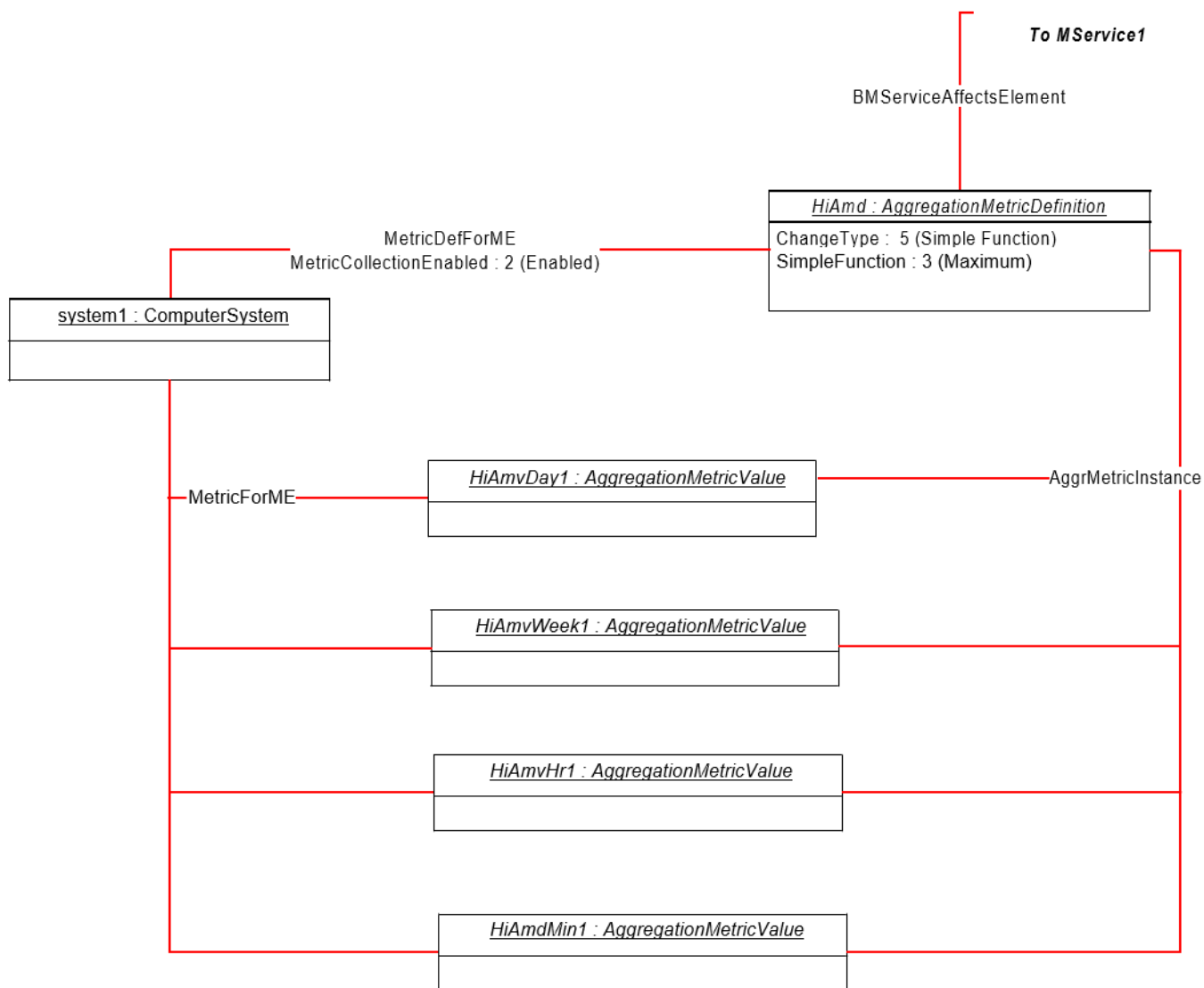
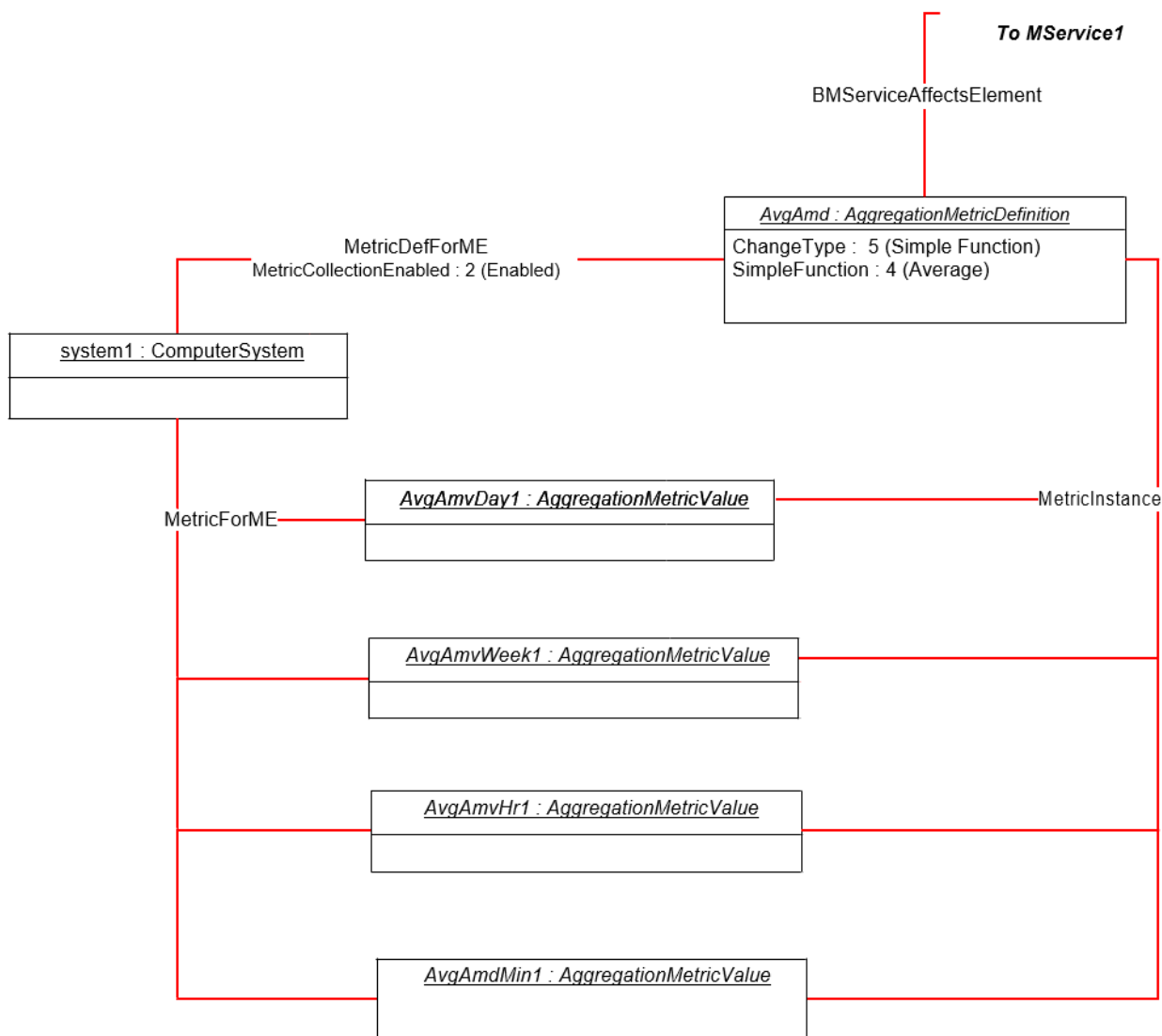


Figure 3. Minimum Power Consumption for Last Hour, Day and Week



**Figure 4. Maximum Power Consumption for Last Hour, Day and Week**



**Figure 5. Average Power Consumption for Last Hour, Day and Week**

## 7. Implementation Requirements

The requirements and guidelines for propagating and formulating certain properties of the classes discussed in this section are the Dell extensions to the requirements in the parent profile: DMTF Base Metric Profile 1.0.

**Table 2.** Class Requirements: Base Metrics Profile

| Class Name                       | Requirement | Description                                                                                                                              |
|----------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------|
| DCIM_AggregationMetricDefinition | Mandatory   | The class shall be implemented in the Implementation Namespaces. See section 7.1.1, 7.2.1, 7.3.1, 7.4.1, 7.5.1, 7.6.1, 7.9.1 and 7.10.1. |
| DCIM_AggregationMetricValue      | Mandatory   | The class shall be implemented in the Implementation Namespaces. See section 7.1.2, 7.2.2, 7.3.2, 7.4.2, 7.5.2, 7.6.2, 7.9.2 and 7.10.2. |
| DCIM_BaseMetricDefinition        | Mandatory   | The class shall be implemented in the Implementation Namespaces. See section 7.7.1, 7.8.1, 7.12.1.                                       |

| Class Name                      | Requirement | Description                                                                                                                                                   |
|---------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DCIM_BaseMetricValue            | Mandatory   | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.7.2, 7.8.2 and 7.12.2.                                                 |
| DCIM_AggrMetricInstance         | Mandatory   | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.1.1, 7.3.1, 7.4.1, 7.5.1, 7.6.1, 7.1.2, 7.3.2, 7.4.2, 7.5.2 and 7.6.2. |
| DCIM_BaseMetricInstance         | Mandatory   | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.7.1, 7.8.1, 7.7.2, and 7.8.2.                                          |
| DCIM_BMElementCapabilities      | Mandatory   | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.14 and 7.15.                                                           |
| DCIM_MetricDefForME             | Mandatory   | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.9.                                                                     |
| DCIM_MetricForME                | Mandatory   | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.1.2, 7.3.2, 7.4.2, 7.5.2, 7.6.2, 7.7.2 and 7.8.2.                      |
| DCIM_BMServiceAffectsElement    | Mandatory   | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.1.1, 7.3.1, 7.4.1, 7.5.1, 7.6.1, 7.7.1 and 7.8.1.                      |
| DCIM_MetricServiceCapabilities  | Mandatory   | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.14.                                                                    |
| DCIM_MetricService              | Mandatory   | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.15.                                                                    |
| DCIM_ElementConformsToProfile   | Mandatory   | The class shall be implemented in both the <i>Interop</i> and <i>Implementation Namespaces</i> . See section 7.15 and 7.16                                    |
| DCIM_RegisteredProfile          | Mandatory   | The class shall be implemented in the <i>Interop Namespace</i> . See section 7.16                                                                             |
| DCIM_LCElementConformsToProfile | Mandatory   | The class shall be implemented in both the <i>Interop</i> and <i>Implementation Namespaces</i> . See section 7.15 and 7.17.                                   |
| DCIM_LCRegisteredProfile        | Mandatory   | The class shall be implemented in the <i>Interop Namespace</i> . See section 7.17.                                                                            |

## 7.1. Maximum Power Consumption Metric in Watts

The following defines the requirements of the DCIM\_AggregationMetricDefinition instance for the maximum power consumption metric in watts.

### 7.1.1. DCIM\_AggregationMetricDefinition

The following clauses define the requirements for the DCIM\_AggregationMetricDefinition class.

DCIM\_AggregationMetricDefinition is a derivation of CIM\_AggregationMetricDefinition.

The DCIM\_BMServiceAffectsElement association's AffectedElement property shall reference DCIM\_AggregationMetricDefinition instances.

The DCIM\_BMServiceAffectsElement association's ElementEffects array property shall contain value 5 (Manages).

The DCIM\_MetricDefForME association's Dependant property shall reference DCIM\_AggregationMetricDefinition instances.

The DCIM\_AggrMetricInstance association's Antecedent property shall reference DCIM\_AggregationMetricDefinition instances.

#### 7.1.1.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricDefinition? cimnamespace= root/dcim"

The key property shall be the Id.

The instance Resource URI DCIM\_AggregationMetricDefinition instance shall be:  
"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM\_AggregationMetricDefinition?? cimnamespace=root/dcim+Id=<Id>"

#### 7.1.1.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricDefinition.

**Table 3.** DCIM\_AggregationMetricDefinition Operations

| Operation Name | Requirement | Required Input |
|----------------|-------------|----------------|
| Get            | Mandatory   | Instance URI   |
| Enumerate      | Mandatory   | Class URI      |
| Associators    | Mandatory   | Instance URI   |
| References     | Mandatory   | Instance URI   |

#### 7.1.1.3. Properties

The following table details the requirements for implementing the DCIM\_AggregationMetricDefinition instance representing maximum power consumption metric in Watts. The most derived class name of this instance shall be DCIM\_AggregationMetricDefinition.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 4.** DCIM\_AggregationMetricDefinition: Maximum Power Consumption Metric in Watts Properties

| Property Name     | Type    | Requirement | Additional Requirement                                         |
|-------------------|---------|-------------|----------------------------------------------------------------|
| ChangeType        | uint16  | Mandatory   | The property shall have value 5 (Simple Function).             |
| DataType          | uint16  | Mandatory   | The property shall have value 12 (uint32)                      |
| ElementName       | string  | Mandatory   | The property shall have value                                  |
|                   |         |             | "Peak Watt Power Consumption"                                  |
| GatheringType     | uint16  | Mandatory   | The property shall have value 3 (periodic)                     |
| Id                | string  | Mandatory   | The property is the key and shall have value "AggrMetricDef:0" |
| IsContinuous      | boolean | Mandatory   | The property shall have value TRUE                             |
| Name              | string  | Mandatory   | The property shall have value "DMTF:System Input Power"        |
| ProgrammaticUnits | string  | Mandatory   | The property shall have value "watt"                           |

| Property Name  | Type     | Requirement | Additional Requirement                                                                                                                    |
|----------------|----------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| SampleInterval | datetime | Mandatory   | The property value shall be in W3C representation in WS-CIM with the corresponding value equal to CIM datetime 00000000000500.000000:000. |
| SimpleFunction | uint16   | Mandatory   | The property shall have value 3 (Maximum)                                                                                                 |
| TimeScope      | uint16   | Mandatory   | The property shall have value 2 (Point)                                                                                                   |

### 7.1.2. DCIM\_AggregationMetricValue

The following clauses define the requirements for the DCIM\_AggregationMetricValue class.

DCIM\_AggregationMetricValue is a derivation of CIM\_AggregationMetricValue.

The DCIM\_AggrMetricInstance association's Dependent property shall reference DCIM\_AggregationMetricValue instances.

The DCIM\_MetricForME association's Dependent property shall reference DCIM\_AggregationMetricValue instances.

#### 7.1.2.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue? cimnamespace=root/dcim"

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_AggregationMetricValue instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue?? cimnamespace=root/dcim+InstanceID=<InstanceID>"

#### 7.1.2.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricValue.

**Table 5.** DCIM\_AggregationMetricValue Operations

| Operation Name | Requirement | Required Input |
|----------------|-------------|----------------|
| Get            | Mandatory   | Instance URI   |
| Enumerate      | Mandatory   | Class URI      |
| Associators    | Mandatory   | Instance URI   |
| References     | Mandatory   | Instance URI   |

#### 7.1.2.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricValue instance representing maximum power consumption metric in Watts. The most derived class name of this instance shall be DCIM\_AggregationMetricValue.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 6.** DCIM\_AggregationMetricValue: Maximum Power Consumption Metric in Watts Properties

| Property Name       | Type     | Requirement | Additional Requirements                                                                                                                       |
|---------------------|----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| AggregationDuration | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current Time minus Start time of MaxPeak Reading. |

| Property Name        | Type     | Requirement | Additional Requirements                                                                                        |
|----------------------|----------|-------------|----------------------------------------------------------------------------------------------------------------|
| AggregationTimeStamp | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current timestamp. |
| BreakdownDimension   | string   | Mandatory   | The property shall have value NULL                                                                             |
| BreakdownValue       | string   | Mandatory   | The property shall have value NULL                                                                             |
| InstanceID           | string   | Mandatory   | The property shall have value "DCIM:System:Max:Power:Cont"                                                     |
| MetricDefinitionId   | string   | Mandatory   | The property shall have value "AggrMetricDef:0"                                                                |
| MetricValue          | string   | Mandatory   | The property shall have value equal to the MaxPeak Watts Reading in whole watts                                |
| TimeStamp            | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to the Current Time.  |
| Volatile             | boolean  | Mandatory   | The property shall have value TRUE.                                                                            |

## 7.2. Maximum Headroom Power Consumption Metric in Watts

The following defines the requirements for the maximum headroom power consumption metric.

### 7.2.1. DCIM\_AggregationMetricDefinition

See section 7.1.1.

### 7.2.2. DCIM\_AggregationMetricValue

The following clauses define the requirements for the DCIM\_AggregationMetricValue class.

DCIM\_AggregationMetricValue is a derivation of CIM\_AggregationMetricValue.

The DCIM\_AggrMetricInstance association's Dependent property shall reference DCIM\_AggregationMetricValue instances.

The DCIM\_MetricForME association's Dependent property shall reference DCIM\_AggregationMetricValue instances.

#### 7.2.2.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue? cimnamespace=root/dcim"

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_AggregationMetricValue instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue?? cimnamespace=root/dcim+InstanceID=<InstanceID>"

#### 7.2.2.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricValue.

**Table 7.** DCIM\_AggregationMetricValue Operations

| Operation Name | Requirement | Required Input |
|----------------|-------------|----------------|
| Get            | Mandatory   | Instance URI   |
| Enumerate      | Mandatory   | Class URI      |

| Operation Name | Requirement | Required Input |
|----------------|-------------|----------------|
| Associators    | Mandatory   | Instance URI   |
| References     | Mandatory   | Instance URI   |

### 7.2.2.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricValue instance representing peak (maximum) headroom power metric in Watts. The most derived class name of this instance shall be DCIM\_AggregationMetricValue.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 8.** DCIM\_AggregationMetricValue: Maximum Power Consumption Metric in Watts Properties

| Property Name        | Type     | Requirement | Additional Requirements                                                                                                                       |
|----------------------|----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| AggregationDuration  | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current Time minus Start time of MaxPeak Reading. |
| AggregationTimeStamp | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current timestamp.                                |
| BreakdownDimension   | string   | Mandatory   | The property shall be NULL                                                                                                                    |
| BreakdownValue       | string   | Mandatory   | The property shall be NULL                                                                                                                    |
| InstanceId           | string   | Mandatory   | The property shall have value "DCIM:System:Max:PowerHdrm:Cont"                                                                                |
| MetricDefinitionId   | string   | Mandatory   | The property shall have value "AggrMetricDef:0"                                                                                               |
| MetricValue          | string   | Mandatory   | The property shall have value equal to the Peak Headroom Watts Reading in whole watts                                                         |
| TimeStamp            | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to the Current Time.                                 |
| Volatile             | boolean  | Mandatory   | The property shall have value TRUE.                                                                                                           |

## 7.3. Maximum Power Consumption Metric in Amperes

The following defines the requirements of the DCIM\_AggregationMetricDefinition instance for the maximum power consumption metric in amperes.

### 7.3.1. DCIM\_AggregationMetricDefinition

The following clauses define the requirements for the DCIM\_AggregationMetricDefinition class.

DCIM\_AggregationMetricDefinition is a derivation of CIM\_AggregationMetricDefinition.

The DCIM\_BMServiceAffectsElement association's AffectedElement property shall reference DCIM\_AggregationMetricDefinition instances.

The DCIM\_BMServiceAffectsElement association's ElementEffects array property shall contain value 5 (Manages).

The DCIM\_MetricDefForME association's Dependant property shall reference DCIM\_AggregationMetricDefinition instances.

The DCIM\_AggrMetricInstance association's Antecedent property shall reference DCIM\_AggregationMetricDefinition instances.

#### 7.3.1.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricDefinition? cimnamespace= root/dcim"

The key property shall be the Id.

The instance Resource URI DCIM\_AggregationMetricDefinition instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM\_AggregationMetricDefinition?? cimnamespace=root/dcim+Id=<Id>"

#### 7.3.1.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricDefinition.

**Table 9.** DCIM\_AggregationMetricDefinition Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

#### 7.3.1.3. Properties

The following table details the requirements for implementing the DCIM\_AggregationMetricDefinition instance representing max power consumption metric in Amperes. The most derived class name of this instance shall be DCIM\_AggregationMetricDefinition.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 10.** DCIM\_AggregationMetricDefinition: Maximum Power Consumption Metric in Amperes Properties

| Property Name     | Type     | Requirement | Additional Requirements                                                                                                                    |
|-------------------|----------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| ChangeType        | uint16   | Mandatory   | The property shall have value 5 (Simple Function)                                                                                          |
| DataType          | uint16   | Mandatory   | The property shall have value 12 (uint32)                                                                                                  |
| ElementName       | string   | Mandatory   | The property shall have value "Peak Amp Power Consumption"                                                                                 |
| GatheringType     | uint16   | Mandatory   | The property shall have value 3 (periodic)                                                                                                 |
| Id                | string   | Mandatory   | The property shall have value "AggrMetricDef:3"                                                                                            |
| IsContinuous      | boolean  | Mandatory   | The property shall have value TRUE                                                                                                         |
| Name              | string   | Mandatory   | The property shall have value "DMTF: System Input Power"                                                                                   |
| ProgrammaticUnits | string   | Mandatory   | The property shall have value "ampere * 10 <sup>-1</sup> "                                                                                 |
| SampleInterval    | datetime | Mandatory   | The property value shall be in W3C representation in WS-CIM with the corresponding value equal to CIM datetime 000000000000500.000000:000. |
| SimpleFunction    | uint16   | Mandatory   | The property shall have value 3 (Maximum)                                                                                                  |
| TimeScope         | uint16   | Mandatory   | The property shall have value 2 (Point)                                                                                                    |

### 7.3.2. DCIM\_AggregationMetricValue

The following clauses define the requirements for the DCIM\_AggregationMetricValue class.

DCIM\_AggregationMetricValue is a derivation of CIM\_AggregationMetricValue.

The DCIM\_AggrMetricInstance association's Dependent property shall reference DCIM\_AggregationMetricValue instances.

The DCIM\_MetricForME association's Dependent property shall reference DCIM\_AggregationMetricValue instances.

#### 7.3.2.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue? cimnamespace=root/dcim"

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_AggregationMetricValue instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue?? cimnamespace=root/dcim+InstanceID=<InstanceID>"

#### 7.3.2.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricValue.

**Table 11.** DCIM\_AggregationMetricValue Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

#### 7.3.2.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricValue instance representing max power consumption metric in amperes. The most derived class name of this instance shall be DCIM\_AggregationMetricValue.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 12.** DCIM\_AggregationMetricValue: Maximum Power Consumption Metric in Amperes Properties

| Property Name        | Type     | Requirement | Additional Requirements                                                                                                                      |
|----------------------|----------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| AggregationDuration  | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current Time minus Start time of MaxPeak Reading |
| AggregationTimeStamp | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current timestamp.                               |
| InstanceID           | string   | Mandatory   | The property shall have value "DCIM:System:Max:Current:Cont"                                                                                 |
| MetricDefinitionId   | string   | Mandatory   | The property shall have value "AggrMetricDef:3"                                                                                              |
| MetricValue          | string   | Mandatory   | The property shall have value equal to the MaxPeak Amp Reading.                                                                              |

| Property Name | Type     | Requirement | Additional Requirements                                                                                  |
|---------------|----------|-------------|----------------------------------------------------------------------------------------------------------|
| TimeStamp     | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current Time |
| Volatile      | boolean  | Mandatory   | The property shall have value TRUE                                                                       |

## 7.4. Maximum Power Consumption Metric for Last Hour, Day and Week

The following defines the requirements of the DCIM\_AggregationMetricValue instance for the maximum power consumption metric for last hour, day, and week.

One instance of DCIM\_AggregationMetricValue shall be instantiated for maximum power consumption last hour.

One instance of DCIM\_AggregationMetricValue shall be instantiated for maximum power consumption last day.

One instance of DCIM\_AggregationMetricValue shall be instantiated for maximum power consumption last week.

### 7.4.1. DCIM\_AggregationMetricDefinition

The following clauses define the requirements for the DCIM\_AggregationMetricDefinition class.

DCIM\_AggregationMetricDefinition is a derivation of CIM\_AggregationMetricDefinition.

The DCIM\_BMServiceAffectsElement association's AffectedElement property shall reference DCIM\_AggregationMetricDefinition instances.

The DCIM\_BMServiceAffectsElement association's ElementEffects array property shall contain value 5 (Manages).

The DCIM\_MetricDefForME association's Dependant property shall reference DCIM\_AggregationMetricDefinition instances.

The DCIM\_AggrMetricInstance association's Antecedent property shall reference DCIM\_AggregationMetricDefinition instances.

#### 7.4.1.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricDefinition? cimnamespace= root/dcim"

The key property shall be the Id.

The instance Resource URI DCIM\_AggregationMetricDefinition instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM\_AggregationMetricDefinition?? cimnamespace=root/dcim+Id=<Id>"

#### 7.4.1.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricDefinition.

**Table 13.** DCIM\_AggregationMetricDefinition Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.4.1.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricDefinition instance representing maximum power consumption metric in Watts for Last Hour, Day and Week. The most derived class name of this instance shall be DCIM\_AggregationMetricDefinition.

If the column “Property Name” matches the property name, the property either shall have the value denoted in the corresponding column “Additional Requirements”, or shall be implemented according to the requirements in the corresponding column “Additional Requirements”.

**Table 14.** DCIM\_AggregationMetricDefinition: Maximum Power Consumption Metric for Last Hour, Day and Week Properties

| Property Name     | Type     | Requirement | Additional Requirements                                                     |
|-------------------|----------|-------------|-----------------------------------------------------------------------------|
| ChangeType        | uint16   | Mandatory   | The property shall have value 5 (Simple Function)                           |
| DataType          | uint16   | Mandatory   | The property shall have value 12 (uint32)                                   |
| ElementName       | string   | Mandatory   | The property shall have value “Timed Peak Power Consumption”                |
| GatheringType     | uint16   | Mandatory   | The property shall have value 3 (periodic)                                  |
| Id                | string   | Mandatory   | The property shall have value “AggrMetricDef:4”                             |
| IsContinuous      | boolean  | Mandatory   | The property shall have value TRUE                                          |
| Name              | string   | Mandatory   | The property shall have value “DMTF:System Input Power”                     |
| ProgrammaticUnits | string   | Mandatory   | The property shall have value “watt”                                        |
| SampleInterval    | datetime | Mandatory   | The property shall represent the datetime interval for sampling the metric. |
| SimpleFunction    | uint16   | Mandatory   | The property shall have value 3 (Maximum)                                   |
| TimeScope         | uint16   | Mandatory   | The property shall have value 2 (Point)                                     |

### 7.4.2. DCIM\_AggregationMetricValue

The following clauses define the requirements for the DCIM\_AggregationMetricValue class.

DCIM\_AggregationMetricValue is a derivation of CIM\_AggregationMetricValue.

The DCIM\_AggrMetricInstance association’s Dependent property shall reference DCIM\_AggregationMetricValue instances.

The DCIM\_MetricForME association’s Dependent property shall reference DCIM\_AggregationMetricValue instances.

#### 7.4.2.1. Resource URIs for WinRM®

The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue? cimnamespace=root/dcim”

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_AggregationMetricValue instance shall be:

“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue?? cimnamespace=root/dcim+InstanceID=<InstanceID>”

#### 7.4.2.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricValue.

**Table 15.** DCIM\_AggregationMetricValue Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.4.2.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricValue instance representing maximum power consumption metric in Watts for Last Hour, Day and Week. The most derived class name of this instance shall be DCIM\_AggregationMetricValue.

If the column “Property Name” matches the property name, the property either shall have the value denoted in the corresponding column “Additional Requirements”, or shall be implemented according to the requirements in the corresponding column “Additional Requirements”.

**Table 16.** DCIM\_AggregationMetricValue: Maximum Power Consumption Metric for Last Hour, Day and Week Properties

| Property Name        | Type     | Requirement | Additional Requirements                                                                                                                                                                      |
|----------------------|----------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AggregationDuration  | datetime | Mandatory   | shall be in W3C representation in WS-CIM with the corresponding value equal to 1 hour or 1 day or 1 week.                                                                                    |
| AggregationTimeStamp | datetime | Mandatory   | shall be in W3C representation in WS-CIM with the corresponding value equal to current timestamp.                                                                                            |
| InstanceId           | string   | Mandatory   | shall have one of the following values: <ul style="list-style-type: none"> <li>• DCIM:System:Max:Power:1H</li> <li>• DCIM:System:Max:Power:1D</li> <li>• DCIM:System:Max:Power:1W</li> </ul> |
| MetricDefinitionId   | string   | Mandatory   | "AggrMetricDef:4"                                                                                                                                                                            |
| MetricValue          | string   | Mandatory   | shall be equal to the collection value for last 1 hour or 1 day or 1 week in whole watts                                                                                                     |
| TimeStamp            | datetime | Mandatory   | Shall be in W3C representation in WS-CIM with the corresponding value equal to the value collection timestamp.                                                                               |
| Volatile             | boolean  | Mandatory   | TRUE                                                                                                                                                                                         |

## 7.5. Minimum Power Consumption Metric for Last Hour, Day and Week

The following defines the requirements of the DCIM\_AggregationMetricValue instance for the minimum power consumption metric for last hour, day, and week.

One instance of DCIM\_AggregationMetricValue shall be instantiated for minimum power consumption last hour.

One instance of DCIM\_AggregationMetricValue shall be instantiated for minimum power consumption last day.

One instance of DCIM\_AggregationMetricValue shall be instantiated for minimum power consumption last week.

### 7.5.1. DCIM\_AggregationMetricDefinition

The following clauses define the requirements for the DCIM\_AggregationMetricDefinition class.

DCIM\_AggregationMetricDefinition is a derivation of CIM\_AggregationMetricDefinition.

The DCIM\_BMServiceAffectsElement association's AffectedElement property shall reference DCIM\_AggregationMetricDefinition instances.

The DCIM\_BMServiceAffectsElement association's ElementEffects array property shall contain value 5 (Manages).

The DCIM\_MetricDefForME association's Dependent property shall reference DCIM\_AggregationMetricDefinition instances.

The DCIM\_AggrMetricInstance association's Antecedent property shall reference DCIM\_AggregationMetricDefinition instances.

#### 7.5.1.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricDefinition? cimnamespace= root/dcim"

The key property shall be the Id.

The instance Resource URI DCIM\_AggregationMetricDefinition instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM\_AggregationMetricDefinition?? cimnamespace=root/dcim+Id=<Id>"

#### 7.5.1.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricDefinition.

**Table 17.** DCIM\_AggregationMetricDefinition Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

#### 7.5.1.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricDefinition instance representing minimum power consumption metric in Watts for Last Hour, Day and Week. The most derived class name of this instance shall be DCIM\_AggregationMetricDefinition.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 18.** DCIM\_AggregationMetricDefinition: Minimum Power Consumption Metric in Watts for Last Hour, Day and Week Properties

| Property Name | Type    | Requirement | Additional Requirements                                         |
|---------------|---------|-------------|-----------------------------------------------------------------|
| ChangeType    | uint16  | Mandatory   | The property shall have value 5 (Simple Function)               |
| DataType      | uint16  | Mandatory   | The property shall have value 12 (uint32)                       |
| ElementName   | string  | Mandatory   | The property shall have value "Timed Minimum Power Consumption" |
| GatheringType | uint16  | Mandatory   | The property shall have value 3 (periodic)                      |
| Id            | string  | Mandatory   | The property shall have value "AggrMetricDef:1"                 |
| IsContinuous  | boolean | Mandatory   | The property shall have value TRUE                              |
| Name          | string  | Mandatory   | The property shall have value "DMTF:System Input Power"         |

| Property Name     | Type     | Requirement | Additional Requirements                                                     |
|-------------------|----------|-------------|-----------------------------------------------------------------------------|
| ProgrammaticUnits | string   | Mandatory   | The property shall have value "watt"                                        |
| SampleInterval    | Datetime | Mandatory   | The property shall represent the datetime interval for sampling the metric. |
| SimpleFunction    | uint16   | Mandatory   | The property shall have value 2 (Minimum)                                   |
| TimeScope         | uint16   | Mandatory   | The property shall have value 2 (Point)                                     |

## 7.5.2. DCIM\_AggregationMetricValue

The following clauses define the requirements for the DCIM\_AggregationMetricValue class.

DCIM\_AggregationMetricValue is a derivation of CIM\_AggregationMetricValue.

The DCIM\_AggrMetricInstance association's Dependent property shall reference DCIM\_AggregationMetricValue instances.

The DCIM\_MetricForME association's Dependent property shall reference DCIM\_AggregationMetricValue instances.

### 7.5.2.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue? cimnamespace=root/dcim"

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_AggregationMetricValue instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue?? cimnamespace=root/dcim+InstanceID=<InstanceID>"

### 7.5.2.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricValue.

**Table 19.** DCIM\_AggregationMetricValue Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.5.2.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricValue instance representing minimum power consumption metric in Watts for Last Hour, Day and Week. The most derived class name of this instance shall be DCIM\_AggregationMetricValue.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 20.** DCIM\_AggregationMetricValue: Minimum Power Consumption Metric in Watts for Last Hour, Day and Week Properties

| Property Name       | Type     | Requirement | Additional Requirements                                                                                                |
|---------------------|----------|-------------|------------------------------------------------------------------------------------------------------------------------|
| AggregationDuration | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to 1 hour or 1 day or 1 week. |

| Property Name        | Type     | Requirement | Additional Requirements                                                                                                                                                                                                      |
|----------------------|----------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AggregationTimeStamp | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to current timestamp.                                                                                                               |
| InstanceID           | string   | Mandatory   | The property shall have value have one of the following values: <ul style="list-style-type: none"> <li>• “DCIM:System:Min:Power:1H”,</li> <li>• “DCIM:System:Min:Power:1D”,</li> <li>• “DCIM:System:Min:Power:1W”</li> </ul> |
| MetricDefinitionId   | string   | Mandatory   | The property shall have value "AggrMetricDef:1"                                                                                                                                                                              |
| MetricValue          | string   | Mandatory   | The property shall have value equal to the collection value for last 1 hour or 1 day or 1 week in whole watts                                                                                                                |
| TimeStamp            | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to the value collection timestamp.                                                                                                  |
| Volatile             | boolean  | Mandatory   | The property shall have value TRUE.                                                                                                                                                                                          |

## 7.6. Average Power Consumption Metric for Last Hour, Day and Week

The following defines the requirements of the DCIM\_AggregationMetricValue instance for the average power consumption metric for last hour, day, and week.

One instance of DCIM\_AggregationMetricValue shall be instantiated for average power consumption last hour.

One instance of DCIM\_AggregationMetricValue shall be instantiated for average power consumption last day.

One instance of DCIM\_AggregationMetricValue shall be instantiated for average power consumption last week.

### 7.6.1. DCIM\_AggregationMetricDefinition

The following clauses define the requirements for the DCIM\_AggregationMetricDefinition class.

DCIM\_AggregationMetricDefinition is a derivation of CIM\_AggregationMetricDefinition.

The DCIM\_BMServiceAffectsElement association's AffectedElement property shall reference DCIM\_AggregationMetricDefinition instances.

The DCIM\_BMServiceAffectsElement association's ElementEffects array property shall contain value 5 (Manages).

The DCIM\_MetricDefForME association's Dependent property shall reference DCIM\_AggregationMetricDefinition instances.

The DCIM\_AggrMetricInstance association's Antecedent property shall reference DCIM\_AggregationMetricDefinition instances.

#### 7.6.1.1. Resource URIs for WinRM®

The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricDefinition? cimnamespace= root/dcim”

The key property shall be the Id.

The instance Resource URI DCIM\_AggregationMetricDefinition instance shall be:

“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM\_AggregationMetricDefinition?? cimnamespace=root/dcim+Id=<Id>”

### 7.6.1.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricDefinition.

**Table 21.** DCIM\_AggregationMetricDefinition Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.6.1.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricDefinition instance representing average power consumption metric in Watts for Last Hour, Day and Week. The most derived class name of this instance shall be DCIM\_AggregationMetricDefinition.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 22.** DCIM\_AggregationMetricDefinition: Average Power Consumption Metric in Watts for Last Hour, Day and Week Properties

| Property Name     | Type     | Requirement | Additional Requirements                                                     |
|-------------------|----------|-------------|-----------------------------------------------------------------------------|
| ChangeType        | uint16   | Mandatory   | The property shall have value 5 (Simple Function)                           |
| DataType          | uint16   | Mandatory   | The property shall have value 12 (uint32)                                   |
| ElementName       | string   | Mandatory   | The property shall have value "Timed Average Power Consumption"             |
| GatheringType     | uint16   | Mandatory   | The property shall have value 3 (periodic)                                  |
| Id                | string   | Mandatory   | The property shall have value "AggrMetricDef:2"                             |
| IsContinuous      | boolean  | Mandatory   | The property shall have value TRUE                                          |
| Name              | string   | Mandatory   | The property shall have value "DMTF:System Input Power"                     |
| ProgrammaticUnits | string   | Mandatory   | The property shall have value "watt"                                        |
| SampleInterval    | datetime | Mandatory   | The property shall represent the datetime interval for sampling the metric. |
| SimpleFunction    | uint16   | Mandatory   | The property shall have value 4 (Average)                                   |
| TimeScope         | uint16   | Mandatory   | The property shall have value 2 (Point)                                     |

### 7.6.2. DCIM\_AggregationMetricValue

The following clauses define the requirements for the DCIM\_AggregationMetricValue class.

DCIM\_AggregationMetricValue is a derivation of CIM\_AggregationMetricValue.

The DCIM\_AggrMetricInstance association's Dependent property shall reference DCIM\_AggregationMetricValue instances.

The DCIM\_MetricForME association's Dependent property shall reference DCIM\_AggregationMetricValue instances.

### 7.6.2.1. Resource URIs for WinRM®

The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue? cimnamespace=root/dcim”

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_AggregationMetricValue instance shall be:  
“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue??  
cimnamespace=root/dcim+InstanceID=<InstanceID>”

### 7.6.2.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricValue.

**Table 23.** DCIM\_AggregationMetricValue Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.6.2.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricValue instance representing average power consumption metric in Watts for Last Hour, Day and Week. The most derived class name of this instance shall be DCIM\_AggregationMetricValue.

If the column “Property Name” matches the property name, the property either shall have the value denoted in the corresponding column “Additional Requirements”, or shall be implemented according to the requirements in the corresponding column “Additional Requirements”.

**Table 24.** DCIM\_AggregationMetricValue: Average Power Consumption Metric in Watts for Last Hour, Day and Week Properties

| Property Name        | Type     | Requirement | Additional Requirements                                                                                                                                                                                 |
|----------------------|----------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AggregationDuration  | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to 1 hour or 1 day or 1 week.                                                                                  |
| AggregationTimeStamp | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to current timestamp.                                                                                          |
| InstanceID           | string   | Mandatory   | The property shall have one of the below values: <ul style="list-style-type: none"><li>• “DCIM:System:Avg:Power:1H”</li><li>• “DCIM:System:Avg:Power:1D”</li><li>• “DCIM:System:Avg:Power:1W”</li></ul> |
| MetricDefinitionId   | string   | Mandatory   | The property shall have value “AggrMetricDef:2”                                                                                                                                                         |
| MetricValue          | datetime | Mandatory   | The property shall be equal to the collection value for last 1 hour or 1 day or 1 week in whole watts                                                                                                   |
| Volatile             | boolean  | Mandatory   | The property shall have value TRUE.                                                                                                                                                                     |

## 7.7. Energy Consumption Metric

The following defines the requirements of the DCIM\_BaseMetricDefinition instance of the energy consumption metric.

### 7.7.1. DCIM\_BaseMetricDefinition

The following clauses define the requirements for the DCIM\_BaseMetricDefinition class.

DCIM\_BaseMetricDefinition is derived from CIM\_BaseMetricDefinition.

The DCIM\_BMServiceAffectsElement association's AffectedElement property shall reference DCIM\_BaseMetricDefinition instances.

The DCIM\_BMServiceAffectsElement association's ElementEffects array property shall contain value 5 (Manages).

The DCIM\_MetricDefForME association's Dependent property shall reference DCIM\_BaseMetricDefinition instances.

The DCIM\_MetricDefForME association's MetricCollectionEnabled property shall have value 2 (Enabled).

The DCIM\_BaseMetricInstance association's Antecedent property shall reference DCIM\_BaseMetricDefinition instances.

#### 7.7.1.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricDefinition? cimnamespace=root/dcim"

The key property shall be the Id.

The instance Resource URI for DCIM\_BaseMetricDefinition instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricDefinition?? cimnamespace=root/dcim+Id=<Id>"

#### 7.7.1.2. Operations

The following table details the implemented operations on DCIM\_BaseMetricDefinition.

**Table 25.** DCIM\_BaseMetricDefinition Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

#### 7.7.1.3. Properties

The following table details the requirements for implementing DCIM\_BaseMetricDefinition instance representing energy consumption metric. The most derived class name of this instance shall be DCIM\_BaseMetricDefinition.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 26.** DCIM\_BaseMetricDefinition: Energy Consumption Metric Properties

| Property Name | Type   | Requirement | Additional Requirements                   |
|---------------|--------|-------------|-------------------------------------------|
| ChangeType    | uint16 | Mandatory   | The property shall have value 3 (Counter) |
| DataType      | uint16 | Mandatory   | The property shall have value 12 (uint32) |

| Property Name     | Type     | Requirement | Additional Requirements                                                                                                                        |
|-------------------|----------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| ElementName       | string   | Mandatory   | The property shall have value "Energy Consumption"                                                                                             |
| GatheringType     | uint16   | Mandatory   | The property shall have value 3 (periodic)                                                                                                     |
| Id                | string   | Mandatory   | The property shall have value "DCIM:BaseMetricDefinition:1"                                                                                    |
| IsContinuous      | boolean  | Mandatory   | The property shall have value TRUE.                                                                                                            |
| Name              | string   | Mandatory   | The property shall have value "DMTF:System Aggregate Input Energy"                                                                             |
| ProgrammaticUnits | string   | Mandatory   | The property shall have value "watt * hour * 10^3"                                                                                             |
| SampleInterval    | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to 000000000000500.000000:000 in CIM datetime format. |
| TimeScope         | uint16   | Mandatory   | The property shall have value 4 (Startup Interval).                                                                                            |

## 7.7.2. DCIM\_BaseMetricValue

The following clauses define the requirements for the DCIM\_BaseMetricValue class. DCIM\_BaseMetricValue is derived from CIM\_BaseMetricValue.

The DCIM\_BaseMetricInstance association's Dependent property shall reference DCIM\_BaseMetricValue instances.

The DCIM\_MetricForME association's Dependent property shall reference DCIM\_BaseMetricValue instances.

### 7.7.2.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricValue? cimnamespace=root/dcim"

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_BaseMetricValue instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricValue?? cimnamespace=root/dcim+InstanceID=<InstanceID>"

### 7.7.2.2. Operations

The following table details the implemented operations on DCIM\_BaseMetricValue.

**Table 27.** DCIM\_BaseMetricValue Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.7.2.3. Properties

The following table details the requirements for implementing DCIM\_BaseMetricValue instance representing energy consumption metric. The most derived class name of this instance shall be DCIM\_BaseMetricValue.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 28.** DCIM\_BaseMetricValue: Energy Consumption Metric in Amperes Properties

| Property Name      | Type     | Requirement | Additional Requirements                                                                                                                              |
|--------------------|----------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Duration           | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current timestamp minus Start Time of cumulative reading |
| InstanceID         | string   | Mandatory   | The property shall have value "DCIM:System:Point:Energy:Cont"                                                                                        |
| MetricDefinitionId | string   | Mandatory   | The property shall have value "DCIM:BaseMetricDefinition:1"                                                                                          |
| MetricValue        | string   | Mandatory   | The property shall have value be equal to the value of the cumulative reading in kilowatt-hour (kWh).                                                |
| TimeStamp          | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current timestamp                                        |
| Volatile           | boolean  | Mandatory   | The property shall have value TRUE                                                                                                                   |

## 7.8. Instantaneous Power Consumption Headroom Metric

The following defines the requirements for the instantaneous power consumption headroom metric.

### 7.8.1. DCIM\_BaseMetricDefinition

The following clauses define the requirements for the DCIM\_BaseMetricDefinition class.

DCIM\_BaseMetricDefinition is derived from CIM\_BaseMetricDefinition.

#### 7.8.1.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricDefinition? cimnamespace=root/dcim"

The key property shall be the Id.

The instance Resource URI for DCIM\_BaseMetricDefinition instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricDefinition?? cimnamespace=root/dcim+Id=<Id>"

#### 7.8.1.2. Operations

The following table details the implemented operations on DCIM\_BaseMetricDefinition.

**Table 29.** DCIM\_BaseMetricDefinition Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

#### 7.8.1.3. Properties

The following table details the requirements for implementing DCIM\_BaseMetricDefinition instance representing the instantaneous power consumption metric. The most derived class name of this instance shall be DCIM\_BaseMetricDefinition.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 30.** DCIM\_BaseMetricDefinition: Instantaneous Power Metric Properties

| Property Name     | Type     | Requirement | Additional Requirements                                                                                                                       |
|-------------------|----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| ChangeType        | uint16   | Mandatory   | The property shall have value 4 (Gauge)                                                                                                       |
| DataType          | uint16   | Mandatory   | The property shall have value 12 (uint32)                                                                                                     |
| ElementName       | string   | Mandatory   | The property shall have value "Instantaneous Power"                                                                                           |
| GatheringType     | uint16   | Mandatory   | The property shall have value 3 (periodic)                                                                                                    |
| ID                | string   | Mandatory   | The property shall have value "DCIM:System:Point:Power"                                                                                       |
| IsContinuous      | boolean  | Mandatory   | The property shall have value TRUE                                                                                                            |
| Name              | string   | Mandatory   | The property shall have value "DMTF:System Input Power"                                                                                       |
| ProgrammaticUnits | string   | Mandatory   | The property shall have value "watt"                                                                                                          |
| SampleInterval    | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to 00000000000500.000000:000 in CIM datetime format. |
| TimeScope         | uint16   | Mandatory   | The property shall have value 2 (Point)                                                                                                       |

## 7.8.2. DCIM\_BaseMetricValue

The following clauses define the requirements for the DCIM\_BaseMetricValue class. DCIM\_BaseMetricValue is derived from CIM\_BaseMetricValue.

### 7.8.2.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricValue? cimnamespace=root/dcim"

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_BaseMetricValue instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricValue?? cimnamespace=root/dcim+InstanceID=<InstanceID>"

### 7.8.2.2. Operations

The following table details the implemented operations on DCIM\_BaseMetricValue.

**Table 31.** DCIM\_BaseMetricValue Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.8.2.3. Properties

The following table details the requirements for implementing DCIM\_BaseMetricValue instance representing the instantaneous power consumption headroom metric. The most derived class name of this instance shall be DCIM\_BaseMetricValue.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 32.** DCIM\_BaseMetricValue: Instantaneous Power Consumption Headroom Metric in Amperes Properties

| Property Name      | Type     | Requirement | Additional Requirements                                                                                       |
|--------------------|----------|-------------|---------------------------------------------------------------------------------------------------------------|
| Duration           | datetime | Mandatory   | The property shall be NULL.                                                                                   |
| InstanceID         | string   | Mandatory   | The property shall have value "DCIM:System:Point:PowerHdrm:Cont"                                              |
| MetricDefinitionId | string   | Mandatory   | The property shall have value "DCIM:System:Point:Power"                                                       |
| MetricValue        | string   | Mandatory   | The property shall have value equal to the value of the instantaneous power headroom in watts.                |
| TimeStamp          | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current timestamp |
| Volatile           | Boolean  | Mandatory   | The property shall have value TRUE                                                                            |

## 7.9. Maximum Inlet Temperature Metric for Last Hour, Day, Week, Month and Year

The following defines the requirements of the DCIM\_AggregationMetricValue instance for the maximum inlet temperature metric for the last hour, day, week, month and year.

One instance of DCIM\_AggregationMetricValue shall be instantiated for maximum inlet temperature last hour.

One instance of DCIM\_AggregationMetricValue shall be instantiated for maximum inlet temperature last day.

One instance of DCIM\_AggregationMetricValue shall be instantiated for maximum inlet temperature last week.

One instance of DCIM\_AggregationMetricValue shall be instantiated for maximum inlet temperature last month.

One instance of DCIM\_AggregationMetricValue shall be instantiated for maximum inlet temperature last year.

### 7.9.1. DCIM\_AggregationMetricDefinition

The following clauses define the requirements for the DCIM\_AggregationMetricDefinition class.

DCIM\_AggregationMetricDefinition is a derivation of CIM\_AggregationMetricDefinition.

#### 7.9.1.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricDefinition? cimnamespace= root/dcim"

The key property shall be the Id.

The instance Resource URI DCIM\_AggregationMetricDefinition instance shall be:

"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM\_AggregationMetricDefinition?? cimnamespace=root/dcim+Id=<Id>"

#### 7.9.1.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricDefinition.

**Table 33.** DCIM\_AggregationMetricDefinition Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.9.1.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricDefinition instance representing maximum inlet temperature metric in Watts for Last Hour, Day and Week. The most derived class name of this instance shall be DCIM\_AggregationMetricDefinition.

If the column “Property Name” matches the property name, the property either shall have the value denoted in the corresponding column “Additional Requirements”, or shall be implemented according to the requirements in the corresponding column “Additional Requirements”.

**Table 34.** DCIM\_AggregationMetricDefinition: Maximum Inlet Temperature Metric for Last Hour, Day and Week Properties

| Property Name     | Type     | Requirement | Additional Requirements                                                     |
|-------------------|----------|-------------|-----------------------------------------------------------------------------|
| ChangeType        | uint16   | Mandatory   | The property shall have value 5 (Simple Function)                           |
| DataType          | uint16   | Mandatory   | The property shall have value 12 (uint32)                                   |
| ElementName       | string   | Mandatory   | The property shall have value “System Peak Inlet Temp”                      |
| GatheringType     | uint16   | Mandatory   | The property shall have value 3 (periodic)                                  |
| Id                | string   | Mandatory   | The property shall have value “DCIM:System:Max:InletTemp”                   |
| IsContinuous      | boolean  | Mandatory   | The property shall have value TRUE                                          |
| Name              | string   | Mandatory   | The property shall have value " DCIM:System Peak Inlet Temperature"         |
| ProgrammaticUnits | string   | Mandatory   | The property shall have value "degree celsius"                              |
| SampleInterval    | datetime | Mandatory   | The property shall represent the datetime interval for sampling the metric. |
| SimpleFunction    | uint16   | Mandatory   | The property shall have value 3 (Maximum)                                   |
| TimeScope         | uint16   | Mandatory   | The property shall have value 2 (Point)                                     |

### 7.9.2. DCIM\_AggregationMetricValue

The following clauses define the requirements for the DCIM\_AggregationMetricValue class.  
DCIM\_AggregationMetricValue is a derivation of CIM\_AggregationMetricValue.

#### 7.9.2.1. Resource URIs for WinRM®

The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue? cimnamespace=root/dcim”

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_AggregationMetricValue instance shall be:  
“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue?? cimnamespace=root/dcim+InstanceID=<InstanceID>”

#### 7.9.2.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricValue.

**Table 35.** DCIM\_AggregationMetricValue Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.9.2.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricValue instance representing maximum inlet temperature metric in Watts for Last Hour, Day and Week. The most derived class name of this instance shall be DCIM\_AggregationMetricValue.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 36.** DCIM\_AggregationMetricValue: Maximum Inlet Temperature Metric for Last Hour, Day Week, Month and Year Properties

| Property Name        | Type     | Requirement | Additional Requirements                                                                                                                                                                                                                                                                  |
|----------------------|----------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AggregationDuration  | datetime | Mandatory   | shall be in W3C representation in WS-CIM with the corresponding value equal to 1 hour or 1 day or 1 week or 1 month or 1 year.                                                                                                                                                           |
| AggregationTimeStamp | datetime | Mandatory   | shall be in W3C representation in WS-CIM with the corresponding value equal to current timestamp.                                                                                                                                                                                        |
| ElementName          | string   | Mandatory   | shall represent the user-friendly name for the metric.                                                                                                                                                                                                                                   |
| InstanceID           | string   | Mandatory   | shall have one of the following values: <ul style="list-style-type: none"> <li>• DCIM:System:Max:InletTemp:1H</li> <li>• DCIM:System:Max:InletTemp:1D</li> <li>• DCIM:System:Max:InletTemp:1W</li> <li>• DCIM:System:Max:InletTemp:1M</li> <li>• DCIM:System:Max:InletTemp:1Y</li> </ul> |
| MetricDefinitionId   | string   | Mandatory   | "DCIM:System:Max:InletTemp"                                                                                                                                                                                                                                                              |
| MetricValue          | string   | Mandatory   | shall be equal to the collection value for the last hour or day or week or month or year in Celsius.                                                                                                                                                                                     |
| TimeStamp            | datetime | Mandatory   | shall be in W3C representation in WS-CIM with the corresponding value equal to the value collection timestamp.                                                                                                                                                                           |
| Volatile             | boolean  | Mandatory   | TRUE                                                                                                                                                                                                                                                                                     |

## 7.10. Average Inlet Temperature Metric for Last Hour, Day, Week, Month and Year

The following defines the requirements of the DCIM\_AggregationMetricValue instance for the average inlet temperature metric for last hour, day, week, month and year.

One instance of DCIM\_AggregationMetricValue shall be instantiated for average inlet temperature last hour.

One instance of DCIM\_AggregationMetricValue shall be instantiated for average inlet temperature last day.

One instance of DCIM\_AggregationMetricValue shall be instantiated for average inlet temperature last week.

One instance of DCIM\_AggregationMetricValue shall be instantiated for average inlet temperature last month.

One instance of DCIM\_AggregationMetricValue shall be instantiated for average inlet temperature last year.

### 7.10.1. DCIM\_AggregationMetricDefinition

The following clauses define the requirements for the DCIM\_AggregationMetricDefinition class. DCIM\_AggregationMetricDefinition is a derivation of CIM\_AggregationMetricDefinition.

#### 7.10.1.1. Resource URIs for WinRM®

The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricDefinition? cimnamespace= root/dcim”

The key property shall be the Id.

The instance Resource URI DCIM\_AggregationMetricDefinition instance shall be:

“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM\_AggregationMetricDefinition?? cimnamespace=root/dcim+Id=<Id>”

#### 7.10.1.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricDefinition.

**Table 37.** DCIM\_AggregationMetricDefinition Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

#### 7.10.1.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricDefinition instance representing average inlet temperature metric in Watts for Last Hour, Day and Week. The most derived class name of this instance shall be DCIM\_AggregationMetricDefinition.

If the column “Property Name” matches the property name, the property either shall have the value denoted in the corresponding column “Additional Requirements”, or shall be implemented according to the requirements in the corresponding column “Additional Requirements”.

**Table 38.** DCIM\_AggregationMetricDefinition: Average Inlet temperature Metric in Watts for Last Hour, Day and Week Properties

| Property Name     | Type     | Requirement | Additional Requirements                                                     |
|-------------------|----------|-------------|-----------------------------------------------------------------------------|
| ChangeType        | uint16   | Mandatory   | The property shall have value 5 (Simple Function)                           |
| DataType          | uint16   | Mandatory   | The property shall have value 12 (uint32)                                   |
| ElementName       | string   | Mandatory   | The property shall have value “System Average Inlet Temperature”            |
| GatheringType     | uint16   | Mandatory   | The property shall have value 3 (periodic)                                  |
| Id                | string   | Mandatory   | The property shall have value “DCIM:System:Avg:InletTemp”                   |
| IsContinuous      | boolean  | Mandatory   | The property shall have value TRUE                                          |
| Name              | String   | Mandatory   | The property shall have value " DCIM:System Average Inlet Temperature"      |
| ProgrammaticUnits | string   | Mandatory   | The property shall have value "degree celsius"                              |
| SampleInterval    | datetime | Mandatory   | The property shall represent the datetime interval for sampling the metric. |

| Property Name  | Type   | Requirement | Additional Requirements                   |
|----------------|--------|-------------|-------------------------------------------|
| SimpleFunction | uint16 | Mandatory   | The property shall have value 4 (Average) |
| TimeScope      | uint16 | Mandatory   | The property shall have value 2 (Point)   |

### 7.10.2. DCIM\_AggregationMetricValue

The following clauses define the requirements for the DCIM\_AggregationMetricValue class. DCIM\_AggregationMetricValue is a derivation of CIM\_AggregationMetricValue.

#### 7.10.2.1. Resource URIs for WinRM®

The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue? cimnamespace=root/dcim”

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_AggregationMetricValue instance shall be:  
“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_AggregationMetricValue??  
cimnamespace=root/dcim+InstanceID=<InstanceID>”

#### 7.10.2.2. Operations

The following table details the implemented operations on DCIM\_AggregationMetricValue.

**Table 39.** DCIM\_AggregationMetricValue Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

#### 7.10.2.3. Properties

The following table details the requirements for implementing DCIM\_AggregationMetricValue instance representing average inlet temperature metric in Watts for Last Hour, Day and Week. The most derived class name of this instance shall be DCIM\_AggregationMetricValue.

If the column “Property Name” matches the property name, the property either shall have the value denoted in the corresponding column “Additional Requirements”, or shall be implemented according to the requirements in the corresponding column “Additional Requirements”.

**Table 40.** DCIM\_AggregationMetricValue: Average Inlet temperature Metric in Celsius for Last Hour, Day and Week Properties

| Property Name        | Type     | Requirement | Additional Requirements                                                                                                                     |
|----------------------|----------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| AggregationDuration  | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to 1 hour or 1 day or 1 week or 1 month or 1 year. |
| AggregationTimeStamp | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to current timestamp.                              |
| ElementName          | string   | Mandatory   | The property shall represent the user-friendly name for the metric.                                                                         |

| Property Name      | Type     | Requirement | Additional Requirements                                                                                                                                                                                                                                                                                     |
|--------------------|----------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| InstanceId         | string   | Mandatory   | The property shall have one of the below values: <ul style="list-style-type: none"> <li>• “DCIM:System:Avg:InletTemp:1H”</li> <li>• “DCIM:System:Avg:InletTemp:1D”</li> <li>• “DCIM:System:Avg:InletTemp:1W”</li> <li>• “DCIM:System:Avg:InletTemp:1M”</li> <li>• “DCIM:System:Avg:InletTemp:1Y”</li> </ul> |
| MetricDefinitionId | string   | Mandatory   | The property shall have value “DCIM:System:Avg:InletTemp”                                                                                                                                                                                                                                                   |
| MetricValue        | datetime | Mandatory   | The property shall be equal to the collection value for the last hour or day or week or month or year in Celsius.                                                                                                                                                                                           |
| Timestamp          | datetime | Mandatory   | The property shall represent the timestamp of the metric.                                                                                                                                                                                                                                                   |
| ElementName        | string   | Mandatory   | The property shall represent the user friendly name for the metric.                                                                                                                                                                                                                                         |
| Volatile           | boolean  | Mandatory   | The property shall have value TRUE.                                                                                                                                                                                                                                                                         |

## 7.11. Statistical Data Associated to OOB Sensors

All the statistical data associated to OOB Sensors are modelled under BaseMetrics profile.

The various categories of statistical data is presented as sensor instances of DCIM\_AggregationMetricDefinition class. So the instances are: i.e., CPUPerfStatistics, MemoryPerfStatistics, IOPerfStatistics, CUPSIndexStatistics. The detailed explanation of properties of this class is presented under 7.11.1.

The statistical data is exposed to user under various instances of DCIM\_AggregationMetricValues class. The values & associated timestamps are properties of these instances. The instances are MinLastHour, MinLastday, MinLastWeek, MaxLastHour, MaxLastday, MaxLastWeek, PeakUtilization, AverageLastHour, AverageLastDay, AverageLastWeek. The detailed explanation of properties of this class is presented under 7.11.2.

This statistical data is license dependent. To view the instance of OOB sensors either feature license or Enterprise license is must.

### 7.11.1. DCIM\_AggregationMetricDefinition

The following table shows properites of the class DCIM\_AggregationMetricDefinition. The values are presented in percentage form. The most derived class name of this instance shall be DCIM\_AggregationMetricDefinition.

**Table 41.** Properties of DCIM\_AggregationMetricDefinition

| Property Name | Type    | Requirement | Possible Values                                                                                                                                                                                                                                                                     |
|---------------|---------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ChangeType    | uint16  | Mandatory   | The property shall have value 5 (Simple Function).                                                                                                                                                                                                                                  |
| DataType      | uint16  | Mandatory   | The property shall have value 12 (uint32)                                                                                                                                                                                                                                           |
| ElementName   | string  | Mandatory   | The property shall have appropriate name. For e.g: Timed Average IO Usage Statistics.                                                                                                                                                                                               |
| GatheringType | uint16  | Mandatory   | The property shall have value 3 (periodic)                                                                                                                                                                                                                                          |
| Id            | string  | Mandatory   | The property shall have value similar to the given example: <ul style="list-style-type: none"> <li>• “DCIM:SystemBoardCPUUsageStat”OR</li> <li>• “DCIM:SystemBoardIOUsageStat” OR</li> <li>• “DCIM:SystemBoardMEMUsageStat” OR</li> <li>• “DCIM:SystemBoardSYSUsageStat”</li> </ul> |
| IsContinuous  | boolean | Mandatory   | The property shall have value TRUE                                                                                                                                                                                                                                                  |

| Property Name     | Type     | Requirement | Possible Values                                                                                                                                                                         |
|-------------------|----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name              | string   | Mandatory   | The property shall have value "DCIM:System CPU Usage Statistics" OR "Timed Average IO Usage Statistics" OR "DCIM:System Memory Usage Statistics" OR "DCIM:System CUPS Index Statistics" |
| ProgrammaticUnits | string   | Mandatory   | The property shall have value "percentage"                                                                                                                                              |
| SampleInterval    | datetime | Mandatory   | The property value shall be in W3C representation in WS-CIM with the corresponding value equal to CIM datetime 00000000000600.000000:000 as the interval is 6sec.                       |
| SimpleFunction    | uint16   | Mandatory   | The property shall have value 4(Maximum)                                                                                                                                                |
| TimeScope         | uint16   | Mandatory   | The property shall have value 3 (Interval)                                                                                                                                              |

### 7.11.2. DCIM\_AggregationMetricValue

The following table details the properties of DCIM\_AggregationMetricValue instance representing statistical data in percentage for Last Hour, Day and Week for the below metric Instances:

**Table 42.** Properties of DCIM\_AggregationMetricValue

| Property Name        | Type     | Requirement | Possible Values                                                                                                                                |
|----------------------|----------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| AggregationDuration  | datetime | Mandatory   | For 1Hour: 00000000010000.000000:000<br>1Day: 00000001000000.000000:000<br>1Week: 00000007000000.000000:000<br>None: 00000000000000.000000:000 |
| AggregationTimeStamp | datetime | Mandatory   | Current timestamp.                                                                                                                             |
| ElementName          | string   | Mandatory   | Shall represent the user-friendly name for the metric.Example: Maximum CPU Usage for the last week                                             |
| InstanceID           | string   | Mandatory   | shall have appropriate value as shown in below example:"DCIM:SystemBoard:Avg:SYSUsage:1W"                                                      |
| MetricDefinitionId   | string   | Mandatory   | This property shall have value in the format shown below.E.g.: DCIM:iDRAC:Embedded.1:SystemBoardCPUUsag eStat                                  |
| MetricValue          | string   | Mandatory   | Shall be equal to the collection value for last 1 hour or 1 day or 1 week in percentage.                                                       |
| TimeStamp            | datetime | Mandatory   | Shall be in W3C representation in WS-CIM with the corresponding value equal to the value collection timestamp.                                 |
| Volatile             | boolean  | Mandatory   | TRUE                                                                                                                                           |

Note: The value of property MetricDefinitionID (DCIM\_AggregationMetricValue) should match to property Id (DCIM\_AggregationMetricDefinition).

Note: Timestamp is not applicable for Average metric Values. So in that case timestamp will be NULL.

## 7.12. Inlet Temperature Time above Thresholds Metric

The following defines the requirements for the inlet temperature time above thresholds metric. The metric describes the percentage of time for which system inlet temperature have been above the warning and fatal thresholds.

### 7.12.1. DCIM\_BaseMetricDefinition

The following clauses define the requirements for the DCIM\_BaseMetricDefinition class.

DCIM\_BaseMetricDefinition is derived from CIM\_BaseMetricDefinition.

#### 7.12.1.1. Resource URIs for WinRM®

The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricDefinition? cimnamespace=root/dcim”

The key property shall be the Id.

The instance Resource URI for DCIM\_BaseMetricDefinition instance shall be:

“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricDefinition?? cimnamespace=root/dcim+Id=<Id>”

#### 7.12.1.2. Operations

The following table details the implemented operations on DCIM\_BaseMetricDefinition.

**Table 43.** DCIM\_BaseMetricDefinition Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

#### 7.12.1.3. Properties

The following table details the requirements for implementing DCIM\_BaseMetricDefinition instance representing inlet temperature time above thresholds metric. The most derived class name of this instance shall be DCIM\_BaseMetricDefinition.

If the column “Property Name” matches the property name, the property either shall have the value denoted in the corresponding column “Additional Requirements”, or shall be implemented according to the requirements in the corresponding column “Additional Requirements”.

**Table 44.** DCIM\_BaseMetricDefinition: Inlet Temperature Time above Thresholds Metric Properties

| Property Name     | Type     | Requirement | Additional Requirements                                                                                                                        |
|-------------------|----------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| ChangeType        | uint16   | Mandatory   | The property shall have value 3 (Counter)                                                                                                      |
| DataType          | uint16   | Mandatory   | The property shall have value 12 (uint32)                                                                                                      |
| ElementName       | string   | Mandatory   | The property shall have value “Percentage of Time Spent in Inlet Temperature Threshold Limits”                                                 |
| GatheringType     | uint16   | Mandatory   | The property shall have value 3 (periodic)                                                                                                     |
| Id                | string   | Mandatory   | The property shall have value “DCIM:System:InletTemp:Percent”                                                                                  |
| IsContinuous      | boolean  | Mandatory   | The property shall have value TRUE.                                                                                                            |
| Name              | string   | Mandatory   | The property shall have value "DCIM:System Inlet Temperature Percent"                                                                          |
| ProgrammaticUnits | string   | Mandatory   | The property shall have value "percent"                                                                                                        |
| SampleInterval    | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to 000000000000005.000000:000 in CIM datetime format. |

| Property Name | Type   | Requirement | Additional Requirements                             |
|---------------|--------|-------------|-----------------------------------------------------|
| TimeScope     | uint16 | Mandatory   | The property shall have value 4 (Startup Interval). |

## 7.12.2. DCIM\_BaseMetricValue

The following clauses define the requirements for the DCIM\_BaseMetricValue class. DCIM\_BaseMetricValue is derived from CIM\_BaseMetricValue.

### 7.12.2.1. Resource URIs for WinRM®

The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricValue? cimnamespace=root/dcim”

The key property shall be the InstanceID.

The instance Resource URI for this DCIM\_BaseMetricValue instance shall be:

“http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_BaseMetricValue?? cimnamespace=root/dcim+InstanceID=<InstanceID>”

### 7.12.2.2. Operations

The following table details the implemented operations on DCIM\_BaseMetricValue.

**Table 45.** DCIM\_BaseMetricValue Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.12.2.3. Properties

The following table details the requirements for implementing DCIM\_BaseMetricValue instance representing inlet temperature time above thresholds metric. The most derived class name of this instance shall be DCIM\_BaseMetricValue.

If the column “Property Name” matches the property name, the property either shall have the value denoted in the corresponding column “Additional Requirements”, or shall be implemented according to the requirements in the corresponding column “Additional Requirements”.

**Table 46.** DCIM\_BaseMetricValue: Inlet temperature Time above Thresholds Metric Properties

| Property Name      | Type     | Requirement | Additional Requirements                                                                                                                            |
|--------------------|----------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Duration           | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to current timestamp minus start time of the metric.      |
| ElementName        | string   | Mandatory   | The property shall represent the user-friendly name for the metric.                                                                                |
| InstanceID         | string   | Mandatory   | The property shall have one of the following values: “DCIM:System:Point:InletTempCriticalPerc:Cont”, or “DCIM:System:Point:InletTempWarnPerc:Cont” |
| MetricDefinitionId | string   | Mandatory   | The property shall have the value of “DCIM:System:InletTemp:Percent”.                                                                              |
| MetricValue        | string   | Mandatory   | The property shall be a percentage value.                                                                                                          |

| Property Name | Type     | Requirement | Additional Requirements                                                                                       |
|---------------|----------|-------------|---------------------------------------------------------------------------------------------------------------|
| TimeStamp     | datetime | Mandatory   | The property shall be in W3C representation in WS-CIM with the corresponding value equal to Current timestamp |
| Volatile      | boolean  | Mandatory   | The property shall have value TRUE                                                                            |

## 7.13. DCIM\_MetricDefForME

The following clauses define the requirements for the DCIM\_MetricDefForME class. DCIM\_MetricDefForME is derived from CIM\_MetricDefForME.

### 7.13.1. Resource URIs for WinRM®

The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_MetricDefForME? cimnamespace=root/dcim”

The key properties shall be the Antecedent and Dependent.

The instance Resource URI for this DCIM\_MetricDefForME instance shall be:

http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_MetricDefForME??

cimnamespace=root/dcim+Antecedent=<Reference To DCIM\_ComputerSystem>+Dependent=<Reference to DCIM\_BaseMetricDefinition or DCIM\_AggregationMetricDefinition>

### 7.13.2. Operations

The following table details the implemented operations on DCIM\_MetricDefForME.

**Table 47.** DCIM\_MetricDefForME Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.13.3. Properties

The following table details the requirements for implementing DCIM\_MetricDefForME instance representing an association between DCIM\_ComputerSystem and both DCIM\_BaseMetricDefinition and DCIM\_AggregationMetricDefinition.

If the column “Property Name” matches the property name, the property either shall have the value denoted in the corresponding column “Additional Requirements”, or shall be implemented according to the requirements in the corresponding column “Additional Requirements”.

**Table 48.** DCIM\_MetricDefForME Properties

| Properties              | Type      | Requirement | Additional Requirements                                                                                  |
|-------------------------|-----------|-------------|----------------------------------------------------------------------------------------------------------|
| Antecedent              | Reference | Mandatory   | The property value is the Instance URI of DCIM_ComputerSystem class.                                     |
| Dependent               | Reference | Mandatory   | The property value is the Instance URI of DCIM_BaseMetricDefinition or DCIM_AggregationMetricDefinition. |
| MetricCollectionEnabled | uint16    | Mandatory   | The property shall have value of 2 (Enabled).                                                            |

## 7.14. DCIM\_MetricServiceCapabilities

The following clauses define the requirements for the DCIM\_MetricServiceCapabilities class.

DCIM\_MetricServiceCapabilities is derived from CIM\_MetricServiceCapabilities.

The DCIM\_BMLElementCapabilities association's Capabilities property shall reference DCIM\_MetricServiceCapabilities instances.

### 7.14.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_MetricServiceCapabilities? cimnamespace=root/dcim"

The key properties shall be the InstanceID.

The instance Resource URI for this DCIM\_MetricServiceCapabilities instance shall be:  
http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_MetricServiceCapabilities??  
cimnamespace=root/dcim+InstanceID=<InstanceID>

### 7.14.2. Operations

The following table details the implemented operations on DCIM\_MetricServiceCapabilities.

**Table 49.** DCIM\_MetricServiceCapabilities Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.14.3. Properties

The following table details the requirements for implementing DCIM\_MetricServiceCapabilities instance representing an association between DCIM\_ComputerSystem and both DCIM\_BaseMetricValue and DCIM\_AggregationMetricValue.

If the column "Property Name" matches the property name, the property either shall have the value denoted in the corresponding column "Additional Requirements", or shall be implemented according to the requirements in the corresponding column "Additional Requirements".

**Table 50.** DCIM\_MetricServiceCapabilities Properties

| Property Name         | Type   | Requirement | Additional Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------|--------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ControllableMetrics[] | String | Mandatory   | The property array shall have the following elements: <ul style="list-style-type: none"><li>• http://schemas.dell.com/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_AggregationMetricDefinition?Id=AggrMetricDef:0</li><li>• http://schemas.dell.com/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_AggregationMetricDefinition?Id=AggrMetricDef:3</li><li>• http://schemas.dell.com/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_BaseMetricDefinition?Id=DCIM:BaseMetricDefinition:1</li></ul> |
| MetricsControlTypes[] | uint16 | Mandatory   | The property array shall have the following elements:4(Both),4(Both),4(Both)                                                                                                                                                                                                                                                                                                                                                                                                     |

| Property Name                | Type   | Requirement | Additional Requirements                                                 |
|------------------------------|--------|-------------|-------------------------------------------------------------------------|
| ControllableManagedElement[] | String | Mandatory   | The property array shall be an empty array.                             |
| ManagedElementControlTypes[] | uint16 | Mandatory   | The property array shall be an empty array.                             |
| SupportedMethods[]           | uint16 | Mandatory   | The property array shall have the following elements:2 (ControlMetrics) |
| InstanceID                   | String | Mandatory   | The property shall have value "DCIM:MetricServiceCapabilities:1"        |
| ElementName                  | String | Mandatory   | The property shall have value "Metric Service Capabilities"             |

## 7.15. DCIM\_MetricService

The following clauses define the requirements for the DCIM\_MetricService class. DCIM\_MetricService is derived from CIM\_MetricService.

The DCIM\_BMElementCapabilities association's ManagedElement property shall reference the DCIM\_MetricService instance.

The DCIM\_BMServiceAffectsElement association's AffectingElement property shall reference the DCIM\_MetricService instance.

The DCIM\_BMServiceAffectsElement association's ElementEffects array property shall contain value 5 (Manages).

The DCIM\_BMHostedService association's Dependent property shall reference the DCIM\_MetricService instance.

The DCIM\_ElementConformsToProfile association's ManagedElement property shall reference the DCIM\_MetricService instance.

The DCIM\_LCElementConformsToProfile association's ManagedElement property shall reference the DCIM\_MetricService instance.

### 7.15.1. Resource URIs for WinRM®

The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_MetricService?cimnamespace=root/dcim"

The key properties shall be the SystemCreationClassName, CreationClassName, SystemName,

and Name. The instance Resource URI for this DCIM\_MetricService instance shall be:

http://schemas.dell.com/wbem/wscim/1/cim-

schema/2/DCIM\_MetricService??cimnamespace=root/dcim+SystemCreationClassName=<SystemCreationClassName>+CreationClassName=<CreationClassName>+SystemName=<SystemName>+Name=<Name>.

### 7.15.2. Operations

The following table details the implemented operations on DCIM\_MetricService.

**Table 51.** DCIM\_MetricService Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Invoke         | Mandatory    | Instance URI   |
| Associators    | Mandatory    | Instance URI   |

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| References     | Mandatory    | Instance URI   |

### 7.15.3. Properties

The following table details the requirements for implementing DCIM\_MetricService. If the column “Property Name” matches the property name, the property either shall have the value denoted in the corresponding column “Additional Requirements”, or shall be implemented according to the requirements in the corresponding column “Additional Requirements”.

**Table 52.** DCIM\_MetricService Properties

| Property Name           | Type   | Requirement | Additional Requirements                                |
|-------------------------|--------|-------------|--------------------------------------------------------|
| SystemCreationClassName | string | Mandatory   | The property shall have value “DCIM_SPCComputerSystem” |
| CreationClassName       | string | Mandatory   | The property shall have value “DCIM_MetricService”     |
| SystemName              | string | Mandatory   | The property shall have value “systemmc”               |
| Name                    | string | Mandatory   | The property shall have value “DCIM MetricService 1”   |
| ElementName             | string | Mandatory   | The property shall have value “Metric Service”         |

## 7.16. DMTF Base Metrics Profile Registration

This section describes the implementation for the DCIM\_RegisteredProfile class.

This class is instantiated in the Interop Namespace.

The DCIM\_ElementConformsToProfile association(s) shall reference the DCIM\_RegisteredProfile instance.

### 7.16.1. Resource URIs for WinRM®

The class Resource URI is:

*"http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM\_RegisteredProfile?cimnamespace=root/interop"*

The key property shall be the InstanceID property. The instance Resource URI is:

*"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_RegisteredProfile?cimnamespace=root/interop+InstanceID=DCIM:BaseMetricsRegisteredProfile:1"*

### 7.16.2. Operations

The following table details the implemented operations on for DCIM\_RegisteredProfile.

**Table 53.** DCIM\_RegisteredProfile - Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.16.3. Properties

The following table details the implemented properties for DCIM\_LCRegisteredProfile instance representing Base Metrics Profile implementation.

**Table 54.** DCIM\_RegisteredProfile - Properties

| Property Name          | Requirement | Type   | Additional Requirements                                               |
|------------------------|-------------|--------|-----------------------------------------------------------------------|
| InstanceID             | Mandatory   | String | The property value shall be "DCIM:BaseMetricsRegisteredProfile:4.0.0" |
| RegisteredName         | Mandatory   | String | This property value shall be "Base Metrics"                           |
| RegisteredVersion      | Mandatory   | String | This property value shall be "4.0.0".                                 |
| RegisteredOrganization | Mandatory   | Uint16 | This property value shall be 2 (DMTF).                                |

## 7.17. Dell Base Metrics Profile Registration

This section describes the implementation for the DCIM\_LCRegisteredProfile class. This class is instantiated in the Interop Namespace.

The DCIM\_LCElementConformsToProfile association(s) shall reference the DCIM\_LCRegisteredProfile instance.

### 7.17.1. Resource URIs for WinRM®

The class Resource URI is:

*"http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM\_RegisteredProfile?cimnamespace=root/interop"*

The key property shall be the InstanceID property. The instance Resource URI is:

*"http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM\_LCRegisteredProfile?cimnamespace=root/interop+InstanceID=DMTF:BaseMetrics:1.0.0"*

### 7.17.2. Operations

The following table details the implemented operations on for DCIM\_LCRegisteredProfile.

**Table 55.** DCIM\_LCRegisteredProfile - Operations

| Operation Name | Requirements | Required Input |
|----------------|--------------|----------------|
| Get            | Mandatory    | Instance URI   |
| Enumerate      | Mandatory    | Class URI      |
| Associators    | Mandatory    | Instance URI   |
| References     | Mandatory    | Instance URI   |

### 7.17.3. Properties

The following table details the implemented properties for DCIM\_LCRegisteredProfile instance representing Base Metrics Profile implementation.

**Table 56.** DCIM\_LCRegisteredProfile - Properties

| Property Name               | Requirement | Type   | Additional Requirements                               |
|-----------------------------|-------------|--------|-------------------------------------------------------|
| InstanceID                  | Mandatory   | String | This property value shall be "DMTF:BaseMetrics:4.0.0" |
| RegisteredName              | Mandatory   | String | This property value is "Base Metrics"                 |
| RegisteredVersion           | Mandatory   | String | This property value is "4.0.0".                       |
| RegisteredOrganization      | Mandatory   | Uint16 | This property value is 1 (Other).                     |
| OtherRegisteredOrganization | Mandatory   | String | The property value is "DCIM".                         |

## 8. Methods

This section details the requirements for supporting extrinsic methods for the CIM elements defined by this profile.

### 8.1. CIM\_MetricService.ControlMetrics( )

The ControlMetrics( ) method provides the ability to reset the metric collection for a particular metric or metrics.

The ControlMetrics( ) method's return code values shall be as specified in Table 58 where the method execution behavior matches the return code description. The ControlMetrics( ) method's parameters are in specified in Table 59. No standard messages are defined for this method.

**Table 57.** CIM\_MetricService.ControlMetrics( ) Method: Return Code Values

| Value | Description                      |
|-------|----------------------------------|
| 0     | Operation completed successfully |
| 2     | Failed                           |

**Table 58.** CIM\_MetricService.ControlMetrics( ) Method: Standard Messages

| MessageID (OUT parameter) | Message                                                               | MessageArguments[]                  |
|---------------------------|-----------------------------------------------------------------------|-------------------------------------|
| SYS001                    | The command was successful                                            |                                     |
| SYS003                    | Missing parameter(s) %s                                               | MetricCollectionEnabled, Definition |
| SYS004                    | Invalid parameter value for %s                                        | MetricCollectionEnabled, Definition |
| SYS022                    | Resource allocation failure                                           |                                     |
| SYS091                    | Unable to complete the operation because the method is not supported. |                                     |

**Table 59.** CIM\_MetricService.ControlMetrics( ) Method: Parameters

| Qualifiers | Name                    | Type                         | Description/Values                                                                                                               |
|------------|-------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| IN         | Subject                 | CIM_ManagedElement REF       | The parameter shall be NULL.                                                                                                     |
| IN         | Definition              | CIM_BaseMetricDefinition REF | Reference to the DCIM_BaseMetricDefinition or DCIM_AggregationMetricDefinition for which collection is to be enabled or disabled |
| IN, REQ    | MetricCollectionEnabled | uint16                       | The parameter value shall be 4 (Reset).                                                                                          |
| OUT        | MessageID               | String                       | Error MessageID                                                                                                                  |
| OUT        | Message                 | String                       | Error Message                                                                                                                    |
| OUT        | MessageArguments[]      | String                       | Error MessageArguments                                                                                                           |

### 8.2. DCIM\_MetricService.ExportThermalHistory()

The ExportThermalHistory() method is used to exports the system's thermal history in xml or csv from the Lifecycle Controller to a remote share.

**Table 60.** DCIM\_MetricService.ExportThermalHistory() Method: Return Code Values

| Value | Description                                          |
|-------|------------------------------------------------------|
| 2     | Error occurred                                       |
| 4096  | Job started: REF returned to started CIM_ConcreteJob |

**Table 61.** DCIM\_MetricService.ExportThermalHistory() Method: Parameters

| Qualifiers | Name               | Type                | Description/Values                                                                                                            |
|------------|--------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------|
| IN, REQ    | IPAddress          | string              | The IP address of the target export server.                                                                                   |
| IN, REQ    | ShareName          | string              | The directory path to the mount point.                                                                                        |
| IN, REQ    | FileName           | string              | The target output file name.                                                                                                  |
| IN, REQ    | ShareType          | uint16              | Type of share: NFS=0, CIFS=2                                                                                                  |
| IN, REQ    | FileType           | uint16              | Type of exported file: XML=0, CSV=1                                                                                           |
| IN         | Username           | String              | User name for the target export server.                                                                                       |
| IN         | Password           | String              | Password for the target export server.                                                                                        |
| IN         | Workgroup          | String              | The applicable workgroup.                                                                                                     |
| OUT        | Job                | CIM_ConcreteJob REF | Returned to keep track of config job status <sup>1</sup>                                                                      |
| OUT        | MessageID          | String              | Error Message ID may be used to look-up in the Dell Message registry files. For more information, see Error Message Registry. |
| OUT        | Message            | String              | Error Message in English corresponding to MessageID is returned if the method fails to execute.                               |
| OUT        | MessageArguments[] | string              | Substitution variables for dynamic error messages.                                                                            |

**Table 62.** DCIM\_MetricService.ExportThermalHistory() Method: Standard Messages

| MessageID (OUT parameter) | Message                                                                                                    | MessageArguments[]   |
|---------------------------|------------------------------------------------------------------------------------------------------------|----------------------|
| SYS002                    | Cannot perform the operation due to an unknown error in iDRAC.                                             | NA                   |
| SYS003                    | Missing parameter(s) %s                                                                                    | <parameter name>     |
| SYS004                    | Invalid parameter value for %s                                                                             | <parameter name>     |
| SYS022                    | Resource allocation failure                                                                                | NA                   |
| SYS026                    | Missing parameters for network share: %s.                                                                  | <share type>         |
| SYS027                    | Cannot access network share.                                                                               | NA                   |
| SYS028                    | Method is already running: %s.                                                                             | ExportThermalHistory |
| JCP017                    | Maximum job limit reached, cannot create new jobs.                                                         | NA                   |
| JCP018                    | Backup job is running, cannot create new jobs until the existing Backup job is completed or is canceled.   | NA                   |
| JCP019                    | Restore job is running, cannot create new jobs until the existing Restore job is completed or is canceled. | NA                   |

### 8.3. DCIM\_MetricService.PeakReset()

The PeakReset() method provides the ability to reset the Peak utilization for a particular sensor to 0.

The PeakReset() method's return code values shall be as specified in below Table where the method execution behavior matches the return code description. The PeakReset() method's parameters are in specified in Table 65. No standard messages are defined for this method.

**Table 63.** CIM\_MetricService.PeakReset( ) Method: Return Code Values

| Value | Description                      |
|-------|----------------------------------|
| 0     | Operation completed successfully |
| 2     | Failed                           |

**Table 64.** CIM\_MetricService.PeakReset( ) Method: Standard Messages

| MessageID (OUT parameter) | Message                                                        | MessageArguments[] |
|---------------------------|----------------------------------------------------------------|--------------------|
| SYS001                    | The command was successful                                     |                    |
| SYS002                    | Cannot perform the operation due to an unknown error in iDRAC. |                    |
| SYS003                    | Missing parameter(s) %s                                        | <Parameter Name>   |
| SYS004                    | Invalid parameter value for %s                                 | <Parameter Name>   |

**Table 65.** CIM\_MetricService.PeakReset( ) Method: Parameters

| Qualifiers | Name               | Type   | Description/Values                                                                                                                                                                                             |
|------------|--------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IN, REQ    | UsageType          | String | FQDD should be passed.<br>iDRAC.Embedded.1#SystemBoardCPUUsageStat OR<br>iDRAC.Embedded.1#SystemBoardIOUsageStat OR<br>iDRAC.Embedded.1#SystemBoardMEMUsageStat OR<br>iDRAC.Embedded.1#SystemBoardSYSUsageStat |
| OUT        | MessageID          | String | Error MessageID                                                                                                                                                                                                |
| OUT        | Message            | String | Error Message                                                                                                                                                                                                  |
| OUT        | MessageArguments[] | String | Error MessageArguments                                                                                                                                                                                         |

## 9. Use Cases

See *Lifecycle Controller (LC) Integration Best Practices Guide*.

## 10. CIM Elements

No additional requirements are specified.

## 11. Privilege and License Requirement

The following table describes the privilege and license requirements for the listed operations:

**Table 66.** Privilege and License Requirements

| Class and Method                 | Operation      | User Privilege Required | License Required    |
|----------------------------------|----------------|-------------------------|---------------------|
| DCIM_AggregationMetricDefinition | ENUMERATE, GET | Login                   | None.               |
| DCIM_AggregationMetricValue      | ENUMERATE, GET | Login                   | LM_POWER_MONITORING |
| DCIM_BaseMetricDefinition        | ENUMERATE, GET | Login                   | None.               |
| DCIM_BaseMetricValue             | ENUMERATE, GET | Login                   | LM_POWER_MONITORING |
| DCIM_AggrMetricInstance          | ENUMERATE, GET | Login                   | LM_POWER_MONITORING |
| DCIM_BaseMetricInstance          | ENUMERATE, GET | Login                   | LM_POWER_MONITORING |

| Class and Method                                       | Operation      | User Privilege Required | License Required    |
|--------------------------------------------------------|----------------|-------------------------|---------------------|
| DCIM_BMElementCapabilities                             | ENUMERATE, GET | Login                   | None.               |
| DCIM_MetricDefForME                                    | ENUMERATE, GET | Login                   | None.               |
| DCIM_MetricForME                                       | ENUMERATE, GET | Login                   | None.               |
| DCIM_BMServiceAffectsElement                           | ENUMERATE, GET | Login                   | None.               |
| DCIM_MetricServiceCapabilities                         | ENUMERATE, GET | Login                   | None.               |
| DCIM_MetricService                                     | ENUMERATE, GET | Login                   | None.               |
| DCIM_MetricService, ControlMetrics()                   | INVOKE         | Login, System Control   | LM_POWER_MONITORING |
| DCIM_MetricService, GetAvgPowerConsumptionByInterval() | INVOKE         | Login                   | LM_POWER_MONITORING |
| DCIM_MetricService.PeakReset()                         | INVOKE         | Config                  | LM_OOB              |
| DCIM_ElementConformsToProfile                          | ENUMERATE, GET | Login                   | None.               |
| DCIM_RegisteredProfile                                 | ENUMERATE, GET | Login                   | None.               |
| DCIM_LCRegisteredProfile                               | ENUMERATE, GET | Login                   | None.               |
| DCIM_MetricService.ExportThermalHistory                | Invoke         | Login                   | None                |
| DCIM_LCElementConformsToProfile                        | ENUMERATE, GET | Login                   | None.               |