

1 Base Metrics Profile

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Base Metrics Profile

186 1 Scope

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

191 The metrics covered in this profile are:

- 192 • For power:
 - 193 ○ Maximum power consumption metric in Watts,
 - 194 ○ Maximum power consumption metric in Amperes,
 - 195 ○ Minimum power consumption metric in Watts,
 - 196 ○ Energy consumption metric in kilowatt-hours (kWh),
 - 197 ○ Maximum power consumption metric in Watts for last hour, day, week,
 - 198 ○ Minimum power consumption metric in Watts for last hour, day, week,
 - 199 ○ Average power consumption metric in Watts for last hour, day, week,
 - 200 ○ Maximum headroom power consumption metric,
 - 201 ○ Instantaneous headroom power consumption metric,
- 202 • For inlet temperature
 - 203 ○ Maximum inlet temperature metric for last hour, day, week, month and year,
 - 204 ○ Average inlet temperature metric for last hour, day, week, month and year,
 - 205 ○ Inlet temperature time spent above thresholds.
- 206 • For Out-of Band sensors i.e., CPU, Memory, IO Utilization & System Utilization
 - 207 ○ Maximum utilization metric in percentage for last hour, day and week,
 - 208 ○ Minimum utilization metric in percentage for last hour, day and week,
 - 209 ○ Average utilization metric in percentage for last hour, day and week,
 - 210 ○ Peak Values in percentage.

211

212 2 Normative References

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

- 216 DMTF DSP1033, *Profile Registration Profile 1.0.0*
- 217 DMTF DSPxxxxx, *Base Metric Profile 1.0.0*
- 218 *Dell Lifecycle Controller Best Practices Guide v1.0*, <link TBD>

219 **3 Terms and Definitions**

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

221 **3.1**

222 **conditional**

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

225 **3.2**

226 **mandatory**

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

229 **3.3**

230 **may**

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

232 **3.4**

233 **optional**

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

235 **3.5**

236 **referencing profile**

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

239 **3.6**

240 **shall**

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

243 **4 Symbols and Abbreviated Terms**

244 **4.1**

245 **CIM**

246 Common Information Model

247 **4.2**

248 **iDRAC**

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

250 **4.3**

251 **CMC**

252 Chassis Manager Controller – management controller for the modular chassis

253

254 **5 Synopsis**

255 **Profile Name:** Base Metrics

256 **Version:** 1.2.0

257 **Organization:** Dell

258 **CIM Schema Version:** 2.22.0

259 **Central Class:** CIM_MetricService

260 **Scoping Class:** CIM_ComputerSystem

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

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

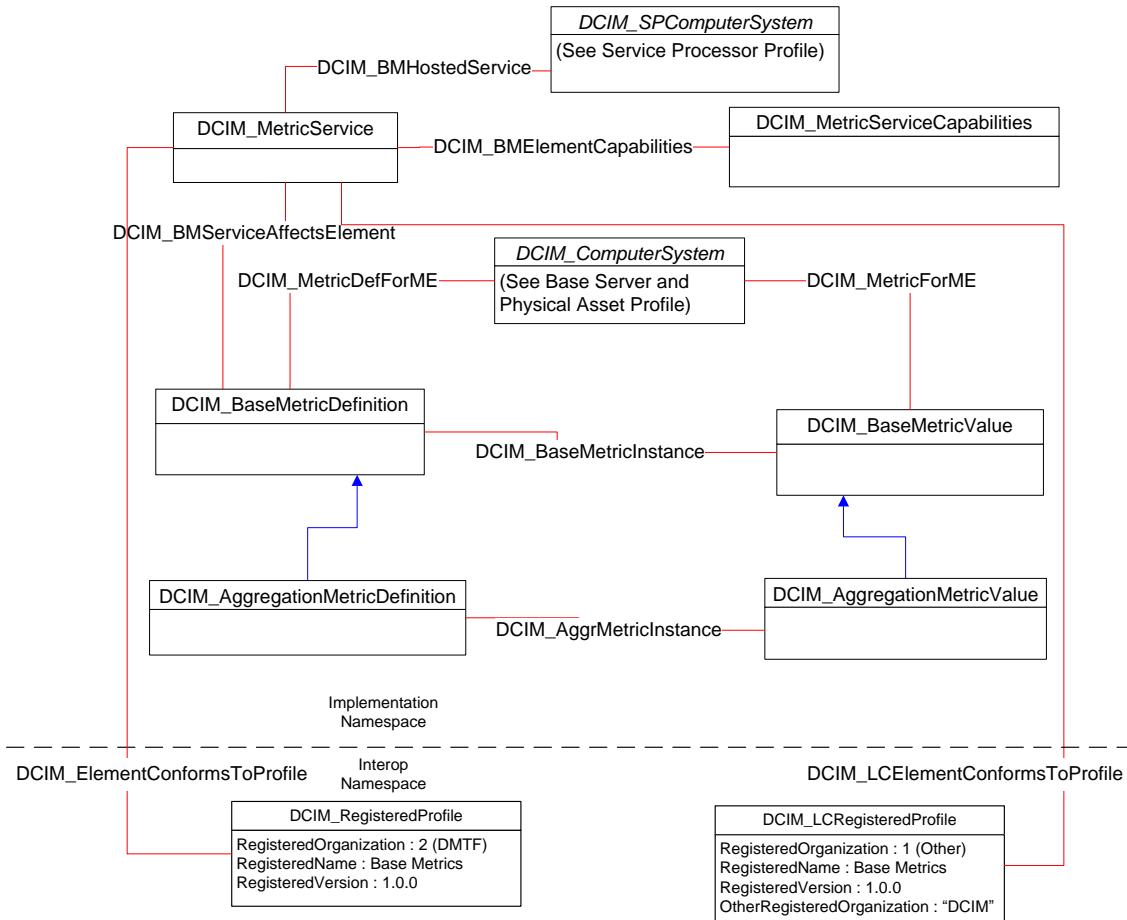
264 **Table 1 – Related Profiles**

Profile Name	Organization	Version	Relationship
Base Metrics Profile	DMTF	1.0	Specializes

265 **6 Description**

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

269 Figure 1 represents the class diagram of the profile.

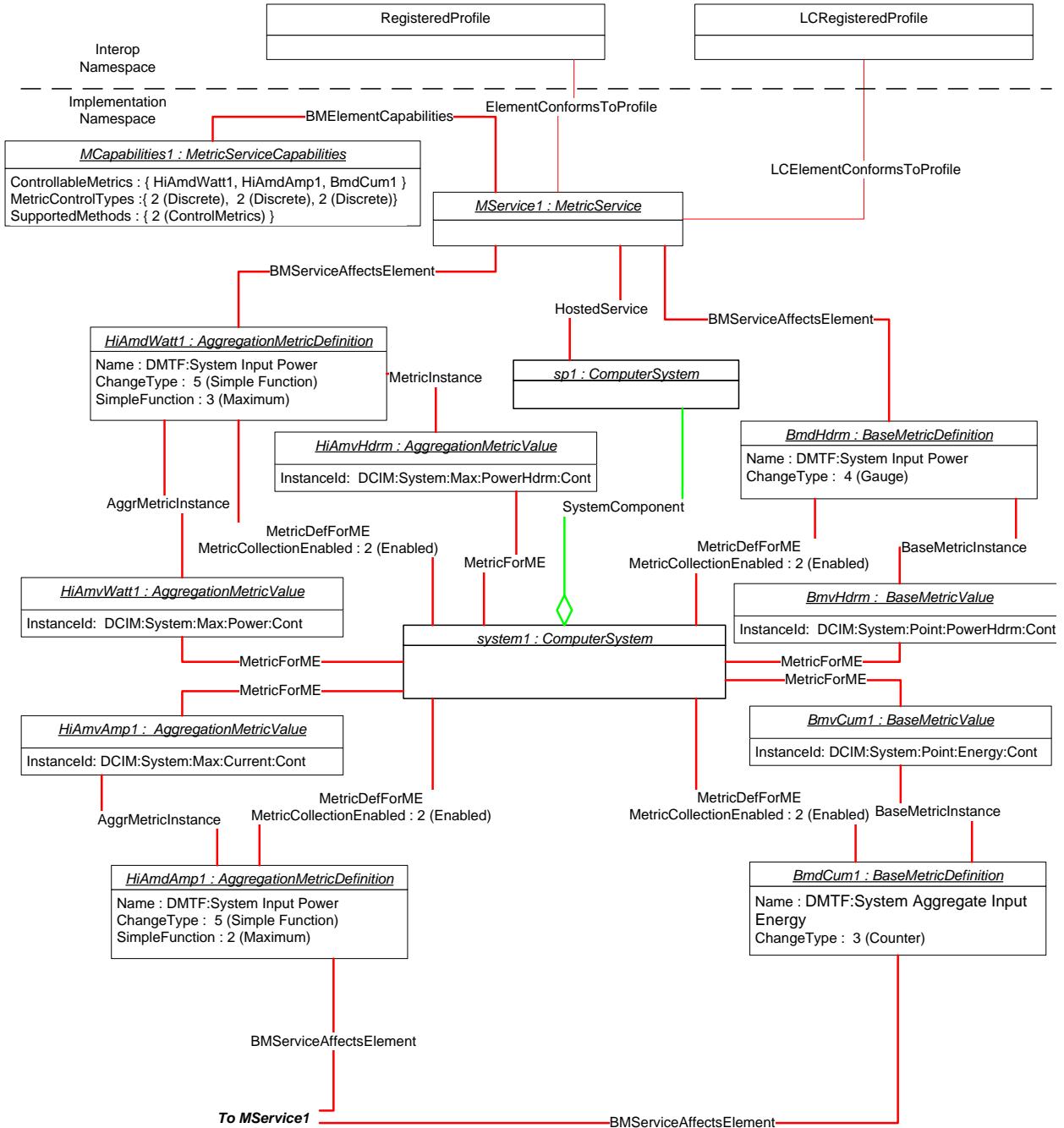


270

271 **Figure 1 – Class Diagram**

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

273



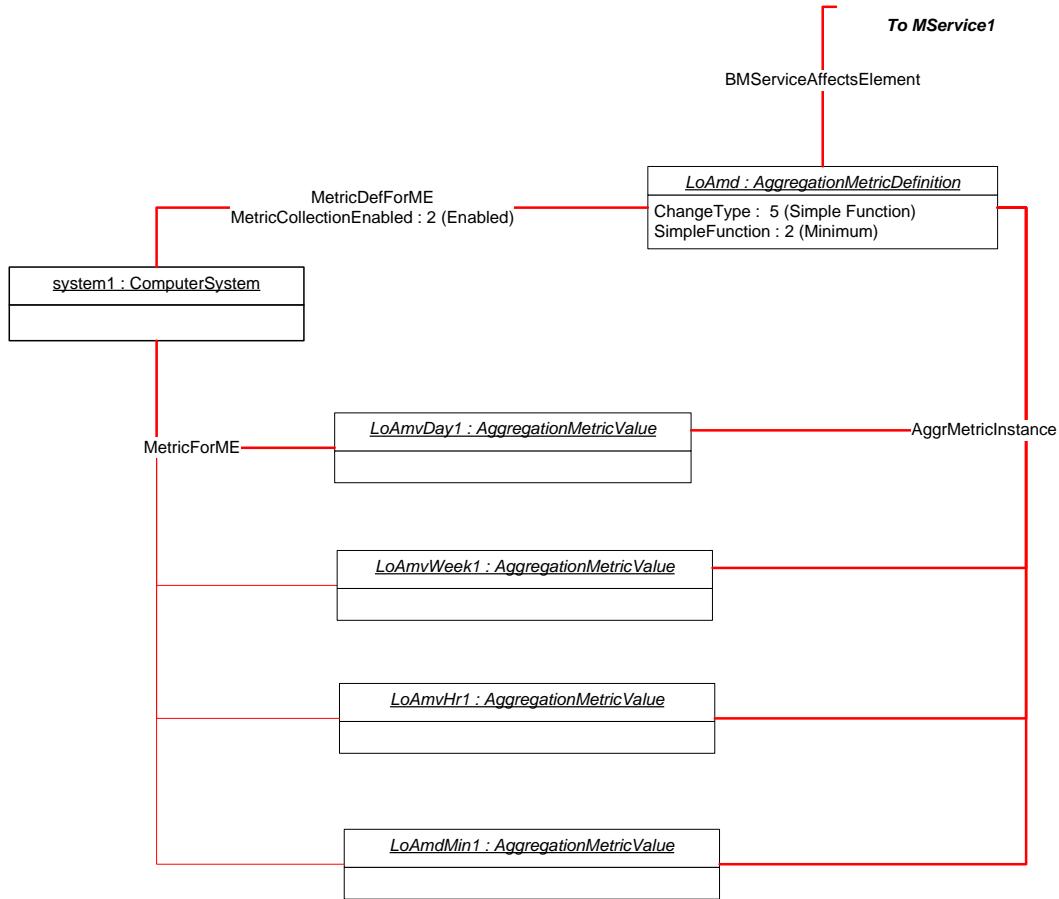
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Figure 2 – Maximum, Headroom Power and Energy Consumption Metrics

276

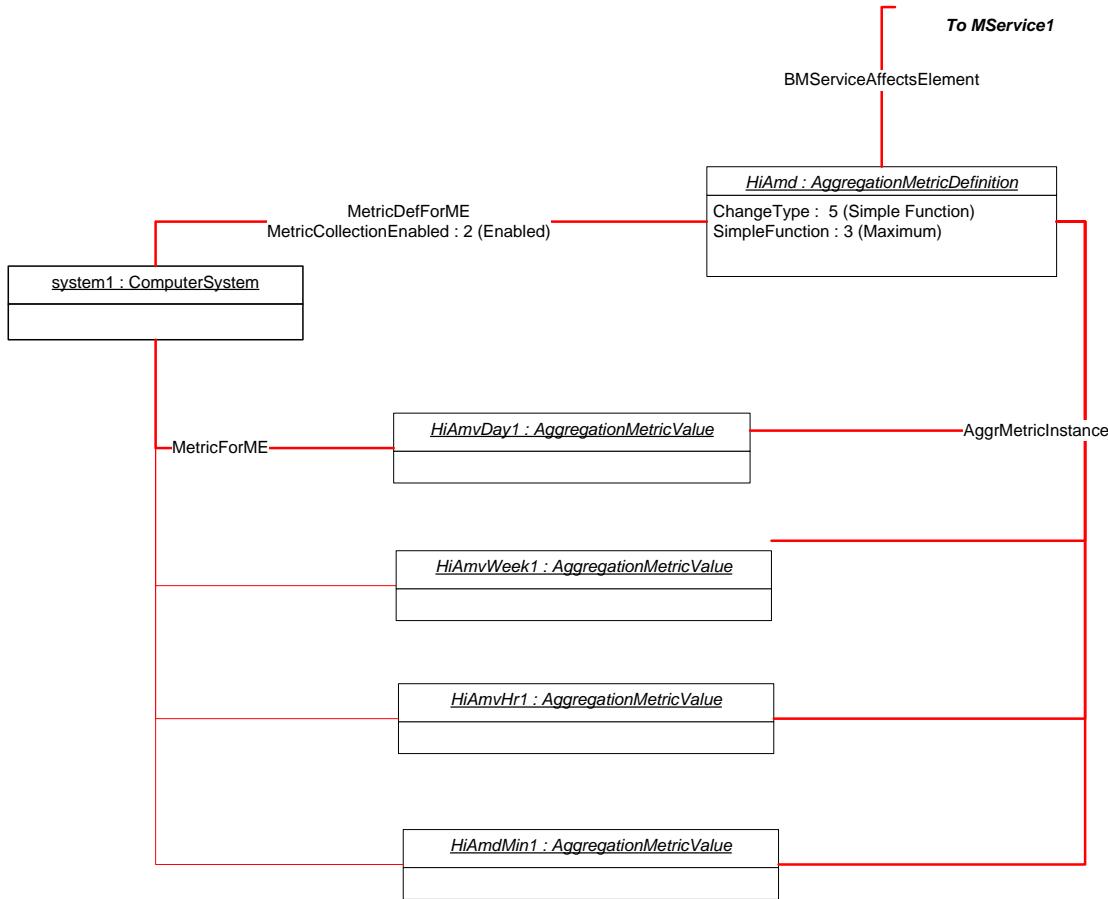
277 The below figures describe the maximum, minimum and average power consumption for the last hour,
278 day and week.



279

280

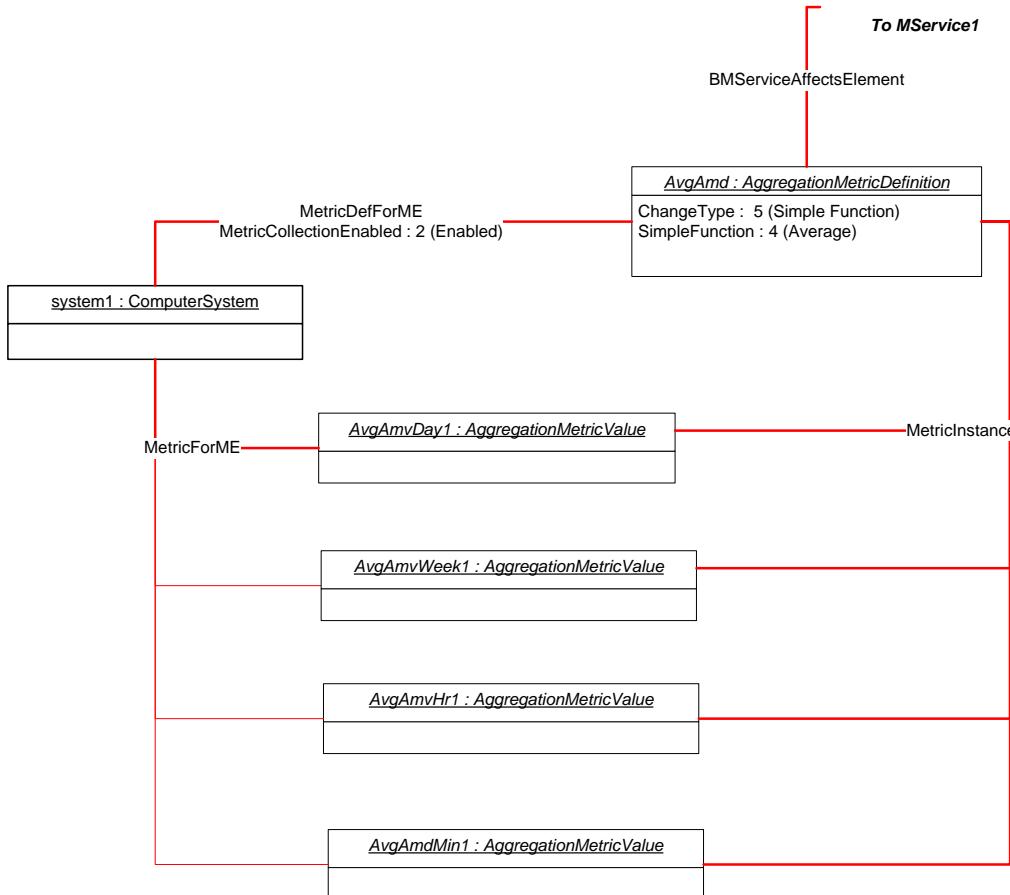
Figure 3 – Minimum Power Consumption for Last Hour, Day and Week



281

282

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



283

284

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

285

286 **7 Implementation Requirements**

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

290

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, 7.6.1, 7.9.1 and 7.10.1.
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, 7.6.2, 7.9.2 and 7.10.2.
DCIM_BaseMetricDefinition	Mandatory	The class shall be implemented in the <i>Implementation Namespaces</i> . 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 Error! Reference source not found..
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.

291

292 **7.1 Maximum Power Consumption Metric in Watts**293 The following defines the requirements of the DCIM_AggregationMetricDefinition instance for the
294 maximum power consumption metric in watts.

295 **7.1.1 DCIM_AggregationMetricDefinition**

296 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
297 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

298 The DCIM_BMServiceAffectsElement association's AffectedElement property shall reference
299 DCIM_AggregationMetricDefinition instances.

300 The DCIM_BMServiceAffectsElement association's ElementEffects array property shall contain value 5
301 (Manages).

302 The DCIM_MetricDefForME association's Dependant property shall reference
303 DCIM_AggregationMetricDefinition instances.

304 The DCIM_AggrMetricInstance association's Antecedent property shall reference
305 DCIM_AggregationMetricDefinition instances.

306 **7.1.1.1 Resource URLs for WinRM®**

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

309 The key property shall be the Id.

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

313 **7.1.1.2 Operations**

314 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

315 **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

316 **7.1.1.3 Properties**

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

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

323 **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"
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)

325 **7.1.2 DCIM_AggregationMetricValue**

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

328 The DCIM_AggrMetricInstance association's Dependent property shall reference
 329 DCIM_AggregationMetricValue instances.

330 The DCIM_MetricForME association's Dependent property shall reference
 331 DCIM_AggregationMetricValue instances.

332 **7.1.2.1 Resource URIs for WinRM®**

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

335 The key property shall be the InstanceID.

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

339 **7.1.2.2 Operations**

340 The following table details the implemented operations on DCIM_AggregationMetricValue.

341 **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

342

343 **7.1.2.3 Properties**

344 The following table details the requirements for implementing DCIM_AggregationMetricValue instance
345 representing maximum power consumption metric in Watts. The most derived class name of this instance
346 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 6 – 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 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.

352

353 **7.2 Maximum Headroom Power Consumption Metric in Watts**

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

355 **7.2.1 DCIM_AggregationMetricDefinition**

356 See section 7.1.1.

357

358 **7.2.2 DCIM_AggregationMetricValue**

359 The following clauses define the requirements for the DCIM_AggregationMetricValue class.
360 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

361 The DCIM_AggrMetricInstance association's Dependent property shall reference
362 DCIM_AggregationMetricValue instances.

363 The DCIM_MetricForME association's Dependent property shall reference
364 DCIM_AggregationMetricValue instances.

365 **7.2.2.1 Resource URLs for WinRM®**

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

368 The key property shall be the InstanceID.

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

372 **7.2.2.2 Operations**

373 The following table details the implemented operations on DCIM_AggregationMetricValue.

374 **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

375 **7.2.2.3 Properties**

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

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

382 **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.

384 7.3 Maximum Power Consumption Metric in Amperes

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

387 7.3.1 DCIM_AggregationMetricDefinition

388 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
 389 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

390 The DCIM_BMServicAffectsElement association's AffectedElement property shall reference
 391 DCIM_AggregationMetricDefinition instances.

392 The DCIM_BMServicAffectsElement association's ElementEffects array property shall contain value 5
 393 (Manages).

394 The DCIM_MetricDefForME association's Dependant property shall reference
 395 DCIM_AggregationMetricDefinition instances.

396 The DCIM_AggrMetricInstance association's Antecedent property shall reference
 397 DCIM_AggregationMetricDefinition instances.

398 7.3.1.1 Resource URLs for WinRM®

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

401 The key property shall be the Id.

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

405 7.3.1.2 Operations

406 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

407 **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
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408 **7.3.1.3 Properties**

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

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

415 **Table 10 – DCIM_AggregationMetricDefinition: Maximum Power Consumption Metric in Amperes**
 416 **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 000000000000500.000000:000.
SimpleFunction	uint16	Mandatory	The property shall have value 3 (Maximum)
TimeScope	uint16	Mandatory	The property shall have value 2 (Point)

417 **7.3.2 DCIM_AggregationMetricValue**

418 The following clauses define the requirements for the DCIM_AggregationMetricValue class.
 419 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

420 The DCIM_AggrMetricInstance association’s Dependent property shall reference
 421 DCIM_AggregationMetricValue instances.

422 The DCIM_MetricForME association’s Dependent property shall reference
 423 DCIM_AggregationMetricValue instances.

424 **7.3.2.1 Resource URIs for WinRM®**

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

427 The key property shall be the InstanceID.

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

431 **7.3.2.2 Operations**

432 The following table details the implemented operations on DCIM_AggregationMetricValue.

433

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

434

7.3.2.3 Properties

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

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

441 **Table 12 – DCIM_AggregationMetricValue: Maximum Power Consumption Metric in Amperes**
 442 **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

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

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

446 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum power consumption
 447 last hour.

448 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum power consumption
 449 last day.

450 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum power consumption
 451 last week.

452 **7.4.1 DCIM_AggregationMetricDefinition**

453 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
454 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

455 The DCIM_BMServiceAffectsElement association's AffectedElement property shall reference
456 DCIM_AggregationMetricDefinition instances.

457 The DCIM_BMServiceAffectsElement association's ElementEffects array property shall contain value 5
(Manages).

459 The DCIM_MetricDefForME association's Dependant property shall reference
460 DCIM_AggregationMetricDefinition instances.

461 The DCIM_AggrMetricInstance association's Antecedent property shall reference
462 DCIM_AggregationMetricDefinition instances.

463 **7.4.1.1 Resource URLs for WinRM®**

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

466 The key property shall be the Id.

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

470 **7.4.1.2 Operations**

471 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

472 **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

473 **7.4.1.3 Properties**

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

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

480 **Table 14 – DCIM_AggregationMetricDefinition: Maximum Power Consumption Metric for Last
481 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)

482 **7.4.2 DCIM_AggregationMetricValue**

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

484 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

485 The DCIM_AggrMetricInstance association's Dependent property shall reference
486 DCIM_AggregationMetricValue instances.

487 The DCIM_MetricForME association's Dependent property shall reference
488 DCIM_AggregationMetricValue instances.

489 **7.4.2.1 Resource URIs for WinRM®**

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

492 The key property shall be the InstanceID.

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

496 **7.4.2.2 Operations**

497 The following table details the implemented operations on DCIM_AggregationMetricValue.

498 **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

499 **7.4.2.3 Properties**

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

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

506 **Table 16 – DCIM_AggregationMetricValue: Maximum Power Consumption Metric for Last Hour,
507 Day and Week Properties**

Property Name	Type	Requirement	Additional Requirements
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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: 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 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

508 **7.5 Minimum Power Consumption Metric for Last Hour, Day and Week**

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

511 One instance of DCIM_AggregationMetricValue shall be instantiated for minimum power consumption last
 512 hour.

513 One instance of DCIM AggregationMetricValue shall be instantiated for minimum power consumption last
 514 day.

515 One instance of DCIM_AggregationMetricValue shall be instantiated for minimum power consumption last
 516 week.

517 **7.5.1 DCIM_AggregationMetricDefinition**

518 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
 519 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

520 The DCIM_BMServicAffectsElement association's AffectedElement property shall reference
 521 DCIM_AggregationMetricDefinition instances.

522 The DCIM_BMServicAffectsElement association's ElementEffects array property shall contain value 5
 523 (Manages).

524 The DCIM_MetricDefForME association's Dependent property shall reference
 525 DCIM_AggregationMetricDefinition instances.

526 The DCIM_AggrMetricInstance association's Antecedent property shall reference
 527 DCIM_AggregationMetricDefinition instances.

528 **7.5.1.1 Resource URIs for WinRM®**

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

531 The key property shall be the Id.

532 The instance Resource URI DCIM_AggregationMetricDefinition instance shall be:
533 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_AggregationMetricDefinition?__cimnamespace=root/dcim+Id=<Id>”
534

535 7.5.1.2 Operations

536 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

537 **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

538 7.5.1.3 Properties

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

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

545 **Table 18 – DCIM_AggregationMetricDefinition: Minimum Power Consumption Metric in Watts for
546 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"
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)

547 **7.5.2 DCIM_AggregationMetricValue**

548 The following clauses define the requirements for the DCIM_AggregationMetricValue class.
549 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

550 The DCIM_AggrMetricInstance association's Dependent property shall reference
551 DCIM_AggregationMetricValue instances.

552 The DCIM_MetricForME association's Dependent property shall reference
553 DCIM_AggregationMetricValue instances.

554 **7.5.2.1 Resource URLs for WinRM®**

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

557 The key property shall be the InstanceID.

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

561 **7.5.2.2 Operations**

562 The following table details the implemented operations on DCIM_AggregationMetricValue.

563 **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

564 **7.5.2.3 Properties**

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

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

571

572 **Table 20 – DCIM_AggregationMetricValue: Minimum Power Consumption Metric in Watts for Last
573 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 value have one of the following values: “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 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.

574 **7.6 Average Power Consumption Metric for Last Hour, Day and Week**

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

577 One instance of DCIM_AggregationMetricValue shall be instantiated for average power consumption last
 578 hour.

579 One instance of DCIM_AggregationMetricValue shall be instantiated for average power consumption last
 580 day.

581 One instance of DCIM_AggregationMetricValue shall be instantiated for average power consumption last
 582 week.

583 **7.6.1 DCIM_AggregationMetricDefinition**

584 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
 585 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

586 The DCIM_BMServicAffectsElement association's AffectedElement property shall reference
 587 DCIM_AggregationMetricDefinition instances.

588 The DCIM_BMServicAffectsElement association's ElementEffects array property shall contain value 5
 589 (Manages).

590 The DCIM_MetricDefForME association's Dependent property shall reference
 591 DCIM_AggregationMetricDefinition instances.

592 The DCIM_AggrMetricInstance association's Antecedent property shall reference
 593 DCIM_AggregationMetricDefinition instances.

594 **7.6.1.1 Resource URIs for WinRM®**

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

597 The key property shall be the Id.

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

601 **7.6.1.2 Operations**

602 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

603 **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

604 **7.6.1.3 Properties**

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

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 **Table 22 – DCIM_AggregationMetricDefinition: Average Power Consumption Metric in Watts for
612 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)

613 **7.6.2 DCIM_AggregationMetricValue**

614 The following clauses define the requirements for the DCIM_AggregationMetricValue class.
615 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

616 The DCIM_AggrMetricInstance association’s Dependent property shall reference
617 DCIM_AggregationMetricValue instances.

618 The DCIM_MetricForME association’s Dependent property shall reference
619 DCIM_AggregationMetricValue instances.

620 **7.6.2.1 Resource URLs for WinRM®**

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

623 The key property shall be the InstanceID.
 624 The instance Resource URI for this DCIM_AggregationMetricValue instance shall be:
 625 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_AggregationMetricValue?__cimnamespace=root/dcim+InstanceId=<InstanceId>”

627 **7.6.2.2 Operations**

628 The following table details the implemented operations on DCIM_AggregationMetricValue.

629 **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

630 **7.6.2.3 Properties**

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

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

637

638 **Table 24 – DCIM_AggregationMetricValue: Average Power Consumption Metric in Watts for Last
 639 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: “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 hour or 1 day or 1 week in whole watts
Volatile	boolean	Mandatory	The property shall have value TRUE.

640 **7.7 Energy Consumption Metric**

641 The following defines the requirements of the DCIM_BaseMetricDefinition instance of the energy
 642 consumption metric.

643 **7.7.1 DCIM_BaseMetricDefinition**

- 644 The following clauses define the requirements for the DCIM_BaseMetricDefinition class.
645 DCIM_BaseMetricDefinition is derived from CIM_BaseMetricDefinition.
- 646 The DCIM_BMServiceAffectsElement association's AffectedElement property shall reference
647 DCIM_BaseMetricDefinition instances.
- 648 The DCIM_BMServiceAffectsElement association's ElementEffects array property shall contain value 5
649 (Manages).
- 650 The DCIM_MetricDefForME association's Dependent property shall reference
651 DCIM_BaseMetricDefinition instances.
- 652 The DCIM_MetricDefForME association's MetricCollectionEnabled property shall have value 2 (Enabled).
- 653 The DCIM_BaseMetricInstance association's Antecedent property shall reference
654 DCIM_BaseMetricDefinition instances.
- 655 **7.7.1.1 Resource URLs for WinRM®**
- 656 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_BaseMetricDefinition?__cimnamespace=root/dcim”
- 658 The key property shall be the Id.
- 659 The instance Resource URI for DCIM_BaseMetricDefinition instance shall be:
660 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_BaseMetricDefinition?__cimnamespace=root/dcim+Id=<Id>”

662 **7.7.1.2 Operations**

663 The following table details the implemented operations on DCIM_BaseMetricDefinition.

664 **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

665 **7.7.1.3 Properties**

- 666 The following table details the requirements for implementing DCIM_BaseMetricDefinition instance
667 representing energy consumption metric. The most derived class name of this instance shall be
668 DCIM_BaseMetricDefinition.
- 669 If the column “Property Name” matches the property name, the property either shall have the value
670 denoted in the corresponding column “Additional Requirements”, or shall be implemented according to
671 the requirements in the corresponding column “Additional Requirements”.

672 **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 00000000000500.000000:000 in CIM datetime format.
TimeScope	uint16	Mandatory	The property shall have value 4 (Startup Interval).

673 **7.7.2 DCIM_BaseMetricValue**

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

675 DCIM_BaseMetricValue is derived from CIM_BaseMetricValue.

676 The DCIM_BaseMetricInstance association's Dependent property shall reference DCIM_BaseMetricValue instances.

678 The DCIM_MetricForME association's Dependent property shall reference DCIM_BaseMetricValue instances.

680 **7.7.2.1 Resource URIs for WinRM®**

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

683 The key property shall be the InstanceID.

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

687 **7.7.2.2 Operations**

688 The following table details the implemented operations on DCIM_BaseMetricValue.

689 **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

690 **7.7.2.3 Properties**

691 The following table details the requirements for implementing DCIM_BaseMetricValue instance
692 representing energy consumption metric. The most derived class name of this instance shall be
693 DCIM_BaseMetricValue.

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

697 **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

698 **7.8 Instantaneous Power Consumption Headroom Metric**

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

700 **7.8.1 DCIM_BaseMetricDefinition**

701 The following clauses define the requirements for the DCIM_BaseMetricDefinition class.
702 DCIM_BaseMetricDefinition is derived from CIM_BaseMetricDefinition.

703 **7.8.1.1 Resource URIs for WinRM®**

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

706 The key property shall be the Id.

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

710 **7.8.1.2 Operations**

711 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

713 7.8.1.3 Properties

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

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

720 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)

721

722

723 **7.8.2 DCIM_BaseMetricValue**

724 The following clauses define the requirements for the DCIM_BaseMetricValue class.
725 DCIM_BaseMetricValue is derived from CIM_BaseMetricValue.

726 **7.8.2.1 Resource URLs for WinRM®**

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

729 The key property shall be the InstanceID.

730 The instance Resource URI for this DCIM_BaseMetricValue instance shall be:
731 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_BaseMetricValue?__cimnamespace=root/dcim+InstanceId=<InstanceId>”

733 **7.8.2.2 Operations**

734 The following table details the implemented operations on DCIM_BaseMetricValue.

735 **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

736 **7.8.2.3 Properties**

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

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

743 **Table 32 – DCIM_BaseMetricValue: Instantaneous Power Consumption Headroom Metric in
744 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

745 **7.9 Maximum Inlet Temperature Metric for Last Hour, Day, Week, Month and**
 746 **Year**

747 The following defines the requirements of the DCIM_AggregationMetricValue instance for the maximum
 748 inlet temperature metric for the last hour, day, week, month and year.

749 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum inlet temperature last
 750 hour.

751 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum inlet temperature last
 752 day.

753 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum inlet temperature last
 754 week.

755 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum inlet temperature last
 756 month.

757 One instance of DCIM_AggregationMetricValue shall be instantiated for maximum inlet temperature last
 758 year.

759 **7.9.1 DCIM_AggregationMetricDefinition**

760 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
 761 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

762 **7.9.1.1 Resource URIs for WinRM®**

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

765 The key property shall be the Id.

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

769 **7.9.1.2 Operations**

770 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

771 **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

772 **7.9.1.3 Properties**

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

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

779 **Table 34 – DCIM_AggregationMetricDefinition: Maximum Inlet Temperature Metric for Last Hour,
780 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)

781 **7.9.2 DCIM_AggregationMetricValue**

782 The following clauses define the requirements for the DCIM_AggregationMetricValue class.
783 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

784 **7.9.2.1 Resource URIs for WinRM®**

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

787 The key property shall be the InstanceID.

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

791 **7.9.2.2 Operations**

792 The following table details the implemented operations on DCIM_AggregationMetricValue.

793 **Table 35 – DCIM_AggregationMetricValue Operations**

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

794 **7.9.2.3 Properties**

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

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

801 **Table 36 – DCIM_AggregationMetricValue: Maximum Inlet Temperature Metric for Last Hour, Day
 802 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: DCIM:System:Max:InletTemp:1H DCIM:System:Max:InletTemp:1D DCIM:System:Max:InletTemp:1W DCIM:System:Max:InletTemp:1M DCIM:System:Max:InletTemp:1Y
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

803 **7.10 Average Inlet Temperature Metric for Last Hour, Day, Week, Month and
 804 Year**

805 The following defines the requirements of the DCIM_AggregationMetricValue instance for the average
 806 inlet temperature metric for last hour, day, week, month and year.

807 One instance of DCIM_AggregationMetricValue shall be instantiated for average inlet temperature last
 808 hour.

809 One instance of DCIM_AggregationMetricValue shall be instantiated for average inlet temperature last
 810 day.

811 One instance of DCIM_AggregationMetricValue shall be instantiated for average inlet temperature last
 812 week.

813 One instance of DCIM_AggregationMetricValue shall be instantiated for average inlet temperature last
 814 month.

815 One instance of DCIM_AggregationMetricValue shall be instantiated for average inlet temperature last
 816 year.

817 **7.10.1 DCIM_AggregationMetricDefinition**

818 The following clauses define the requirements for the DCIM_AggregationMetricDefinition class.
819 DCIM_AggregationMetricDefinition is a derivation of CIM_AggregationMetricDefinition.

820 **7.10.1.1 Resource URIs for WinRM®**

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

823 The key property shall be the Id.

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

827 **7.10.1.2 Operations**

828 The following table details the implemented operations on DCIM_AggregationMetricDefinition.

829 **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

830 **7.10.1.3 Properties**

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

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

837 **Table 38 – DCIM_AggregationMetricDefinition: Average Inlet temperature Metric in Watts for Last
838 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.
SimpleFunction	uint16	Mandatory	The property shall have value 4 (Average)

Property Name	Type	Requirement	Additional Requirements
TimeScope	uint16	Mandatory	The property shall have value 2 (Point)

839 **7.10.2 DCIM_AggregationMetricValue**

840 The following clauses define the requirements for the DCIM_AggregationMetricValue class.
841 DCIM_AggregationMetricValue is a derivation of CIM_AggregationMetricValue.

842 **7.10.2.1 Resource URIs for WinRM®**

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

845 The key property shall be the InstanceID.

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

849 **7.10.2.2 Operations**

850 The following table details the implemented operations on DCIM_AggregationMetricValue.

851 **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

852 **7.10.2.3 Properties**

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

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

859

860 **Table 40 – DCIM_AggregationMetricValue: Average Inlet temperature Metric in Celsius for Last
861 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.

InstanceId	string	Mandatory	The property shall have one of the below values: “DCIM:System:Avg:InletTemp:1H” “DCIM:System:Avg:InletTemp:1D” “DCIM:System:Avg:InletTemp:1W” “DCIM:System:Avg:InletTemp:1M” “DCIM:System:Avg:InletTemp:1Y”
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.

862 **7.11 Statistical Data Associated to OOB Sensors**

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

864 The various categories of statistical data is presented as sensor instances of
865 DCIM_AggregationMetricDefinition class. So the instances are: i.e., CPUPerfStatistics,
866 MemoryPerfStatistics, IOPerfStatistics, CUPSIndexStatistics. The detailed explanation of properties of
867 this class is presented under 7.11.1.

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

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

875

876 **7.11.1 DCIM_AggregationMetricDefinition**

877 The following table shows properties of the class DCIM_AggregationMetricDefinition. The values are
878 presented in percentage form. The most derived class name of this instance shall be
879 DCIM_AggregationMetricDefinition.

880 **Table 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: “DCIM:SystemBoardCPUUsageStat”OR “DCIM:SystemBoardIOUsageStat” OR “DCIM:SystemBoardMEMUsageStat” OR “DCIM:SystemBoardSYSUsageStat”
IsContinuous	boolean	Mandatory	The property shall have value TRUE
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 • 3 (Maximum)
TimeScope	uint16	Mandatory	The property shall have value 3 (Interval)

881

882 **7.11.2 DCIM_AggregationMetricValue**

883

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

886

887 **Table Properties of DCIM_AggregationMetricValue**

Property Name	Type	Requirement	Possible Values
AggregationDuration	datetime	Mandatory	For 1Hour: 0000000010000.000000:000 1Day: 00000001000000.000000:000 1Week: 00000007000000.000000:000 None: 00000000000000.000000:000
AggregationTimeStamp	datetime	Mandatory	Current timestamp.

Property Name	Type	Requirement	Possible Values
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

- 888 Note:
- 889 1. The value of property MetricDefinitionID (DCIM_AggregationMetricValue) should match to
890 property Id (DCIM_AggregationMetricDefinition).
- 891 2. Timestamp is not applicable for Average metric Values. So in that case timestamp will be NULL.

892 **7.12 Inlet Temperature Time above Thresholds Metric**

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

896 **7.12.1 DCIM_BaseMetricDefinition**

897 The following clauses define the requirements for the DCIM_BaseMetricDefinition class.
898 DCIM_BaseMetricDefinition is derived from CIM_BaseMetricDefinition.

899 **7.12.1.1 Resource URIs for WinRM®**

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

902 The key property shall be the Id.

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

906 **7.12.1.2 Operations**

907 The following table details the implemented operations on DCIM_BaseMetricDefinition.

908 **Table 41 – DCIM_BaseMetricDefinition Operations**

Operation Name	Requirements	Required Input
Get	Mandatory	Instance URI

Enumerate	Mandatory	Class URI
Associators	Mandatory	Instance URI
References	Mandatory	Instance URI

909 **7.12.1.3 Properties**

910 The following table details the requirements for implementing DCIM_BaseMetricDefinition instance
 911 representing inlet temperature time above thresholds metric. The most derived class name of this
 912 instance shall be DCIM_BaseMetricDefinition.

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

916 **Table 42 – DCIM_BaseMetricDefinition: Inlet Temperature Time above Thresholds Metric
 917 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 00000000000005.000000:000 in CIM datetime format.
TimeScope	uint16	Mandatory	The property shall have value 4 (Startup Interval).

918 **7.12.2 DCIM_BaseMetricValue**

919 The following clauses define the requirements for the DCIM_BaseMetricValue class.
 920 DCIM_BaseMetricValue is derived from CIM_BaseMetricValue.

921 **7.12.2.1 Resource URIs for WinRM®**

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

924 The key property shall be the InstanceID.

925 The instance Resource URI for this DCIM_BaseMetricValue instance shall be:
926 “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_BaseMetricValue?__cimnamespace=root/dcim+InstanceId=<InstanceId>”
927

928 **7.12.2.2 Operations**

929 The following table details the implemented operations on DCIM_BaseMetricValue.

930 **Table 43 – DCIM_BaseMetricValue Operations**

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

931 **7.12.2.3 Properties**

932 The following table details the requirements for implementing DCIM_BaseMetricValue instance
933 representing inlet temperature time above thresholds metric. The most derived class name of this
934 instance shall be DCIM_BaseMetricValue.

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

938 **Table 44 – 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.
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

939 **7.13 DCIM_MetricDefForME**

940 The following clauses define the requirements for the DCIM_MetricDefForME class.
941 DCIM_MetricDefForME is derived from CIM_MetricDefForME.

942 **7.13.1 Resource URIs for WinRM®**

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

945 The key properties shall be the Antecedent and Dependent.

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

951 **7.13.2 Operations**

952 The following table details the implemented operations on DCIM_MetricDefForME.

953 **Table 45 – DCIM_MetricDefForME Operations**

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

954 **7.13.3 Properties**

955 The following table details the requirements for implementing DCIM_MetricDefForME instance
956 representing an association between DCIM_ComputerSystem and both DCIM_BaseMetricDefinition and
957 DCIM_AggregationMetricDefinition.

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

961

Table 46 – 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).

962 **7.14 DCIM_MetricServiceCapabilities**

963 The following clauses define the requirements for the DCIM_MetricServiceCapabilities class.
 964 DCIM_MetricServiceCapabilities is derived from CIM_MetricServiceCapabilities.

965 The DCIM_BMEElementCapabilities association's Capabilities property shall reference
 966 DCIM_MetricServiceCapabilities instances.

967 **7.14.1 Resource URIs for WinRM®**

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

970 The key properties shall be the InstanceID.

971 The instance Resource URI for this DCIM_MetricServiceCapabilities instance shall be:
 972 http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricServiceCapabilities?__cimnamespace=root/dcim+InstanceID=<InstanceID>

974 **7.14.2 Operations**

975 The following table details the implemented operations on DCIM_MetricServiceCapabilities.

976 **Table 47 – DCIM_MetricServiceCapabilities Operations**

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

977 **7.14.3 Properties**

978 The following table details the requirements for implementing DCIM_MetricServiceCapabilities instance
 979 representing an association between DCIM_ComputerSystem and both DCIM_BaseMetricValue and
 980 DCIM_AggregationMetricValue.

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

984 **Table 48 – 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”

985

986 7.15 DCIM_MetricService

987 The following clauses define the requirements for the DCIM_MetricService class. DCIM_MetricService is
988 derived from CIM_MetricService.

989 The DCIM_BMElementCapabilities association's ManagedElement property shall reference the
990 DCIM_MetricService instance.

991 The DCIM_BMServiceAffectsElement association's AffectingElement property shall reference the
992 DCIM_MetricService instance.

993 The DCIM_BMServiceAffectsElement association's ElementEffects array property shall contain value 5
994 (Manages).

995 The DCIM_BMHostedService association's Dependent property shall reference the DCIM_MetricService
996 instance.

997 The DCIM_ElementConformsToProfile association's ManagedElement property shall reference the
998 DCIM_MetricService instance.

999 The DCIM_LCElementConformsToProfile association's ManagedElement property shall reference the
1000 DCIM_MetricService instance.

1001

1002 7.15.1 Resource URIs for WinRM®

1003 The class Resource URI shall be “http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricService?__cimnamespace=root/dcim”

1005 The key properties shall be the SystemCreationClassName, CreationClassName, SystemName, and
 1006 Name.
 1007 The instance Resource URI for this DCIM_MetricService instance shall be:
 1008 http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_MetricService?
 1009 ?_cimnamespace=root/dcim+SystemCreationClassName=<
 1010 SystemCreationClassName>+CreationClassName=<CreationClassName>+SystemName=<SystemNam
 1011 e>+Name=<Name>.

1012 **7.15.2 Operations**

1013 The following table details the implemented operations on DCIM_MetricService.

1014 **Table 49 – 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

1015 **7.15.3 Properties**

1016 The following table details the requirements for implementing DCIM_MetricService. If the column
 1017 “Property Name” matches the property name, the property either shall have the value denoted in the
 1018 corresponding column “Additional Requirements”, or shall be implemented according to the requirements
 1019 in the corresponding column “Additional Requirements”.

1020 **Table 50 – 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”

1021 **7.16 DMTF Base Metrics Profile Registration**

1022 This section describes the implementation for the DCIM_RegisteredProfile class.
 1023 This class is instantiated in the Interop Namespace.
 1024 The DCIM_ElementConformsToProfile association(s) shall reference the DCIM_RegisteredProfile
 1025 instance.

1026 **7.16.1 Resource URIs for WinRM®**

1027 The class Resource URI is:

1028 "http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_RegisteredProfile?__cimnamespace=root/interop"
 1029
 1030 The key property shall be the InstanceID property.
 1031 The instance Resource URI is:
 1032 "http://schemas.dell.com/wbem/wscim/1/cim-schema/2/DCIM_RegisteredProfile?__cimnamespace=root/interop+InstanceID=DCIM:BaseMetricsRegisteredProfile:1"
 1033
 1034

1035 **7.16.2 Operations**

1036 The following table details the implemented operations on for DCIM_RegisteredProfile.

1037 **Table 51 – DCIM_RegisteredProfile - Operations**

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

1038

1039 **7.16.3 Properties**

1040 The following table details the implemented properties for DCIM_LCRegisteredProfile instance
 1041 representing Base Metrics Profile implementation.

1042 **Table 52 – 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).

1043 **7.17 Dell Base Metrics Profile Registration**

1044 This section describes the implementation for the DCIM_LCRegisteredProfile class.

1045 This class is instantiated in the Interop Namespace.

1046 The DCIM_LCElementConformsToProfile association(s) shall reference the DCIM_LCRegisteredProfile
 1047 instance.

1048 **7.17.1 Resource URIs for WinRM®**

1049 The class Resource URI is:

1050 "http://schemas.dmtf.org/wbem/wscim/1/cim-schema/2/CIM_RegisteredProfile?__cimnamespace=root/interop"
 1051

1052 The key property shall be the InstanceID property.

1053 The instance Resource URI is:

1054 "http://schemas.dell.com/wbem/wscim/1/cim-
1055 schema/2/DCIM_LCRegisteredProfile?__cimnamespace=root/interop+InstanceID=DMTF:BaseMetric
1056 s:1.0.0"

1057 **7.17.2 Operations**

1058 The following table details the implemented operations on for DCIM_LCRegisteredProfile.

1059 **Table 53 – DCIM_LCRegisteredProfile - Operations**

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

1060

1061 **7.17.3 Properties**

1062 The following table details the implemented properties for DCIM_LCRegisteredProfile instance
1063 representing Base Metrics Profile implementation.

1064 **Table 54 – 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 "1.2.0".
RegisteredOrganization	Mandatory	Uint16	This property value is 1 (Other).
OtherRegisteredOrganization	Mandatory	String	The property value is "DCIM".

1065 **8 Methods**

1066 This section details the requirements for supporting extrinsic methods for the CIM elements defined by
1067 this profile.

1068 **8.1 CIM_MetricService.ControlMetrics()**

1069 The ControlMetrics() method provides the ability to reset the metric collection for a particular metric or
1070 metrics.

1071 The ControlMetrics() method's return code values shall be as specified in Table 55 where the method
1072 execution behavior matches the return code description. The ControlMetrics() method's parameters are
1073 in specified in Table 57. No standard messages are defined for this method.

1074 **Table 55 – CIM_MetricService.ControlMetrics() Method: Return Code Values**

Value	Description
0	Operation completed successfully
2	Failed

1076

Table 56 – 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.	

1077

1078

Table 57 – 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

1079 8.2 DCIM_MetricService.ExportThermalHistory()

1080 The ExportThermalHistory() method is used to exports the system's thermal history in xml or csv from the
 1081 Lifecycle Controller to a remote share.

1082

Table 58 – DCIM_MetricService.ExportThermalHistory() Method: Return Code Values

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

1083

Table 59 – 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 ¹
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.

1084

1085

1086

Table 60 – 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	NA

MessageID (OUT parameter)	Message	MessageArguments[]
	create new jobs until the existing Backup job is completed or is canceled.	
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()

1087 The PeakReset() method provides the ability to reset the Peak utilization for a particular sensor to 0.

1089 The PeakReset() method's return code values shall be as specified in below Table where the method
 1090 execution behavior matches the return code description. The PeakReset() method's parameters are in
 1091 specified in Table 57. No standard messages are defined for this method.

1092 **Table 61 – CIM_MetricService.PeakReset() Method: Return Code Values**

Value	Description
0	Operation completed successfully
2	Failed

1093

1094 **Table 62 – 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>

1095

1096 **Table 63 – CIM_MetricService.PeakReset() Method: Parameters**

Qualifiers	Name	Type	Description/Values
IN, REQ	UsageType	String	FQDD should be passed. iDRAC.Embedded.1#SystemBoardCPUUsage Stat OR iDRAC.Embedded.1#SystemBoardIOUsageS tat OR iDRAC.Embedded.1#SystemBoardMEMUsage Stat OR iDRAC.Embedded.1#SystemBoardSYSUsage Stat
OUT	MessageID	String	Error MessageID
OUT	Message	String	Error Message
OUT	MessageArguments[]	String	Error MessageArguments

1097

1098 **9 Use Cases**

1099 See *Lifecycle Controller (LC) Integration Best Practices Guide*.

1100 **10 CIM Elements**

1101 No additional requirements are specified.

1102 **11 Privilege and License Requirement**

1103 The following table describes the privilege and license requirements for the listed operations:

1104 **Table 64 – 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_BMEElementCapabilities	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,	Login	None.

Class and Method	Operation	User Privilege Required	License Required
	GET		
DCIM_RegisteredProfile	ENUMERATE, GET	Login	None.
DCIM_LCRegisteredProfile	ENUMERATE, GET	Login	None.
DCIM_LCElementConformsToProfile	ENUMERATE, GET	Login	None.

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ANNEX A

Change Log

Version	Date	Description
1.2.0		Added Inlet Temperature metrics.
1.3.0	7/15/2014	New Properties for OOB Statistics (Aggregate Metrics) and Peak Reset method to reset OOB Statistics were added in 13G.
1.3.1	3/10/2015	ControlMetrics Method was updated with New Error SYS091

1109