

Base Metrics Profile

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161

Base Metrics Profile

162 **1 Scope**

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

167 The metrics covered in this profile are:

- 168 • For power:
 - 169 ○ Maximum power consumption metric in Watts,
 - 170 ○ Maximum power consumption metric in Amperes,
 - 171 ○ Minimum power consumption metric in Watts,
 - 172 ○ Energy consumption metric in kilowatt-hours (kWh),
 - 173 ○ Maximum power consumption metric in Watts for last minute, hour, day, week,
 - 174 ○ Minimum power consumption metric in Watts for last minute, hour, day, week,
 - 175 ○ Average power consumption metric in Watts for last minute, hour, day, week,
 - 176 ○ Maximum headroom power consumption metric,
 - 177 ○ Instantaneous headroom power consumption metric.

178

179 **2 Normative References**

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

183 DMTF DSP1053, *Base Metrics Profile 1.0.1*

184 DMTF DSP1033, *Profile Registration Profile 1.0.0*

185 *Dell Lifecycle Controller Best Practices Guide 1.0*,
186 http://en.community.dell.com/techcenter/extras/m/white_papers/20066173.aspx

187 *Dell WSMAN Licenses and Privileges 1.0*

188 **3 Terms and Definitions**

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

190 **3.1**

191 **conditional**

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

194 **3.2**
195 **mandatory**
196 indicates requirements to be followed strictly in order to conform to the document and from which no
197 deviation is permitted

198 **3.3**
199 **may**
200 indicates a course of action permissible within the limits of the document

201 **3.4**
202 **optional**
203 indicates a course of action permissible within the limits of the document

204 **3.5**
205 **referencing profile**
206 indicates a profile that owns the definition of this class and can include a reference to this profile in its
207 "Related Profiles" table

208 **3.6**
209 **shall**
210 indicates requirements to be followed strictly in order to conform to the document and from which no
211 deviation is permitted

212 **4 Symbols and Abbreviated Terms**

213 **4.1**
214 **CIM**
215 Common Information Model

216 **4.2**
217 **iDRAC**
218 integrated Dell Remote Access Controller – management controller for blades and monolithic servers

219 **4.3**
220 **CMC**
221 Chassis Manager Controller – management controller for the modular chassis
222

223 **5 Synopsis**

224 **Profile Name:** Base Metrics
225 **Version:** 1.0.0
226 **Organization:** Dell
227 **CIM Schema Version:** 2.26.0
228 **Central Class:** DCIM_MetricService
229 **Scoping Class:** DCIM_ComputerSystem

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

232 Table 1 identifies profiles that are related to this profile.

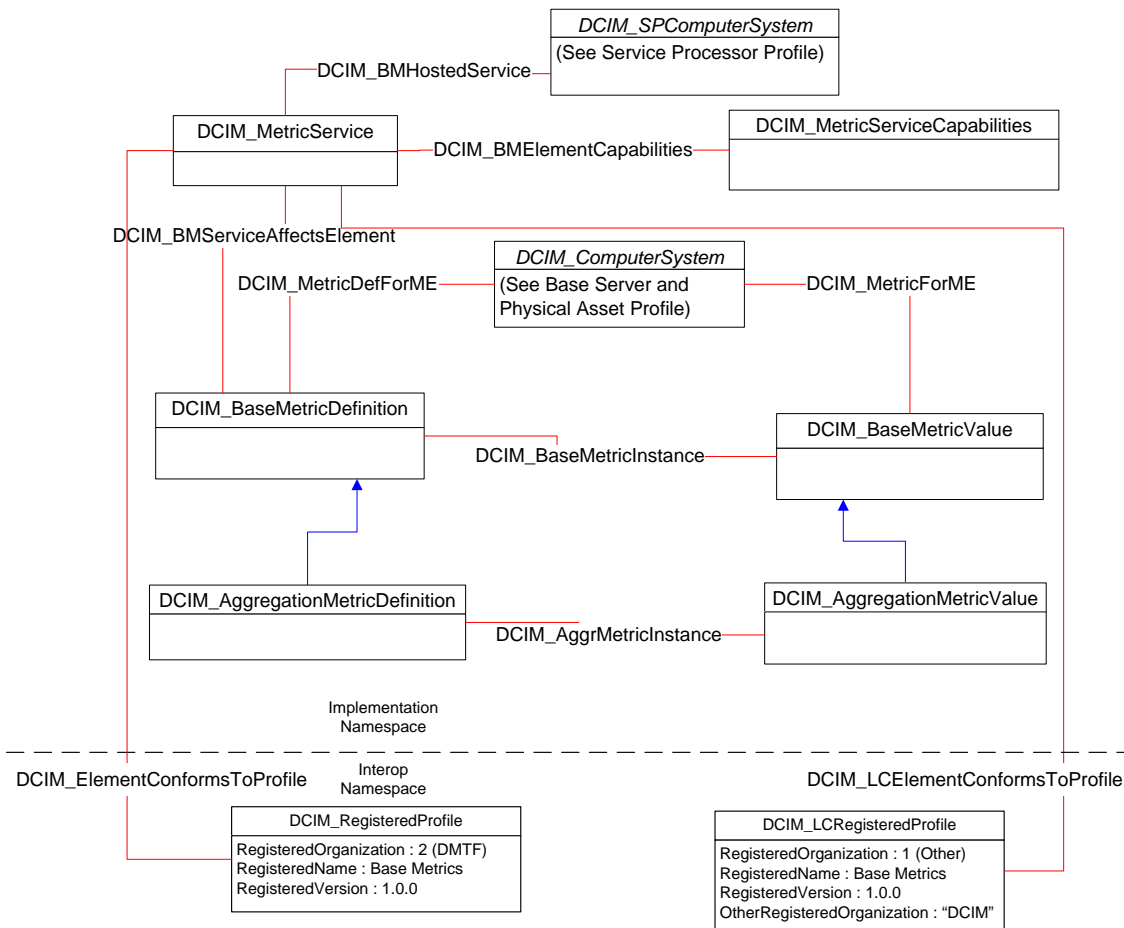
233 **Table 1 – Related Profiles**

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

234 **6 Description**

235 The Dell Base Metrics Profile describes platform’s power related metrics required to represent power
 236 monitoring information using the CIM and DCIM model.

237 Figure 1 represents the class diagram of the profile.

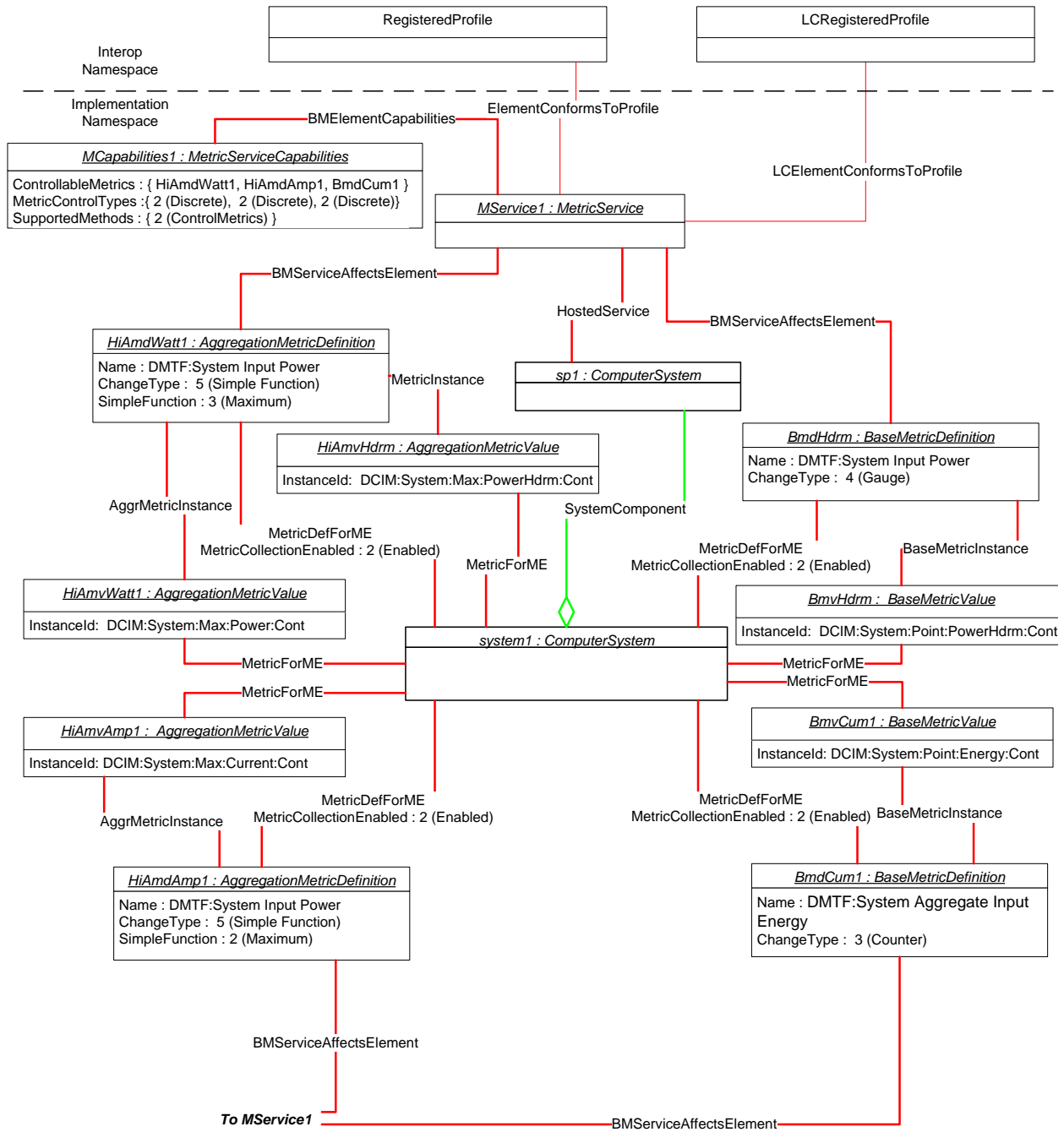


238

239 **Figure 1 – Class Diagram**

240 Figure 2 details maximum power and energy consumption metrics for a platform.

241



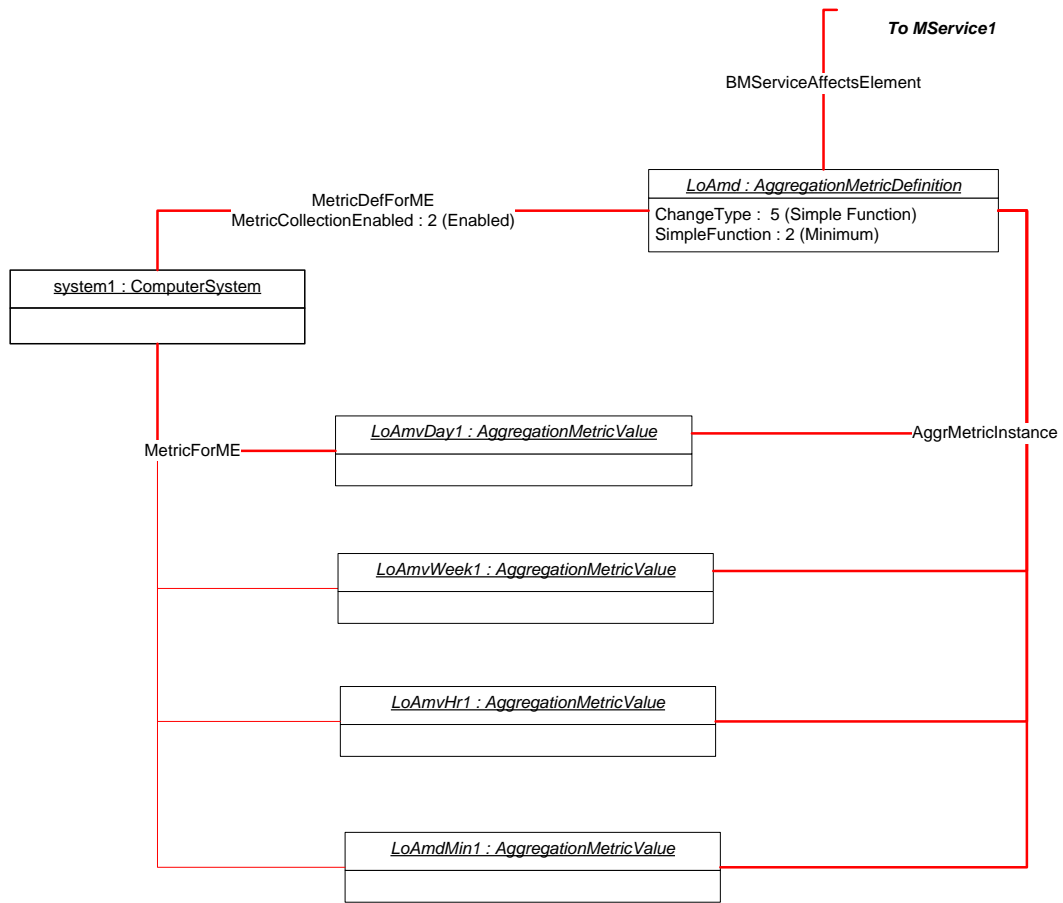
242

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Figure 2 – Maximum, Headroom Power and Energy Consumption Metrics

244

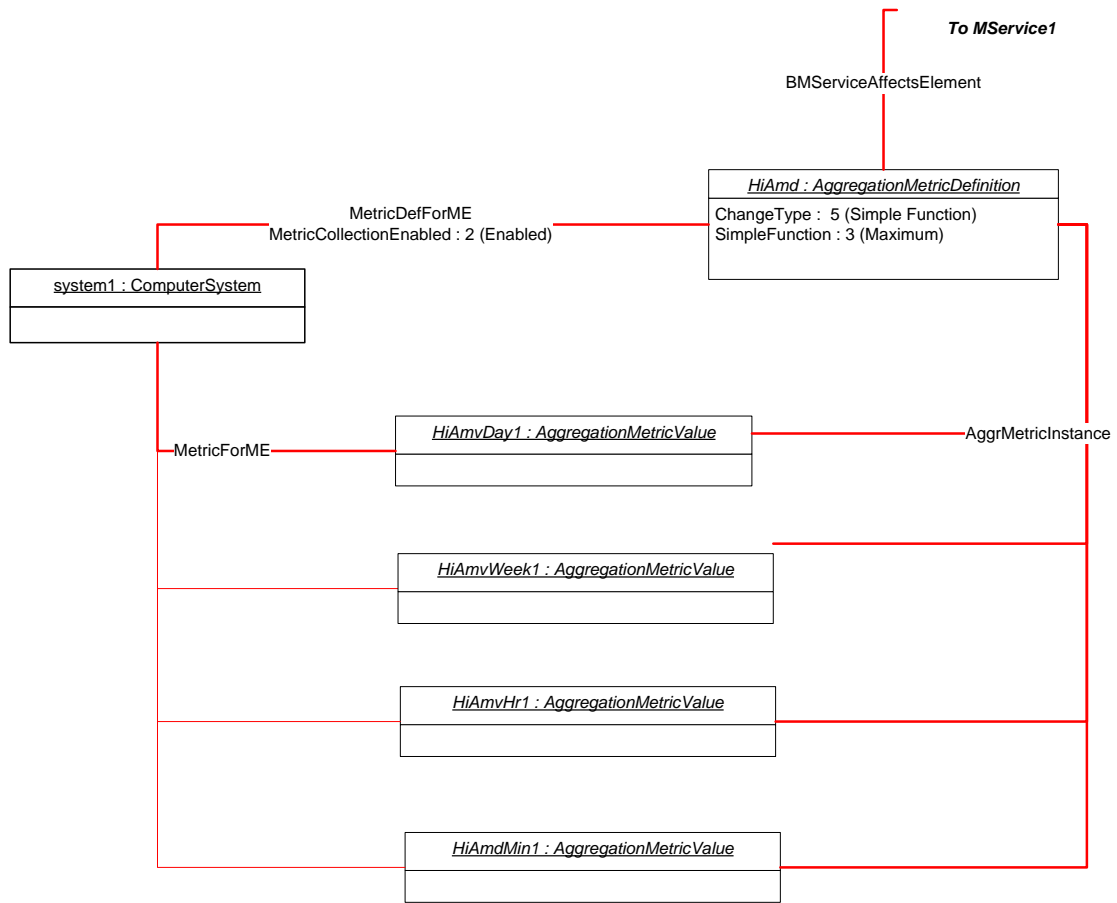
245 The below figures describe the maximum, minimum and average power consumption for the last minute,
 246 hour, day and week.



247

248

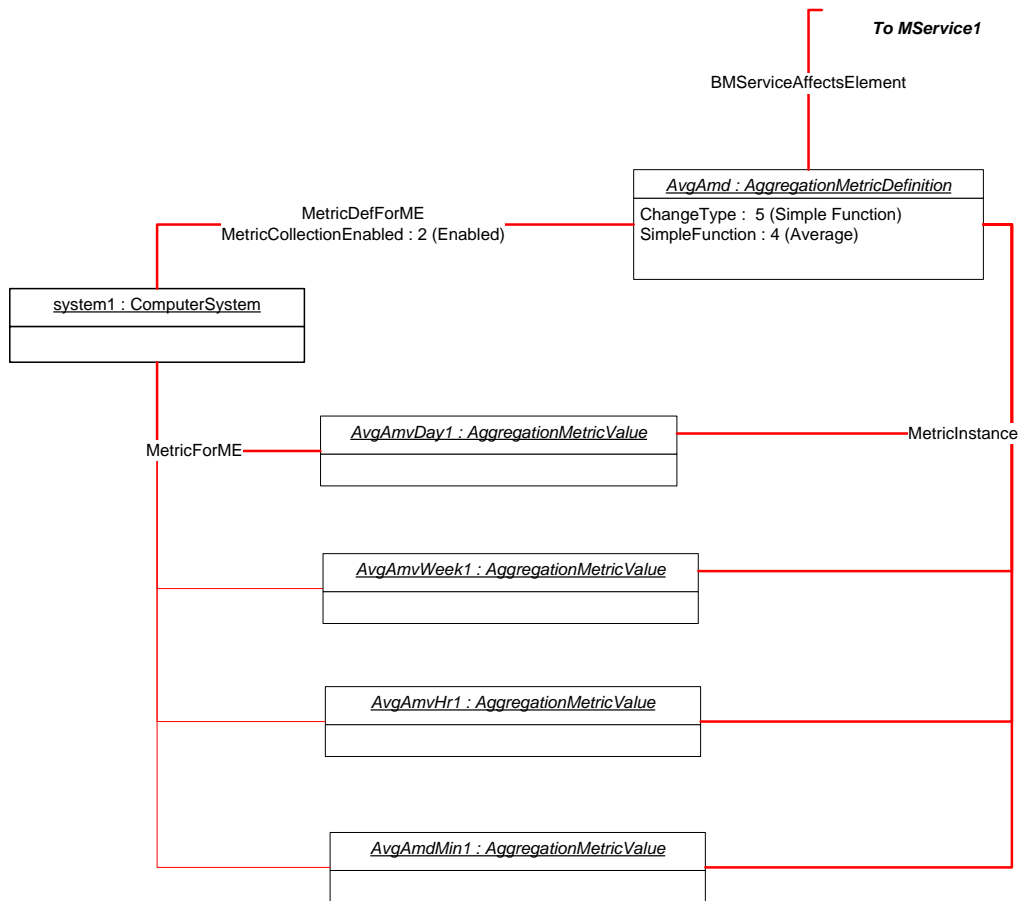
Figure 3 – Minimum Power Consumption for Last Minute, Hour, Day and Week



249

250

Figure 4 – Maximum Power Consumption for Last Minute, Hour, Day and Week



251

252

Figure 5 – Average Power Consumption for Last Minute, Hour, Day and Week

253

254 **7 Implementation Requirements**

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

258

Table 2 – Class Requirements: Base Metrics Profile

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

| Class Name | Requirement | Description |
|---------------------------------|-------------|--|
| DCIM_BaseMetricValue | Mandatory | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.7.2, and 7.8.2. |
| 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 7.10 and 7.11. |
| 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 7.10. |
| DCIM_MetricService | Mandatory | The class shall be implemented in the <i>Implementation Namespaces</i> . See section 7.11. |
| DCIM_ElementConformsToProfile | Mandatory | The class shall be implemented in both the <i>Interop</i> and <i>Implementation Namespaces</i> . See section 7.11 and 7.12 |
| DCIM_RegisteredProfile | Mandatory | The class shall be implemented in the <i>Interop Namespace</i> . See section 7.12 |
| DCIM_LCElementConformsToProfile | Mandatory | The class shall be implemented in both the <i>Interop</i> and <i>Implementation Namespaces</i> . See section 7.11 and 7.13. |
| DCIM_LCRegisteredProfile | Mandatory | The class shall be implemented in the <i>Interop Namespace</i> . See section 7.13. |

259

260 7.1 Maximum Power Consumption Metric in Watts

261 The following defines the requirements of the DCIM_AggregationMetricDefinition instance for the
262 maximum power consumption metric in watts.

263 **7.1.1 DCIM_AggregationMetricDefinition**

264 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
 265 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

266 The DCIM_BMServiceAffectsElement association’s AffectedElement property shall reference
 267 DCIM_AggregationMetricDefinition instances.

268 The DCIM_BMServiceAffectsElement association’s ElementEffects property shall have value 5
 269 (Manages).

270 The DCIM_MetricDefForME association’s Dependant property shall reference
 271 DCIM_AggregationMetricDefinition instances.

272 The DCIM_AggrMetricInstance association’s Antecedent property shall reference
 273 DCIM_AggregationMetricDefinition instances.

274 **7.1.1.1 Resource URIs for WinRM®**

275 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/
 276 DCIM_AggregationMetricDefinition?__cimnamespace= root/dcim”

277 The key property shall be the Id.

278 The instance Resource URI DCIM_AggregationMetricDefinition instance shall be:
 279 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM_AggregationMetricDefinition?
 280 ?__cimnamespace=root/dcim+Id=<Id>”

281 **7.1.1.2 Operations**

282 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

283 **Table 3 – DCIM_AggregationMetricDefinition Operations**

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

284 **7.1.1.3 Properties**

285 The following table details the requirements for implementing the DCIM_AggregationMetricDefinition
 286 instance representing maximum power consumption metric in Watts. The most derived class name of this
 287 instance shall be DCIM_AggregationMetricDefinition.

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

291 **Table 4 – DCIM_AggregationMetricDefinition: Maximum Power Consumption Metric in Watts**
 292 **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" |
| 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) |

293 **7.1.2 DCIM_AggregationMetricValue**

294 The following clauses define the requirements for the DCIM_AggregationMetricValue class.
 295 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

296 The DCIM_AggrMetricInstance association's Dependent property shall reference
 297 DCIM_AggregationMetricValue instances.

298 The DCIM_MetricForME association's Dependent property shall reference
 299 DCIM_AggregationMetricValue instances.

300 **7.1.2.1 Resource URIs for WinRM®**

301 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-
 302 schema/2/DCIM_AggregationMetricValue?__cimnamespace=root/dcim"

303 The key property shall be the InstanceID.

304 The instance Resource URI for this DCIM_AggregationMetricValue instance shall be:
 305 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_AggregationMetricValue?
 306 ?__cimnamespace=root/dcim+InstanceID=<InstanceID>"

307 **7.1.2.2 Operations**

308 The following table details the implemented operations on DCIM_AggregationMetricValue.

309 **Table 5 – DCIM_AggregationMetricValue Operations**

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

310

311 **7.2 Maximum Headroom Power Consumption Metric in Watts**

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

313 **7.2.1 DCIM_AggregationMetricDefinition**

314 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
315 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

316 **7.2.1.1 Resource URIs for WinRM®**

317 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/
318 DCIM_AggregationMetricDefinition?__cimnamespace= root/dcim”

319 The key property shall be the Id.

320 The instance Resource URI DCIM_AggregationMetricDefinition instance shall be:
321 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM_AggregationMetricDefinition?
322 ?__cimnamespace=root/dcim+Id=<Id>”

323 **7.2.1.2 Operations**

324 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

325 **Table 6 – DCIM_AggregationMetricDefinition Operations**

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

326 **7.2.2 DCIM_AggregationMetricValue**

327 The following clauses define the requirements for the DCIM_AggregationMetricValue class.
328 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

329 The DCIM_AggrMetricInstance association’s Dependent property shall reference
330 DCIM_AggregationMetricValue instances.

331 The DCIM_MetricForME association’s Dependent property shall reference
332 DCIM_AggregationMetricValue instances.

333 **7.2.2.1 Resource URIs for WinRM®**

334 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
335 schema/2/DCIM_AggregationMetricValue?__cimnamespace=root/dcim”

336 The key property shall be the InstanceID.

337 The instance Resource URI for this DCIM_AggregationMetricValue instance shall be:
338 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_AggregationMetricValue?
339 ?__cimnamespace=root/dcim+InstanceID=<InstanceID>”

340 **7.2.2.2 Operations**

341 The following table details the implemented operations on DCIM_AggregationMetricValue.

342 **Table 7 – DCIM_AggregationMetricValue Operations**

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

343 **7.2.2.3 Properties**

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

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

350 **Table 8 – DCIM_AggregationMetricValue: Maximum Power Consumption Metric in Watts**
 351 **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. |

352 **7.3 Maximum Power Consumption Metric in Amperes**

353 The following defines the requirements of the DCIM_AggregationMetricDefinition instance for the
 354 maximum power consumption metric in amperes.

355 **7.3.1 DCIM_AggregationMetricDefinition**

356 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
 357 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

358 The DCIM_BMServiceAffectsElement association’s AffectedElement property shall reference
 359 DCIM_AggregationMetricDefinition instances.

360 The DCIM_BMServiceAffectsElement association’s ElementEffects property shall have value 5
 361 (Manages).

362 The DCIM_MetricDefForME association’s Dependant property shall reference
 363 DCIM_AggregationMetricDefinition instances.

364 The DCIM_AggrMetricInstance association’s Antecedent property shall reference
 365 DCIM_AggregationMetricDefinition instances.

366 **7.3.1.1 Resource URIs for WinRM®**

367 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/
 368 DCIM_AggregationMetricDefinition?__cimnamespace= root/dcim”

369 The key property shall be the Id.

370 The instance Resource URI DCIM_AggregationMetricDefinition instance shall be:
 371 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM_AggregationMetricDefinition?
 372 ?__cimnamespace=root/dcim+Id=<Id>”

373 **7.3.1.2 Operations**

374 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

375 **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 |

376 **7.3.1.3 Properties**

377 The following table details the requirements for implementing the DCIM_AggregationMetricDefinition
 378 instance representing max power consumption metric in Amperes. The most derived class name of this
 379 instance shall be DCIM_AggregationMetricDefinition.

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

383 **Table 10 – DCIM_AggregationMetricDefinition: Maximum Power Consumption Metric in Amperes**
 384 **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 ⁻¹ " |
| 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) |

385 7.3.2 DCIM_AggregationMetricValue

386 The following clauses define the requirements for the DCIM_AggregationMetricValue class.
387 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

388 The DCIM_AggrMetricInstance association's Dependent property shall reference
389 DCIM_AggregationMetricValue instances.

390 The DCIM_MetricForME association's Dependent property shall reference
391 DCIM_AggregationMetricValue instances.

392 7.3.2.1 Resource URIs for WinRM®

393 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-
394 schema/2/DCIM_AggregationMetricValue?__cimnamespace=root/dcim"

395 The key property shall be the InstanceID.

396 The instance Resource URI for this DCIM_AggregationMetricValue instance shall be:
397 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_AggregationMetricValue?
398 ?__cimnamespace=root/dcim+InstanceID=<InstanceID>"

399 7.3.2.2 Operations

400 The following table details the implemented operations on DCIM_AggregationMetricValue.

401 **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 |

402 7.3.2.3 Properties

403 The following table details the requirements for implementing DCIM_AggregationMetricValue instance
404 representing max power consumption metric in amperes. The most derived class name of this instance
405 shall be DCIM_AggregationMetricValue.

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

409
410

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 in 100 mAmps. |
| 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 |

411 **7.4 Maximum Power Consumption Metric for Last Minute, Hour, Day and Week**

412 The following defines the requirements of the DCIM_AggregationMetricValue instance for the maximum
413 power consumption metric for last minute, hour, day, and week.

414 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum power consumption
415 last minute.

416 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum power consumption
417 last hour.

418 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum power consumption
419 last day.

420 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum power consumption
421 last week.

422 7.4.1 DCIM_AggregationMetricDefinition

423 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
424 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

425 The DCIM_BMServiceAffectsElement association's AffectedElement property shall reference
426 DCIM_AggregationMetricDefinition instances.

427 The DCIM_BMServiceAffectsElement association's ElementEffects property shall have value 5
428 (Manages).

429 The DCIM_MetricDefForME association's Dependant property shall reference
430 DCIM_AggregationMetricDefinition instances.

431 The DCIM_AggrMetricInstance association's Antecedent property shall reference
432 DCIM_AggregationMetricDefinition instances.

433 7.4.1.1 Resource URIs for WinRM®

434 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/
435 DCIM_AggregationMetricDefinition?__cimnamespace= root/dcim"

436 The key property shall be the Id.

437 The instance Resource URI DCIM_AggregationMetricDefinition instance shall be:
438 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM_AggregationMetricDefinition?
439 ?__cimnamespace=root/dcim+Id=<Id>"

440 7.4.1.2 Operations

441 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

442 **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 |

443 7.4.1.3 Properties

444 The following table details the requirements for implementing DCIM_AggregationMetricDefinition instance
445 representing maximum power consumption metric in Watts for Last Minute, Hour, Day and Week. The
446 most derived class name of this instance shall be DCIM_AggregationMetricDefinition.

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

450 **Table 14 – DCIM_AggregationMetricDefinition: Maximum Power Consumption Metric for Last**
451 **Minute, 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" |
| SimpleFunction | uint16 | Mandatory | The property shall have value 3 (Maximum) |
| TimeScope | uint16 | Mandatory | The property shall have value 2 (Point) |

452 7.4.2 DCIM_AggregationMetricValue

453 The following clauses define the requirements for the DCIM_AggregationMetricValue class.
454 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

455 The DCIM_AggrMetricInstance association's Dependent property shall reference
456 DCIM_AggregationMetricValue instances.

457 The DCIM_MetricForME association's Dependent property shall reference
458 DCIM_AggregationMetricValue instances.

459 7.4.2.1 Resource URIs for WinRM®

460 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-
461 schema/2/DCIM_AggregationMetricValue?__cimnamespace=root/dcim"

462 The key property shall be the InstanceID.

463 The instance Resource URI for this DCIM_AggregationMetricValue instance shall be:
464 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_AggregationMetricValue?
465 ?__cimnamespace=root/dcim+InstanceID=<InstanceID>"

466 7.4.2.2 Operations

467 The following table details the implemented operations on DCIM_AggregationMetricValue.

468 **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 |

469 7.4.2.3 Properties

470 The following table details the requirements for implementing DCIM_AggregationMetricValue instance
471 representing maximum power consumption metric in Watts for Last Minute, Hour, Day and Week. The
472 most derived class name of this instance shall be DCIM_AggregationMetricValue.

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

476 **Table 16 – DCIM_AggregationMetricValue: Maximum Power Consumption Metric for Last Minute,
477 Hour, Day and Week Properties**

| Property Name | Type | Requirement | Additional Requirements |
|---------------|------|-------------|-------------------------|
|---------------|------|-------------|-------------------------|

| Property Name | Type | Requirement | Additional Requirements |
|----------------------|----------|-------------|---|
| AggregationDuration | datetime | Mandatory | shall be in W3C representation in WS-CIM with the corresponding value equal to 1 minute or 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: DCIM:System:Max:Power:1M DCIM:System:Max:Power:1H DCIM:System:Max:Power:1D DCIM:System:Max:Power:1W |
| MetricDefinitionId | string | Mandatory | "AggrMetricDef:4" |
| MetricValue | string | Mandatory | shall be equal to the collection value for last 1 minute or 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 |

478 **7.5 Minimum Power Consumption Metric for Last Minute, Hour, Day and Week**

479 The following defines the requirements of the DCIM_AggregationMetricValue instance for the minimum
480 power consumption metric for last minute, hour, day, and week.

481 One instance of DCIM_AggregationMetricValue shall be instantiated for minimum power consumption last
482 minute.

483 One instance of DCIM_AggregationMetricValue shall be instantiated for minimum power consumption last
484 hour.

485 One instance of DCIM_AggregationMetricValue shall be instantiated for minimum power consumption last
486 day.

487 One instance of DCIM_AggregationMetricValue shall be instantiated for minimum power consumption last
488 week.

489 7.5.1 DCIM_AggregationMetricDefinition

490 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
491 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

492 The DCIM_BMServiceAffectsElement association's AffectedElement property shall reference
493 DCIM_AggregationMetricDefinition instances.

494 The DCIM_BMServiceAffectsElement association's ElementEffects property shall have value 5
495 (Manages).

496 The DCIM_MetricDefForME association's Dependant property shall reference
497 DCIM_AggregationMetricDefinition instances.

498 The DCIM_AggrMetricInstance association's Antecedent property shall reference
499 DCIM_AggregationMetricDefinition instances.

500 7.5.1.1 Resource URIs for WinRM®

501 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/
502 DCIM_AggregationMetricDefinition?__cimnamespace= root/dcim"

503 The key property shall be the Id.

504 The instance Resource URI DCIM_AggregationMetricDefinition instance shall be:
505 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM_AggregationMetricDefinition?
506 ?__cimnamespace=root/dcim+Id=<Id>"

507 7.5.1.2 Operations

508 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

509 **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 |

510 7.5.1.3 Properties

511 The following table details the requirements for implementing DCIM_AggregationMetricDefinition instance
512 representing minimum power consumption metric in Watts for Last Minute, Hour, Day and Week. The
513 most derived class name of this instance shall be DCIM_AggregationMetricDefinition.

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

517 **Table 18 – DCIM_AggregationMetricDefinition: Minimum Power Consumption Metric in Watts for**
518 **Last Minute, 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" |

| Property Name | Type | Requirement | Additional Requirements |
|-------------------|---------|-------------|---|
| 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" |
| ProgrammaticUnits | string | Mandatory | The property shall have value "watt" |
| SimpleFunction | uint16 | Mandatory | The property shall have value 2 (Minimum) |
| TimeScope | uint16 | Mandatory | The property shall have value 2 (Point) |

519 **7.5.2 DCIM_AggregationMetricValue**

520 The following clauses define the requirements for the DCIM_AggregationMetricValue class.

521 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

522 The DCIM_AggrMetricInstance association's Dependent property shall reference

523 DCIM_AggregationMetricValue instances.

524 The DCIM_MetricForME association's Dependent property shall reference

525 DCIM_AggregationMetricValue instances.

526 **7.5.2.1 Resource URIs for WinRM®**

527 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-

528 schema/2/DCIM_AggregationMetricValue?__cimnamespace=root/dcim"

529 The key property shall be the InstanceID.

530 The instance Resource URI for this DCIM_AggregationMetricValue instance shall be:

531 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_AggregationMetricValue?

532 ?__cimnamespace=root/dcim+InstanceID=<InstanceID>"

533 **7.5.2.2 Operations**

534 The following table details the implemented operations on DCIM_AggregationMetricValue.

535 **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 |

536 **7.5.2.3 Properties**

537 The following table details the requirements for implementing DCIM_AggregationMetricValue instance

538 representing minimum power consumption metric in Watts for Last Minute, Hour, Day and Week. The

539 most derived class name of this instance shall be DCIM_AggregationMetricValue.

540 If the column "Property Name" matches the property name, the property either shall have the value

541 denoted in the corresponding column "Additional Requirements", or shall be implemented according to

542 the requirements in the corresponding column "Additional Requirements".

543

544 **Table 20 – DCIM_AggregationMetricValue: Minimum Power Consumption Metric in Watts for Last**
 545 **Minute, 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 minute or 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 value have one of the following values: "DCIM:System:Min:Power:1M", "DCIM:System:Min:Power:1H", "DCIM:System:Min:Power:1D", "DCIM:System:Min:Power:1W" |
| 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 minute or 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. |

546 **7.6 Average Power Consumption Metric for Last Minute, Hour, Day and Week**

547 The following defines the requirements of the DCIM_AggregationMetricValue instance for the average
 548 power consumption metric for last minute, hour, day, and week.

549 One instance of DCIM_AggregationMetricValue shall be instantiated for average power consumption last
 550 minute.

551 One instance of DCIM_AggregationMetricValue shall be instantiated for average power consumption last
 552 hour.

553 One instance of DCIM_AggregationMetricValue shall be instantiated for average power consumption last
 554 day.

555 One instance of DCIM_AggregationMetricValue shall be instantiated for average power consumption last
 556 week.

557 **7.6.1 DCIM_AggregationMetricDefinition**

558 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
 559 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

560 The DCIM_BMServiceAffectsElement association’s AffectedElement property shall reference
 561 DCIM_AggregationMetricDefinition instances.

562 The DCIM_BMServiceAffectsElement association’s ElementEffects property shall have value 5
 563 (Manages).

564 The DCIM_MetricDefForME association’s Dependant property shall reference
 565 DCIM_AggregationMetricDefinition instances.

566 The DCIM_AggrMetricInstance association’s Antecedent property shall reference
 567 DCIM_AggregationMetricDefinition instances.

568 **7.6.1.1 Resource URIs for WinRM®**

569 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/
 570 DCIM_AggregationMetricDefinition?__cimnamespace= root/dcim”

571 The key property shall be the Id.

572 The instance Resource URI DCIM_AggregationMetricDefinition instance shall be:
 573 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/ DCIM_AggregationMetricDefinition?
 574 ?__cimnamespace=root/dcim+Id=<Id>”

575 **7.6.1.2 Operations**

576 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

577 **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 |

578 **7.6.1.3 Properties**

579 The following table details the requirements for implementing DCIM_AggregationMetricDefinition instance
 580 representing average power consumption metric in Watts for Last Minute, Hour, Day and Week. The most
 581 derived class name of this instance shall be DCIM_AggregationMetricDefinition.

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

585 **Table 22 – DCIM_AggregationMetricDefinition: Average Power Consumption Metric in Watts for**
 586 **Last Minute, 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” |

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

587 **7.6.2 DCIM_AggregationMetricValue**

588 The following clauses define the requirements for the DCIM_AggregationMetricValue class.

589 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

590 The DCIM_AggrMetricInstance association's Dependent property shall reference

591 DCIM_AggregationMetricValue instances.

592 The DCIM_MetricForME association's Dependent property shall reference

593 DCIM_AggregationMetricValue instances.

594 **7.6.2.1 Resource URIs for WinRM®**

595 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-

596 schema/2/DCIM_AggregationMetricValue?__cimnamespace=root/dcim"

597 The key property shall be the InstanceID.

598 The instance Resource URI for this DCIM_AggregationMetricValue instance shall be:

599 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_AggregationMetricValue?

600 ?__cimnamespace=root/dcim+InstanceID=<InstanceID>"

601 **7.6.2.2 Operations**

602 The following table details the implemented operations on DCIM_AggregationMetricValue.

603 **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 |

604 **7.6.2.3 Properties**

605 The following table details the requirements for implementing DCIM_AggregationMetricValue instance

606 representing average power consumption metric in Watts for Last Minute, Hour, Day and Week. The most

607 derived class name of this instance shall be DCIM_AggregationMetricValue.

608 If the column "Property Name" matches the property name, the property either shall have the value

609 denoted in the corresponding column "Additional Requirements", or shall be implemented according to

610 the requirements in the corresponding column "Additional Requirements".

611

612 **Table 24 – DCIM_AggregationMetricValue: Average Power Consumption Metric in Watts for Last**
 613 **Minute, 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 minute or 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: "DCIM:System:Avg:Power:1M" "DCIM:System:Avg:Power:1H" "DCIM:System:Avg:Power:1D" "DCIM:System:Avg:Power:1W" |
| 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 minute or 1 hour or 1 day or 1 week in whole watts |
| Volatile | boolean | Mandatory | The property shall have value TRUE. |

614 **7.7 Energy Consumption Metric**

615 The following defines the requirements of the DCIM_BaseMetricDefinition instance of the energy
 616 consumption metric.

617 **7.7.1 DCIM_BaseMetricDefinition**

618 The following clauses define the requirements for the DCIM_BaseMetricDefinition class.
 619 DCIM_BaseMetricDefinition is derived from CIM_BaseMetricDefinition.

620 The DCIM_BMServiceAffectsElement association's AffectedElement property shall reference
 621 DCIM_BaseMetricDefinition instances.

622 The DCIM_BMServiceAffectsElement association's ElementEffects property shall have value 5
 623 (Manages).

624 The DCIM_MetricDefForME association's Dependent property shall reference
 625 DCIM_BaseMetricDefinition instances.

626 The DCIM_MetricDefForME association's MetricCollectionEnabled property shall have value 2 (Enabled).

627 The DCIM_BaseMetricInstance association's Antecedent property shall reference
 628 DCIM_BaseMetricDefinition instances.

629 **7.7.1.1 Resource URIs for WinRM®**

630 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-
 631 schema/2/DCIM_BaseMetricDefinition?__cimnamespace=root/dcim"

632 The key property shall be the Id.

633 The instance Resource URI for DCIM_BaseMetricDefinition instance shall be:
 634 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_BaseMetricDefinition?
 635 ?__cimnamespace=root/dcim+Id=<Id>"

636 **7.7.1.2 Operations**

637 The following table details the implemented operations on DCIM_BaseMetricDefinition.

638 **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 |

639 **7.7.1.3 Properties**

640 The following table details the requirements for implementing DCIM_BaseMetricDefinition instance
 641 representing energy consumption metric. The most derived class name of this instance shall be
 642 DCIM_BaseMetricDefinition.

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

646 **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) |
| 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). |

647 **7.7.2 DCIM_BaseMetricValue**

648 The following clauses define the requirements for the DCIM_BaseMetricValue class.
 649 DCIM_BaseMetricValue is derived from CIM_BaseMetricValue.

650 The DCIM_BaseMetricInstance association's Dependent property shall reference
 651 DCIM_AggregationMetricValue instances.

652 The DCIM_MetricForME association's Dependent property shall reference
 653 DCIM_AggregationMetricValue instances.

654 **7.7.2.1 Resource URIs for WinRM®**

655 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-
 656 schema/2/DCIM_BaseMetricValue?__cimnamespace=root/dcim"

657 The key property shall be the InstanceID.

658 The instance Resource URI for this DCIM_BaseMetricValue instance shall be:
 659 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_BaseMetricValue?
 660 ?__cimnamespace=root/dcim+InstanceID=<InstanceID>"

661 **7.7.2.2 Operations**

662 The following table details the implemented operations on DCIM_BaseMetricValue.

663 **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 |

664 **7.7.2.3 Properties**

665 The following table details the requirements for implementing DCIM_BaseMetricValue instance
 666 representing energy consumption metric. The most derived class name of this instance shall be
 667 DCIM_BaseMetricValue.

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

671 **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 |

| Property Name | Type | Requirement | Additional Requirements |
|---------------|----------|-------------|---|
| | | | 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 |

672 7.8 Instantaneous Power Consumption Headroom Metric

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

674 7.8.1 DCIM_BaseMetricDefinition

675 The following clauses define the requirements for the DCIM_BaseMetricDefinition class.

676 DCIM_BaseMetricDefinition is derived from CIM_BaseMetricDefinition.

677 7.8.1.1 Resource URIs for WinRM®

678 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
679 schema/2/DCIM_BaseMetricDefinition?__cimnamespace=root/dcim”

680 The key property shall be the Id.

681 The instance Resource URI for DCIM_BaseMetricDefinition instance shall be:
682 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_BaseMetricDefinition?
683 ?__cimnamespace=root/dcim+Id=<Id>”

684 7.8.1.2 Operations

685 The following table details the implemented operations on DCIM_BaseMetricDefinition.

686 **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 |

687 7.8.1.3 Properties

688 The following table details the requirements for implementing DCIM_BaseMetricDefinition instance
689 representing the instantaneous power consumption metric. The most derived class name of this instance
690 shall be DCIM_BaseMetricDefinition.

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

694 **Table 30 – DCIM_BaseMetricDefinition: Instantaneous Power Metric Properties**

| Property Name | Type | Requirement | Additional Requirements |
|---------------|------|-------------|-------------------------|
|---------------|------|-------------|-------------------------|

| 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) |

695

696

697 7.8.2 DCIM_BaseMetricValue

698 The following clauses define the requirements for the DCIM_BaseMetricValue class.

699 DCIM_BaseMetricValue is derived from CIM_BaseMetricValue.

700 7.8.2.1 Resource URIs for WinRM®

701 The class Resource URI shall be "http://schemas.dell.com/wbem/wscim/1/cim-
702 schema/2/DCIM_BaseMetricValue?__cimnamespace=root/dcim"

703 The key property shall be the InstanceID.

704 The instance Resource URI for this DCIM_BaseMetricValue instance shall be:
705 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_BaseMetricValue?
706 ?__cimnamespace=root/dcim+InstanceID=<InstanceID>"

707 7.8.2.2 Operations

708 The following table details the implemented operations on DCIM_BaseMetricValue.

709 **Table 31 – DCIM_BaseMetricValue Operations**

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

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

710 **7.8.2.3 Properties**

711 The following table details the requirements for implementing DCIM_BaseMetricValue instance
712 representing the instantaneous power consumption headroom metric. The most derived class name of
713 this instance shall be DCIM_BaseMetricValue.

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

717 **Table 32 – DCIM_BaseMetricValue: Instantaneous Power Consumption Headroom Metric in**
718 **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 |

719 **7.9 DCIM_MetricDefForME**

720 The following clauses define the requirements for the DCIM_MetricDefForME class.
721 DCIM_MetricDefForME is derived from CIM_MetricDefForME.

722 **7.9.1 Resource URIs for WinRM®**

723 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
724 schema/2/DCIM_MetricDefForME?__cimnamespace=root/dcim”

725 The key properties shall be the Antecedent and Dependent.

726 The instance Resource URI for this DCIM_MetricDefForME instance shall be:
727 [http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricDefForME?
728 ?__cimnamespace=root/dcim+Antecedent=<Reference To
729 DCIM_ComputerSystem>+Dependent=<Reference to DCIM_BaseMetricDefinition or
730 DCIM_AggregationMetricDefinition>](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>)

731 **7.9.2 Operations**

732 The following table details the implemented operations on DCIM_MetricDefForME.

733 **Table 33 – DCIM_MetricDefForME Operations**

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

734 **7.9.3 Properties**

735 The following table details the requirements for implementing DCIM_MetricDefForME instance
736 representing an association between DCIM_ComputerSystem and both DCIM_BaseMetricDefinition and
737 DCIM_AggregationMetricDefinition.

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

741 **Table 34 – 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). |

742 **7.10 DCIM_MetricServiceCapabilities**

743 The following clauses define the requirements for the DCIM_MetricServiceCapabilities class.
744 DCIM_MetricServiceCapabilities is derived from CIM_MetricServiceCapabilities.

745 The DCIM_BMElementCapabilities association’s Capabilities property shall reference
746 DCIM_MetricServiceCapabilities instances.

747 **7.10.1 Resource URIs for WinRM®**

748 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
749 schema/2/DCIM_MetricServiceCapabilities?__cimnamespace=root/dcim”

750 The key properties shall be the InstanceID.

751 The instance Resource URI for this DCIM_MetricServiceCapabilities instance shall be:
752 [http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricServiceCapabilities?](http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricServiceCapabilities?__cimnamespace=root/dcim+InstanceID=<InstanceID>)
753 [?__cimnamespace=root/dcim+InstanceID=<InstanceID>](http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricServiceCapabilities?__cimnamespace=root/dcim+InstanceID=<InstanceID>)

754 **7.10.2 Operations**

755 The following table details the implemented operations on DCIM_MetricServiceCapabilities.

756

Table 35 – DCIM_MetricServiceCapabilities Operations

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

757 **7.10.3 Properties**

758 The following table details the requirements for implementing DCIM_MetricServiceCapabilities instance
 759 representing an association between DCIM_ComputerSystem and both DCIM_BaseMetricValue and
 760 DCIM_AggregationMetricValue.

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

764

Table 36 – DCIM_MetricServiceCapabilities Properties

| Property Name | Type | Requirement | Additional Requirements |
|------------------------------|--------|-------------|--|
| ControllableMetrics[] | string | Mandatory | The property array shall have the following elements: “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_AggregationMetricDefinition?Id=AggrMetricDef:0” , “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_AggregationMetricDefinition?Id=AggrMetricDef:3” , “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/root/dcim/DCIM_BaseMetricDefinition?Id=DCIM:BaseMetricDefinition:1” |
| MetricsControlTypes[] | uint16 | Mandatory | The property array shall have the following elements:4(Both),4(Both),4(Both) |
| 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” |

765

766 7.11 DCIM_MetricService

767 The following clauses define the requirements for the DCIM_MetricService class. DCIM_MetricService is
768 derived from CIM_MetricService.

769 The DCIM_BMElementCapabilities association’s ManagedElement property shall reference the
770 DCIM_MetricService instance.

771 The DCIM_BMServiceAffectsElement association’s AffectingElement property shall reference the
772 DCIM_MetricService instance.

773 The DCIM_BMServiceAffectsElement association’s ElementEffects property shall have value 5
774 (Manages).

775 The DCIM_BMHostedService association’s Dependent property shall reference the DCIM_MetricService
776 instance.

777 The DCIM_ElementConformsToProfile association’s ManagedElement property shall reference the
778 DCIM_MetricService instance.

779 The DCIM_LCElementConformsToProfile association’s ManagedElement property shall reference the
780 DCIM_MetricService instance.

781

782 7.11.1 Resource URIs for WinRM®

783 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-
784 schema/2/DCIM_MetricService?__cimnamespace=root/dcim”

785 The key properties shall be the SystemCreationClassName, CreationClassName, SystemName, and
786 Name.

787 The instance Resource URI for this DCIM_MetricService instance shall be:

788 http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricService?

789 [?__cimnamespace=root/dcim+SystemCreationClassName=<](http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricService?__cimnamespace=root/dcim+SystemCreationClassName=<)

790 [SystemCreationClassName>+CreationClassName=<CreationClassName>+SystemName=<SystemNam](http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricService?__cimnamespace=root/dcim+SystemCreationClassName=<)
791 [e>+Name=<Name>.”](http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricService?__cimnamespace=root/dcim+SystemCreationClassName=<)

792 7.11.2 Operations

793 The following table details the implemented operations on DCIM_MetricService.

794

Table 37 – DCIM_MetricService Operations

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

795 7.11.3 Properties

796 The following table details the requirements for implementing DCIM_MetricService. If the column
797 “Property Name” matches the property name, the property either shall have the value denoted in the

798 corresponding column “Additional Requirements”, or shall be implemented according to the requirements
 799 in the corresponding column “Additional Requirements”.

800 **Table 38 – DCIM_MetricService Properties**

| Property Name | Type | Requirement | Additional Requirements |
|-------------------------|--------|-------------|---|
| SystemCreationClassName | string | Mandatory | The property shall have value “DCIM_SPCoMputerSystem” |
| 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” |

801 **7.12 DMTF Base Metrics Profile Registration**

802 This section describes the implementation for the DCIM_RegisteredProfile class.

803 This class is instantiated in the Interop Namespace.

804 The DCIM_ElementConformsToProfile association(s) shall reference the DCIM_RegisteredProfile
 805 instance.

806 **7.12.1 Resource URIs for WinRM®**

807 The class Resource URI is:

808 *"http://schemas.dmtf.org/wbem/wscim/1/cim-*
 809 *schema/2/CIM_RegisteredProfile?__cimnamespace=root/interop"*

810 The key property shall be the InstanceID property.

811 The instance Resource URI is:

812 *"http://schemas.dell.com/wbem/wscim/1/cim-*
 813 *schema/2/DCIM_RegisteredProfile?__cimnamespace=root/interop+InstanceID=DCIM:BaseMetricsR*
 814 *egisteredProfile:1"*

815 **7.12.2 Operations**

816 The following table details the implemented operations on for DCIM_RegisteredProfile.

817 **Table 39 – DCIM_RegisteredProfile - Operations**

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

818

819 7.12.3 Properties

820 The following table details the implemented properties for DCIM_LCRegisteredProfile instance
821 representing Base Metrics Profile implementation.

822 **Table 40 – DCIM_RegisteredProfile - Properties**

| Property Name | Requirement | Type | Additional Requirements |
|------------------------|-------------|--------|---|
| InstanceID | Mandatory | String | The property value shall be "DCIM:BaseMetricsRegisteredProfile:1" |
| RegisteredName | Mandatory | String | This property value shall be "Base Metrics" |
| RegisteredVersion | Mandatory | String | This property value shall be "1.0.0". |
| RegisteredOrganization | Mandatory | Uint16 | This property value shall be 2 (DMTF). |

823 7.13 Dell Base Metrics Profile Registration

824 This section describes the implementation for the DCIM_LCRegisteredProfile class.

825 This class is instantiated in the Interop Namespace.

826 The DCIM_LCElementConformsToProfile association(s) shall reference the DCIM_LCRegisteredProfile
827 instance.

828 7.13.1 Resource URIs for WinRM®

829 The class Resource URI is:

830 *"http://schemas.dmtf.org/wbem/wscim/1/cim-*
831 *schema/2/CIM_RegisteredProfile?__cimnamespace=root/interop"*

832 The key property shall be the InstanceID property.

833 The instance Resource URI is:

834 *"http://schemas.dell.com/wbem/wscim/1/cim-*
835 *schema/2/DCIM_LCRegisteredProfile?__cimnamespace=root/interop+InstanceID=DMTF:BaseMetric*
836 *s:1.0.0"*

837 7.13.2 Operations

838 The following table details the implemented operations on for DCIM_LCRegisteredProfile.

839 **Table 41 – DCIM_LCRegisteredProfile - Operations**

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

840

841 7.13.3 Properties

842 The following table details the implemented properties for DCIM_LCRegisteredProfile instance
843 representing Base Metrics Profile implementation.

844

Table 42 – DCIM_LCRegisteredProfile - Properties

| Property Name | Requirement | Type | Additional Requirements |
|-----------------------------|-------------|--------|---|
| InstanceID | Mandatory | String | This property value shall be "DMTF:BaseMetrics:1.0.0" |
| RegisteredName | Mandatory | String | This property value is "Base Metrics" |
| RegisteredVersion | Mandatory | String | This property value is "1.0.0". |
| RegisteredOrganization | Mandatory | Uint16 | This property value is 1 (Other). |
| OtherRegisteredOrganization | Mandatory | String | The property value is "DCIM". |

845 **8 Methods**

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

848 **8.1 CIM_MetricService.ControlMetrics()**

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

851 The ControlMetrics() method's return code values shall be as specified in Table 43 where the method
852 execution behavior matches the return code description. The ControlMetrics() method's parameters are
853 in specified in Table 45.

854 **Table 43 – CIM_MetricService.ControlMetrics() Method: Return Code Values**

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

855

856 **Table 44 – 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 | |

857

Table 45 – 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. GetAvgPowerConsumptionByInterval ()

860 The GetAvgPowerConsumptionByInterval() method is used to retrieve the average, minimum and
861 maximum power consumption in watts for the specified interval for a particular device or a system as a
862 whole.

863 The ControlMetrics() method's return code values shall be as specified in Table 46 where the method
864 execution behavior matches the return code description. The ControlMetrics() method's parameters are
865 in specified in Table 47.

Table 46 – DCIM_MetricService.GetAvgPowerConsumptionByInterval() Method: Return Code Values

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

| Value | Description |
|-------|----------------|
| 2 | Error occurred |

868

Table 47 – DCIM_MetricService.GetAvgPowerConsumptionByInterval() Method: Parameters

| Qualifiers | Name | Type | Description/Values |
|------------|--------------------|----------|--|
| IN, REQ | Interval | Datetime | The parameter shall represent the interval for which the average power is requested. The interval value shall be between 30 seconds to 15 minutes. |
| IN | Device | Uint16 | The parameter shall represent the device for which the power consumption information is requested. The following shall be the values: <ul style="list-style-type: none"> 0 – System |
| OUT | Min | Uint32 | The parameter shall represent the minimum power consumed in watts during the specified interval. |
| OUT | Max | Uint32 | The parameter shall represent the maximum power consumed in watts during the specified interval. |
| OUT | Average | Uint32 | The parameter shall represent the average power consumed in watts during the specified interval. |
| 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. |

869

870

871

Table 48 – DCIM_MetricService.ExportThermalHistory() Method: Standard Messages

| MessageID (OUT parameter) | Message | MessageArguments[] |
|---------------------------|--------------------------------|--------------------|
| SYS001 | The command was successful | |
| SYS003 | Missing parameter(s) %s | Interval |
| SYS004 | Invalid parameter value for %s | Interval |
| SYS022 | Resource allocation failure | |

872

873 9 Use Cases

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

875 **10 CIM Elements**

876 No additional requirements are specified.

877 **11 Privilege and License Requirement**

878 The following table describes the privilege and license requirements for the listed operations. For the
 879 detailed explanation of the privileges and licenses, refer to the Dell WSMAN Licenses and Privileges
 880 specification.

881 **Table 49 – 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 |
| 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_ElementConformsToProfile | ENUMERATE , GET | Login | None. |
| DCIM_RegisteredProfile | ENUMERATE , GET | Login | None. |
| DCIM_LCRegisteredProfile | ENUMERATE , GET | Login | None. |

| Class and Method | Operation | User Privilege Required | License Required |
|---------------------------------|--------------------|-------------------------|------------------|
| DCIM_LCElementConformsToProfile | ENUMERATE , GET | Login | None. |

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884
885

ANNEX A

Change Log

| Version | Date | Description |
|---------|------------|---|
| 0.0.0 | 01/20/2009 | Initial Draft. |
| 0.1.0 | 10/20/09 | Extended to add specific requirements for Power Metrics and Sensors |
| | | |
| | | |
| | | |

886