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## 6 **Network Policy Management Profile**

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35

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## Foreword

97 The *Network Policy Management Profile* (DSP1048) was prepared by the Network Services Management  
98 Working Group of the DMTF.

99 DMTF is a not-for-profit association of industry members dedicated to promoting enterprise and systems  
100 management and interoperability.

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114

115

## Introduction

116 The information in this specification should be sufficient for a provider or consumer of this data to identify  
117 unambiguously the classes, properties, methods, and values that shall be instantiated and manipulated to  
118 represent and manage Network Services and the associated configuration information. The target  
119 audience for this specification is implementers who are writing CIM-based providers or consumers of  
120 management interfaces that represent the component described in this document.

### 121 Document conventions

#### 122 Typographical conventions

123 The following typographical conventions are used in this document:

- 124 • Document titles are marked in *italics*.
- 125 • ABNF rules are in `monospaced font`.

126

127

# Network Policy Management Profile

## 128 1 Scope

129 The *Network Policy Management Profile* is a base (abstract) profile that will specify the CIM Schema and  
130 use cases associated with the general and common aspects of Network Policy Management. This profile  
131 includes a specification of the Network Policy Service, Network Policy, Network Policy Rule and Setting  
132 Data, Policy Conditions and Action and describes how the network Policies can be applied to the  
133 Managed Elements.

## 134 2 Normative references

135 The following referenced documents are indispensable for the application of this document. For dated or  
136 versioned references, only the edition cited (including any corrigenda or DMTF update versions) applies.  
137 For references without a date or version, the latest published edition of the referenced document  
138 (including any corrigenda or DMTF update versions) applies.

139 DMTF DSP0004, *CIM Infrastructure Specification 2.7*,  
140 [http://www.dmtf.org/standards/published\\_documents/DSP0004\\_2.7.pdf](http://www.dmtf.org/standards/published_documents/DSP0004_2.7.pdf)

141 DMTF DSP0200, *CIM Operations over HTTP 1.3*,  
142 [http://www.dmtf.org/standards/published\\_documents/DSP0200\\_1.3.pdf](http://www.dmtf.org/standards/published_documents/DSP0200_1.3.pdf)

143 DMTF DSP0223, *Generic Operations 1.0*,  
144 [http://www.dmtf.org/standards/published\\_documents/DSP0223\\_1.0.pdf](http://www.dmtf.org/standards/published_documents/DSP0223_1.0.pdf)

145 DMTF DSP1001, *Management Profile Specification Usage Guide 1.0*,  
146 [http://www.dmtf.org/standards/published\\_documents/DSP1001\\_1.0.pdf](http://www.dmtf.org/standards/published_documents/DSP1001_1.0.pdf)

147 DMTF DSP1033, *Profile Registration Profile 1.0*,  
148 [http://www.dmtf.org/standards/published\\_documents/DSP1033\\_1.0.pdf](http://www.dmtf.org/standards/published_documents/DSP1033_1.0.pdf)

149 ISO/IEC Directives, Part 2, *Rules for the structure and drafting of International Standards*,  
150 <http://isotc.iso.org/livelink/livelink.exe?func=ll&objId=4230456&objAction=browse&sort=subtype>

## 151 3 Terms and definitions

152 In this document, some terms have a specific meaning beyond the normal English meaning. Those terms  
153 are defined in this clause.

154 The terms "shall" ("required"), "shall not", "should" ("recommended"), "should not" ("not recommended"),  
155 "may," "need not" ("not required"), "can" and "cannot" in this document are to be interpreted as described  
156 in [ISO/IEC Directives, Part 2](#), Annex H. The terms in parenthesis are alternatives for the preceding term,  
157 for use in exceptional cases when the preceding term cannot be used for linguistic reasons. Note that  
158 [ISO/IEC Directives, Part 2](#), Annex H specifies additional alternatives. Occurrences of such additional  
159 alternatives shall be interpreted in their normal English meaning.

160 The terms "clause", "subclause", "paragraph", and "annex" in this document are to be interpreted as  
161 described in [ISO/IEC Directives, Part 2](#), Clause 5.

162 The terms "normative" and "informative" in this document are to be interpreted as described in [ISO/IEC](#)  
163 [Directives, Part 2](#), Clause 3. In this document, clauses, subclauses, or annexes labeled "(informative)" do  
164 not contain normative content. Notes and examples are always informative elements.

165 The terms defined in [DSP0004](#), [DSP0223](#), and [DSP1001](#) apply to this document. The following additional  
166 terms are used in this document.

167 **3.1**

168 **conditional**

169 indicates requirements to be followed strictly to conform to the document when the specified conditions  
170 are met

171 **3.2**

172 **mandatory**

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

175 **3.3**

176 **optional**

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

178 **3.4**

179 **pending configuration**

180 indicates the configuration that will be applied to an IP network connection the next time the IP network  
181 connection accepts a configuration

182 **3.5**

183 **referencing profile**

184 indicates a profile that owns the definition of this class and can include a reference to this profile in its  
185 "Referenced Profiles" table

186 **3.6**

187 **unspecified**

188 indicates that this profile does not define any constraints for the referenced CIM element or operation

189 **4 Symbols and abbreviated terms**

190 The abbreviations defined in [DSP0004](#), [DSP0223](#), and [DSP1001](#) apply to this document. The following  
191 additional abbreviations are used in this document.

192 **4.1**

193 **IP**

194 Internet Protocol

195 **4.2**

196 **VLAN**

197 Virtual Local Area Network



198 **5 Synopsis**

199 **Profile name:** Network Policy Management

200 **Version:** 0.0.1

201 **Organization:** DMTF

202 **CIM Schema version:** 2.43

203 **Central class:** CIM\_NetworkPolicyManagementService

204 **Scoping class:** CIM\_System

205 The *Network Policy Management Profile* is a base profile that specifies the CIM Schema and use cases  
 206 associated with the general and common aspects of Network Policy Management. The Network Policy  
 207 Management Profile is an adaptation of the CIM Policy Management Profile.

208 Table 1 identifies profiles on which this profile has a dependency.

209 **Table 1 – Referenced profiles**

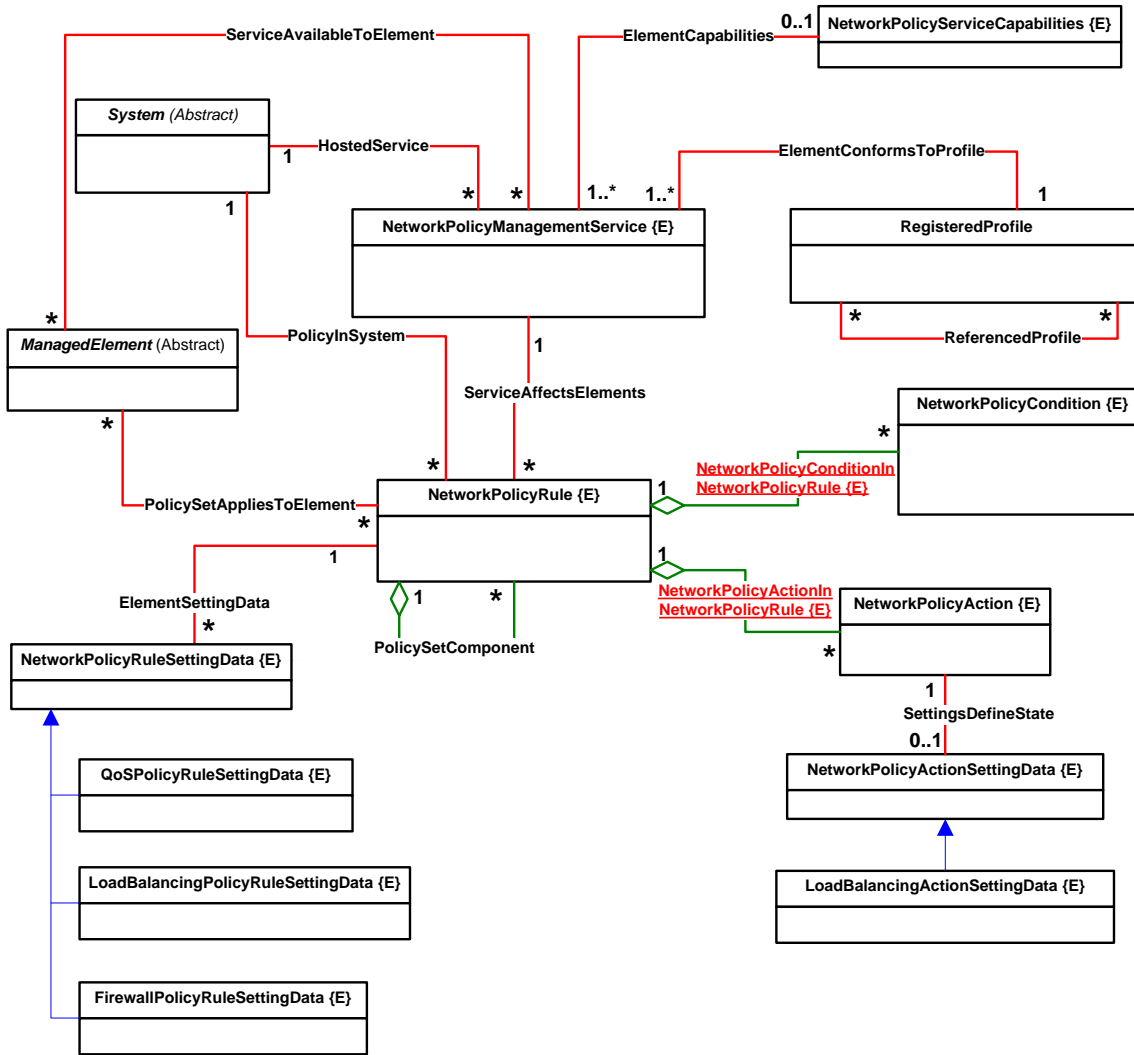
Profile Name	Organization	Version	Requirement	Description
Profile Registration	DMTF	1.0	Mandatory	None
Network Management Profile	DMTF	1.0	Optional	None
Policy Profile	DMTF	1.0	Mandatory	None

210 **6 Description**

211 The *Network Policy Management Profile* includes base specification of the Network Policy Management  
 212 Service, Network Policy, Network Policy Rule and Setting Data, and Policy Conditions and Action. This  
 213 standard describes how a Network Policy is applied to the Managed Elements and contains three  
 214 possible extensions representing QoS, Firewall, and Load Balancer policies. Other types of policies, for  
 215 example Access Control List (ACL) or routing policies, may be represented in a similar manner.

216 **6.1 Class diagram**

217 Figure 1 represents the class schema for the *Network Policy Management Profile*. For simplicity, the  
 218 CIM\_ prefix has been removed from the names of the classes.



219

220 **Figure 1 – Network Policy Management Profile: Class diagram**

221 Network Policy model is an extension of the existing CIM Policy model, where the  
 222 CIM\_NetworkPolicyRule extends the CIM\_PolicyRule class, and CIM\_NetworkPolicyCondition and  
 223 CIM\_NetworkPolicyAction extend CIM\_Policy. CIM\_NetworkPolicyManagementService extends the  
 224 CIM\_Service class and provides policy management capabilities.

225 The Network Policy Management Service is hosted on a System (for example an instance of the  
 226 Computer System representing a network appliance, device or a network management system/controller)  
 227 and serves as a management gateway through which the instances of CIM\_NetworkPolicyRule are  
 228 created, configured, and applied to the instances of CIM\_ManagedElement subclasses, for example,

- 229 CIM\_Network, CIM\_ProtocolEndpoint, subclasses of CIM\_Service (e.g., for configuration of the routing  
230 policies), etc.
- 231 The CIM\_NetworkPolicyRule may be subclassed to represent different types of network policies, for  
232 example CIM\_QoSPolicyRule or CIM\_LoadBalancingPolicyRule.
- 233 There is a set of Network Policy Conditions that can be associated with the particular Network Policy  
234 Rule. These conditions determine when the particular policy will be invoked. The conditions can be  
235 evaluated in the specified order (see the definition of the  
236 CIM\_NetworkPolicyConditionInNetworkPolicyRule association for how the condition evaluation order is  
237 specified). The set of the CIM\_NetworkPolicyAction instances associated with the Network Policy via the  
238 CIM\_NetworkPolicyActionInNetworkPolicyRule determines the actions that will be executed once the  
239 policy is triggered.
- 240 The Network Policy Rule and Network Policy Action are configured via the instances of  
241 CIM\_NetworkPolicyRuleSettingData and CIM\_NetworkPolicyActionSettingData classes or subclasses  
242 thereof.
- 243 The CIM\_NetworkPolicyRuleSettingData may be subclassed to represent the settings of the policies  
244 extending Network Policy Management Profile, for example CIM\_QoSPolicyRuleSettingData or  
245 CIM\_LoadBalancingPolicyRuleSettingData.
- 246 The CIM\_NetworkPolicyActionSettingData may be subclassed to represent the settings of the policies  
247 extending Network Policy Management Profile, for example CIM\_LoadBalancingActionSettingData.
- 248 The CIM\_NetworkPolicyServiceCapabilities class describes the capabilities offered by the Network Policy  
249 Management Service. The CIM\_RegisteredProfile provides the information about the Policy Management  
250 Profile registration.

## 251 **7 Implementation**

- 252 This clause details the requirements related to the arrangement of instances and properties of instances  
253 for implementations of this profile.

### 254 **7.1 Representing the policy management capabilities**

#### 255 **7.1.1 CIM\_NetworkPolicyManagementService**

- 256 The instance of the CIM\_NetworkPolicyManagementService class serves as a management endpoint  
257 through which the instances of CIM\_NetworkPolicyRule shall be created, configured, and applied to the  
258 managed elements. Zero or more instances of CIM\_NetworkPolicyManagementService shall be  
259 instantiated.

- 260 The instances of the CIM\_NetworkPolicyManagementService shall be associated with the instance of the  
261 scoping CIM\_System through an instance of CIM\_HostedService association.

#### 262 **7.1.2 CIM\_NetworkPolicyServiceCapabilities**

- 263 The CIM\_NetworkPolicyServiceCapabilities class represents the capabilities offered by the  
264 CIM\_NetworkPolicyManagementService. There shall be at most one instance of the  
265 CIM\_NetworkPolicyServiceCapabilities class associated with at least one or more instances of  
266 CIM\_NetworkPolicyManagementService.

## 267 **7.2 Representing the Network Policy**

### 268 **7.2.1 CIM\_NetworkPolicyRule**

269 The CIM\_NetworkPolicyRule class extends the CIM\_PolicyRule and represents the Network Policy that is  
270 instantiated, configured, and applied to the various managed elements. The CIM\_NetworkPolicyRule  
271 instance shall be associated with the scoping CIM\_System through an instance of CIM\_PolicyInSystem  
272 association. The instance of the CIM\_NetworkPolicyRule shall be associated with one instance of the  
273 scoping CIM\_System.

274 A CIM\_NetworkPolicyRule instance that is applied to an instance of CIM\_ManagedElement shall be  
275 associated with the CIM\_ManagedElement instance through an instance of  
276 CIM\_PolicySetAppliesToElement association.

### 277 **7.2.2 CIM\_NetworkPolicyCondition**

278 The CIM\_NetworkPolicyCondition extends the CIM\_Policy class and specifies a particular condition,  
279 which causes the associated network policy to be triggered once met. Each CIM\_NetworkPolicyCondition  
280 instance shall be associated with one instance of the CIM\_NetworkPolicyRule through the instance of  
281 CIM\_NetworkPolicyConditionInNetworkPolicyRule association.

### 282 **7.2.3 CIM\_NetworkPolicyAction**

283 The CIM\_NetworkPolicyAction class extends the CIM\_Policy class and determines an action taken once  
284 the policy is triggered. Each CIM\_NetworkPolicyAction instance shall be associated with one instance of  
285 the CIM\_NetworkPolicyRule through the CIM\_NetworkPolicyActionInNetworkPolicyRule association  
286 instance.

## 287 **7.3 Network Policy configuration**

### 288 **7.3.1 CIM\_NetworkPolicyRuleSettingData**

289 The CIM\_NetworkPolicyRuleSettingData class extends the CIM\_SettingData class and specifies the  
290 setting data for the network policy.

291 An instance of the CIM\_NetworkPolicySettingData shall be associated to the instance of  
292 CIM\_NetworkPolicyRule through an instance of CIM\_ElementSettingsData association.

#### 293 **7.3.1.1 CIM\_QoSPolicyRuleSettingData**

294 The CIM\_QoSPolicyRuleSettingData class extends the CIM\_NetworkPolicyRuleSettingData class and  
295 specifies the setting data for the QoS network policy.

#### 296 **7.3.1.2 CIM\_FirewallPolicyRuleSettingData**

297 The CIM\_FirewallPolicyRuleSettingData class extends the CIM\_NetworkPolicyRuleSettingData class and  
298 specifies the setting data for the QoS network policy.

#### 299 **7.3.1.3 CIM\_LoadBalancingPolicyRuleSettingData**

300 The CIM\_LoadBalancingPolicyRuleSettingData class extends the CIM\_NetworkPolicyRuleSettingData  
301 class and specifies the setting data for the load balancing network policy.

### 302 **7.3.2 CIM\_NetworkPolicyActionSettingData**

303 CIM\_NetworkPolicyActionSettingData class extends the CIM\_NetworkPolicySettingData and specifies the  
304 setting data for the Network Policy Action.

305 An instance of the CIM\_NetworkPolicyActionSettingData shall be associated to the instance of  
 306 CIM\_NetworkPolicyAction through an instance of CIM\_SettingsDefineState association.

### 307 7.3.2.1 CIM\_LoadBalancingPolicyActionSettingData

308 CIM\_LoadBalancingPolicyActionSettingData class extends the CIM\_NetworkPolicyActionSettingData and  
 309 specifies the setting data for the load balancing network policy action.

## 310 8 Methods

311 This clause details the requirements for supporting intrinsic operations and extrinsic methods for the CIM  
 312 elements defined by this profile.

### 313 8.1 Extrinsic methods

314 If synchronous execution of a method succeeds, the implementation shall set a return value of  
 315 0 (Completed with No Error).

316 If synchronous execution of a method fails, the implementation shall set a return value of 2 (Failed) or a  
 317 more specific return code as specified with the respective method.

318 If a method is executed as an asynchronous task, the implementation shall perform all of the following  
 319 actions:

- 320 • Create a Job object according to DSP1103 Job Control Profile.
- 321 • Set a return value of 4096 (Job Started).

#### 322 8.1.1 Job parameter

323 The implementation shall set the value of the Job parameter as a result of an asynchronous execution of  
 324 a method of the CIM\_NetworkPolicyService as follows:

- 325 • If the method execution is performed synchronously, the implementation shall set the value to  
 326 NULL.
- 327 • If the method execution is performed asynchronously, the implementation shall set the value to  
 328 refer to the instance of the CIM\_ConcreteJob class that represents the asynchronous task.

#### 329 8.1.2 CIM\_NetworkPolicyService.CreatePolicyRule( )

330 The implementation of the CreatePolicyRules( ) method is required; the provisions in this subclause apply  
 331 in addition to behavior applicable to all extrinsic methods as specified in 8.1.

332 This method creates instances of CIM\_NetworkPolicyRule class, CIM\_NetworkPolicyCondition,  
 333 CIM\_NetworkPolicyAction, CIM\_NetworkPolicyRuleSettingData, and  
 334 CIM\_NetworkPolicyActionSettingData classes and all mandatory associations between these instances  
 335 as described in clause 7.

336 Profile implementation should make sure that the types of the policy actions, network policy rule setting  
 337 data, and network policy action setting data match to represent a configuration of the particular policy  
 338 type, for example load balancing or firewall policy.

339 **Input:** NetworkPolicyAction[], ActionsOrder[] (uint16) (optional), NetworkPolicyCondition[],  
 340 ConditionGroupNumber[] (uint16), NetworkPolicyRuleSettingData[], NetworkPolicyActionSettingData[],  
 341 SequenceNumber, NetworkPolicyRule, REF ParentNetworkPolicyRule (optional), REF  
 342 ManagedElement[] (optional)

343 **Output:** REF to NetworkPolicyRule

**344 8.1.3 CIM\_NetworkPolicyService.DeletePolicyRules( )**

345 The implementation of the DeletePolicyRules( ) method is required; the provisions in this subclause apply  
346 in addition to behavior applicable to all extrinsic methods as specified in 8.1.

347 This method removes all associated instances of CIM\_NetworkPolicyAction,  
348 CIM\_NetworkPolicyCondition, CIM\_NetworkPolicyRuleSettingData, and  
349 CIM\_NetworkPolicyActionSettingData that are only associated with the rule specified in this method input  
350 parameter.

351 The requested CIM\_NetworkPolicyRule instances shall be associated with this network policy service in  
352 order for them to be removed

353 **Input:** REF NetworkPolicyRule[]

**354 8.1.4 CIM\_NetworkPolicyService.ApplyPolicyRule( ) (optional)**

355 The implementation of the ApplyPolicyRules( ) method is optional; the provisions in this subclause apply  
356 in addition to behavior applicable to all extrinsic methods as specified in 8.1.

357 Applies the Network Policy Rule to the specified instances of the CIM\_ManagedElement. This method  
358 creates the instances of the CIM\_PolicySetAppliesToElement association between the specified instance  
359 of the CIM\_NetworkPolicyRule and the instances of CIM\_ManagedElement subclasses, which references  
360 are supplied.

361 **Input:** REF NetworkPolicyRule, REF ManagedElement[]

**362 8.1.5 CIM\_NetworkPolicyService.ReleasePolicyRule( ) (optional)**

363 The implementation of the ReleasePolicyRules( ) method is optional; the provisions in this subclause  
364 apply in addition to behavior applicable to all extrinsic methods as specified in 8.1.

365 Removes the Network Policy Rule from the ManagedElement instances it was applied before. This  
366 method deletes the instances of the CIM\_PolicySetAppliesToElement association between the specified  
367 instance of the CIM\_NetworkPolicyRule and the instances of CIM\_ManagedElement subclasses, which  
368 references are supplied.

369 **Input:** REF NetworkPolicyRule, REF ManagedElement[]

**370 8.2 Profile conventions for operations**

371 For each profile class (including associations), the implementation requirements for operations, including  
372 those in the following default list, are specified in class-specific subclauses of this clause.

373 The default list of operations is as follows:

- 374 • GetInstance
- 375 • EnumerateInstances
- 376 • EnumerateInstanceNames
- 377 • Associators
- 378 • AssociatorNames
- 379 • References
- 380 • ReferenceNames

**381 8.3 CIM\_NetworkPolicyManagementService**

382 All operations in the default list in 8.1 shall be implemented as defined in [DSP0200](#).

**383 8.4 CIM\_NetworkPolicyServiceCapabilities**

384 All operations in the default list in 8.1 shall be implemented as defined in [DSP0200](#).

**385 8.5 CIM\_NetworkPolicyRule**

386 All operations in the default list in 8.1 shall be implemented as defined in [DSP0200](#).

**387 8.6 CIM\_NetworkPolicyCondition**

388 All operations in the default list in 8.1 shall be implemented as defined in [DSP0200](#).

**389 8.7 CIM\_NetworkPolicyAction**

390 All operations in the default list in 8.1 shall be implemented as defined in [DSP0200](#).

**391 8.8 CIM\_NetworkPolicyRuleSettingData**

392 All operations in the default list in 8.1 shall be implemented as defined in [DSP0200](#).

**393 8.9 CIM\_NetworkPolicyActionSettingData**

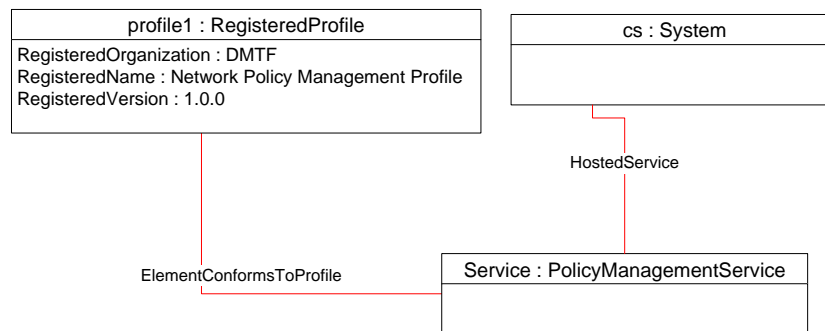
394 All operations in the default list in 8.1 shall be implemented as defined in [DSP0200](#).

## 395 9 Use cases

396 This clause contains object diagrams and use cases for the *Network Policy Management Profile*.

### 397 9.1 Profile registration

398 The object diagram in Figure 2 shows one possible method for advertising profile conformance.



399

400

Figure 2 – Registered profile

## 401 9.2 Profile extension and usage examples

### 402 9.2.1 Extending and using the Network Policy Management Profile

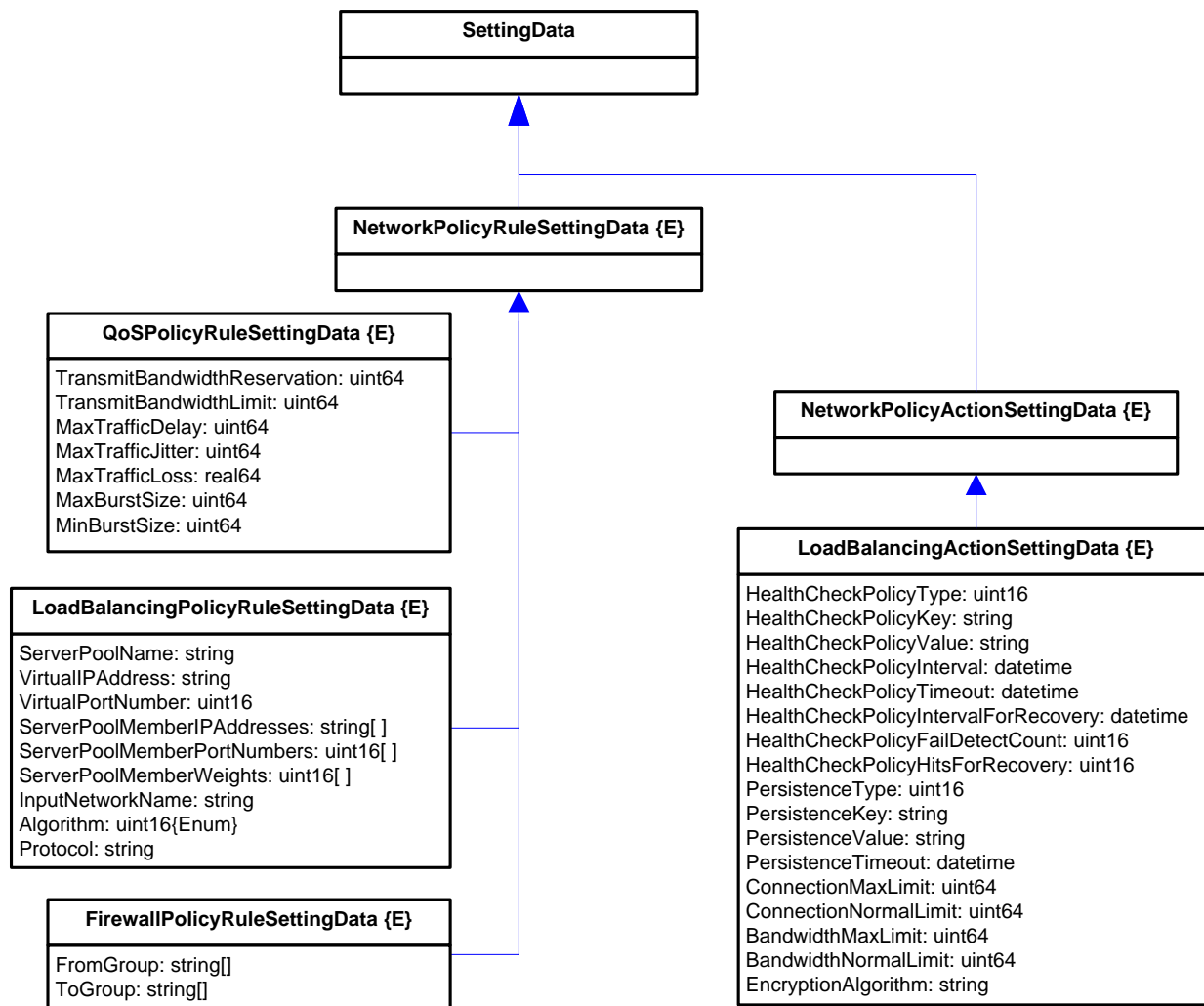
403 The *Network Policy Management Profile* is a base profile that specifies the CIM Schema and use cases  
 404 associated with the general and common aspects of Network Policy Management. This profile is intended  
 405 to be extended to represent various kinds of network policies, such as Load Balancing, Firewall, QoS,  
 406 Routing, etc.

407 The extension is generally performed by subclassing `CIM_NetworkPolicyRulesSettingData` to represent  
 408 the settings specific to the particular type of Network Policy, for example Load Balancer by introducing  
 409 `CIM_LoadBalancingPolicyRuleSettingData` and by subclassing `CIM_NetworkPolicyActionSettingData` if  
 410 the particular type of actions require specific configuration parameters, for example by introducing  
 411 `CIM_LoadBalancingActionSettingData` to specify the action settings for the load balancing actions.

412 The class diagram on Figure 3 represents the Policy Rule and Action extensions for the Load Balancer,  
 413 Firewall, and QoS specific Network Policies.



414



415

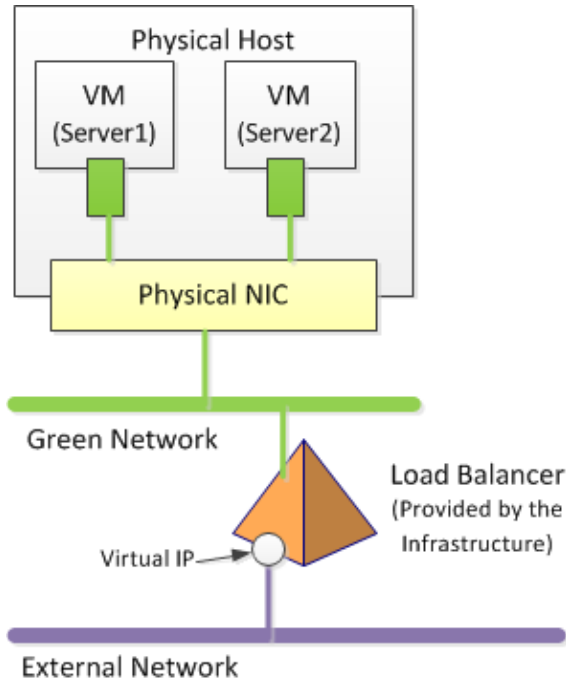
416

Figure 3 – Network Management Policy extensions

417 **9.2.2 Load Balancer configuration**

418 Figure 4 illustrates one of the possible load balancing scenarios. In this case the Load Balancer needs to  
 419 redirect the IP traffic, coming from the external network to one of the Virtual Machines (VM), hosted by the  
 420 same Physical Host. The VMs are connected to the internal network and their IP addresses can be  
 421 resolved via NAT.

422 The IP traffic that needs to be load balanced is coming to port 80 and the load balancing needs to be  
 423 performed using Round Robin algorithm, where each VM can be assigned its own weight. In this example  
 424 VM1 has been assigned weight equal to 6 and VM2 has been assigned weight equal to 3.

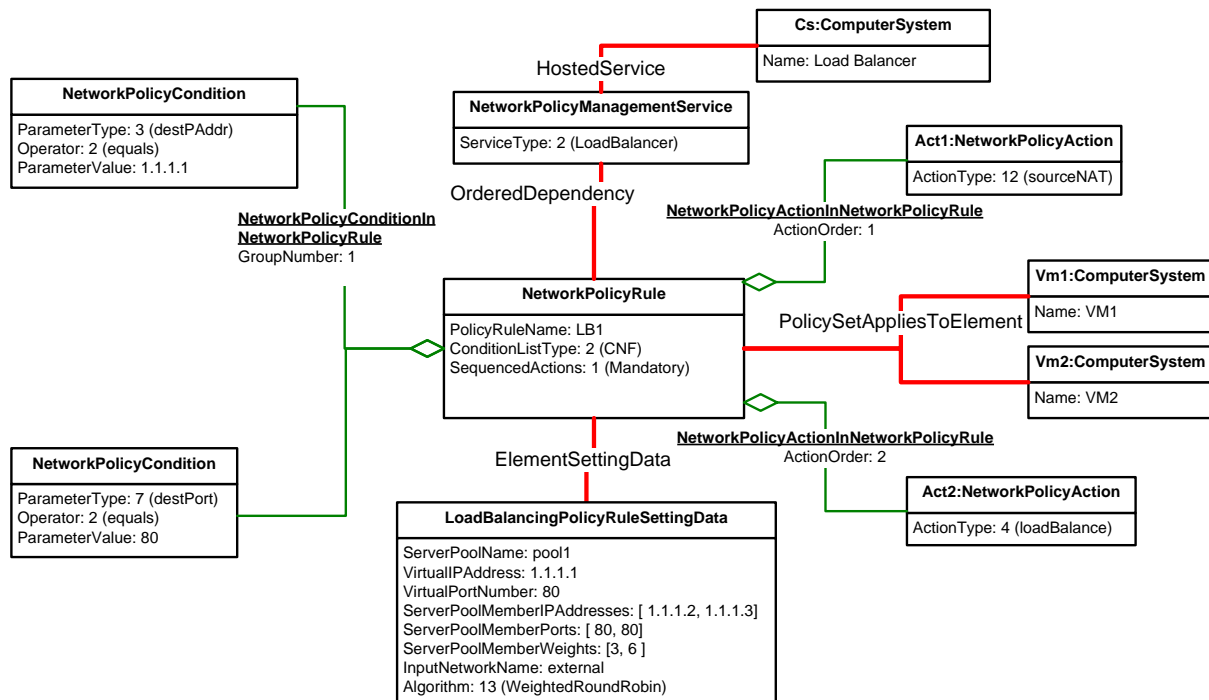


Parameter	Configuration Value
Algorithm	RoundRobin
Virtual Port	80
VM1 Destination Port	80
VM2 Destination Port	80
VM1 weight	6
VM2 weight	3
NetworkPolicyActions	Source NAT Load balance

425

426

Figure 4 – Example load balancing scenario



427

428

429

Figure 5 – Example load balancing configuration using Network Policy

430

431

432

433

Figure 5 shows how such load balancing configuration can be modeled using Network Policy model. As per Network Policy model extension principles described earlier in clause 9.2.1, we are creating instances of CIM\_LoadBalancingPolicyRuleSettingData classes to capture the specific configuration parameters of the load balancer, such as VM weights, load balancing algorithm, and VM destination ports.

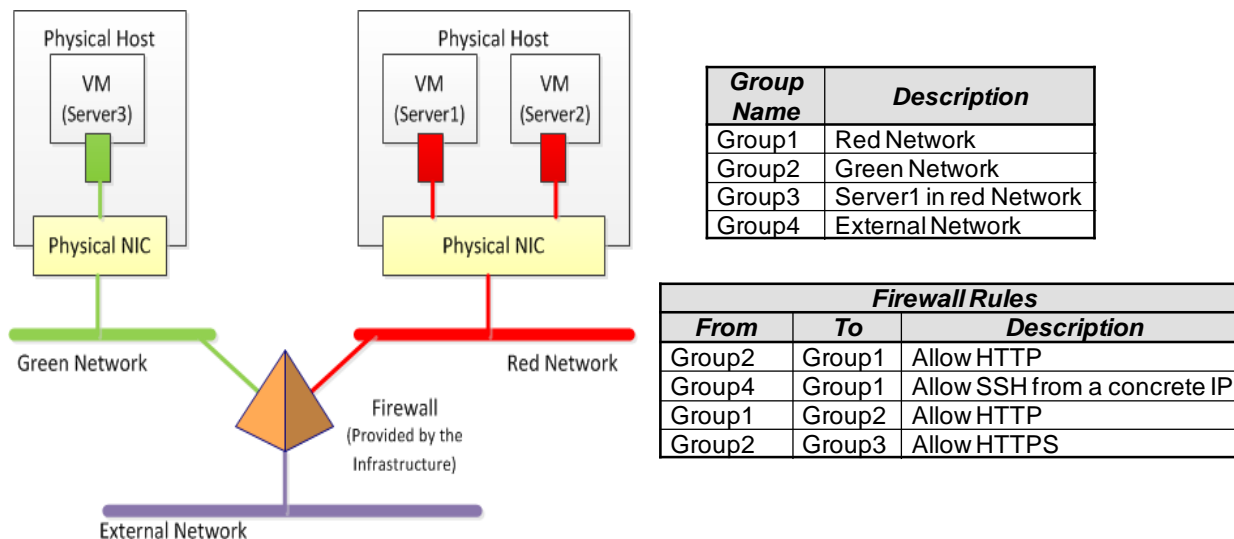
434 In the case of the Round Robin load balancing algorithm, there is no need to create the additional  
 435 instances of the CIM\_LoadBalancingActionSettingData class.

436 The instances of CIM\_NetworkPolicyCondition classes capture some of the configuration parameters,  
 437 notably the destination ports for incoming IP traffic.

438 **9.2.3 Firewall configuration**

439 Another example of extending and using the Network Policy Management profile is configuration of  
 440 firewalls. Consider the example firewall configuration scenario outlined on the Figure 6. Here we are  
 441 configuring four network groups with the different rules permitting or denying traffic flow between them  
 442 and the external network.

443 Each group can contain individual or several networks (e.g., Red Network or Green Network) or can be a  
 444 collection of virtual machines or servers in the particular network (e.g., Server 1 in Red Network).



445

446 **Figure 6 – Example firewall configuration scenario**

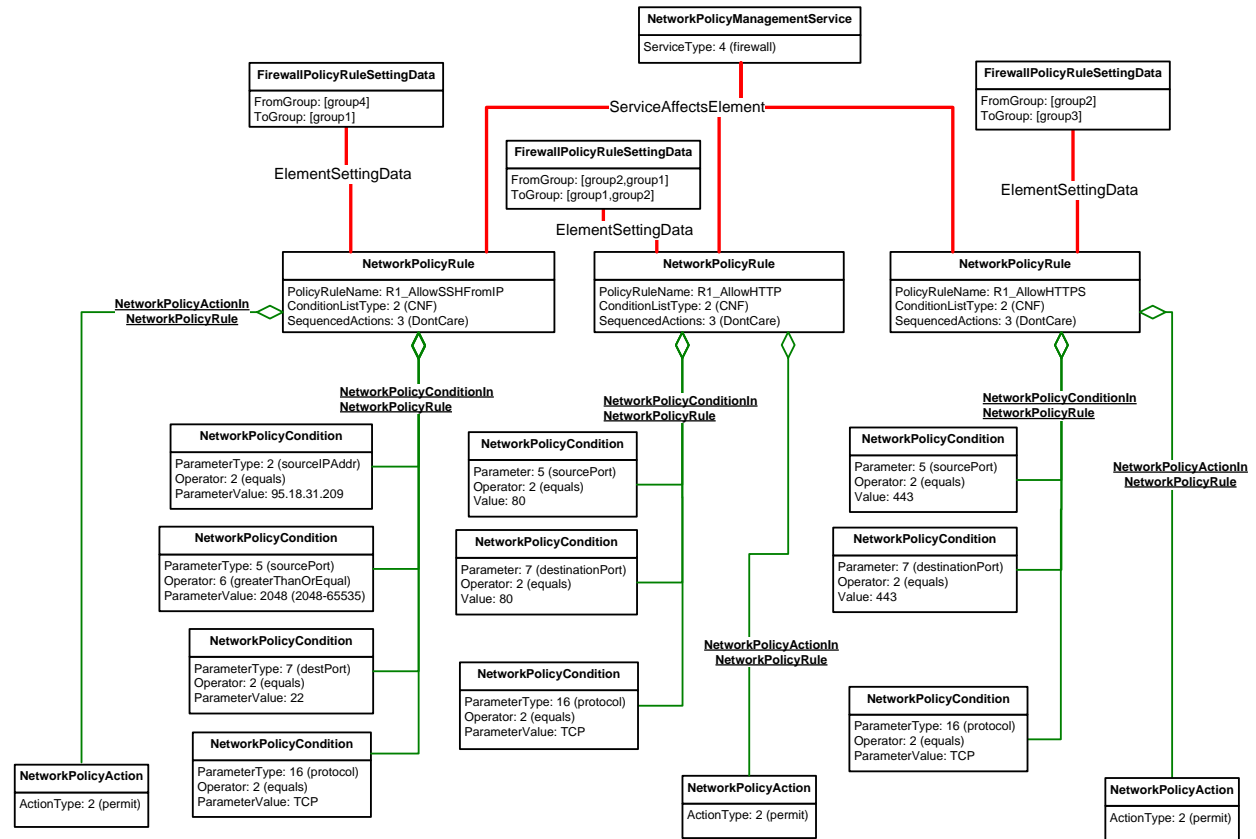
447 The Firewall Rules table in Figure 6 describes the traffic flow rules between various groups used in this  
 448 example.

449 Figure 7 illustrates how the firewall rules described earlier can be modeled using Network Policy model.

450 In this case we are using instances of CIM\_FirewallPolicyRuleSettingData to specify some of the firewall  
 451 configuration data, such as the names of the Groups for which the particular policy instance is configured.

452 The instances of CIM\_NetworkPolicyCondition class specify the traffic characteristics (e.g., source IP  
 453 address and port number) that are used to trigger the particular policy (represented as an instance of  
 454 CIM\_NetworkPolicyRule), which controls the traffic flow in the system.

455 The only type of action used by this model is the Permit action (represented via the instance of  
 456 CIM\_NetworkPolicyAction class with the actionType property set to 'permit'), which indicates that the  
 457 particular policy permits the flow of traffic between the groups once the matching conditions trigger the  
 458 execution of the particular policy instance.



459

460

Figure 7 – Example firewall configuration scenario using Network Policy

461 **9.2.4 QoS Service configuration**

462 Figure 8 shows the example Quality of Service (QoS) configurations. Here we have three classes of  
 463 service – Gold, Bronze, and Silver, each with different traffic characteristics, such as maximum allowed  
 464 bandwidth, maximum delay, jitter, and others.

465 These QoS characteristics can be applied to the traffic, generated by the particular applications, for  
 466 example between SIP clients and server, MySQL applications deployed in Tomcat, etc.

467 The purpose of the QoS policies is to control the use of the network resources according to selected class  
 468 of service.

- QoS Scenario.
  - BandwidthReservation: 2 Mbps
  - BandwidthLimit: 5 Mbps
  - MaxTrafficDelay: 150 ms
  - MaxTrafficJitter: 50 ms
  - RequestedMaxIPTrafficLoss: 0.05%
  - Rule: Match SIP Application

**GOLD**

  - BandwidthReservation: 1 Mbps
  - BandwidthLimit: 2 Mbps
  - MaxTrafficDelay: 50 ms
  - RequestedMaxIPTrafficLoss: 0.02%
  - Rule: Match MySQL Application

**SILVER**

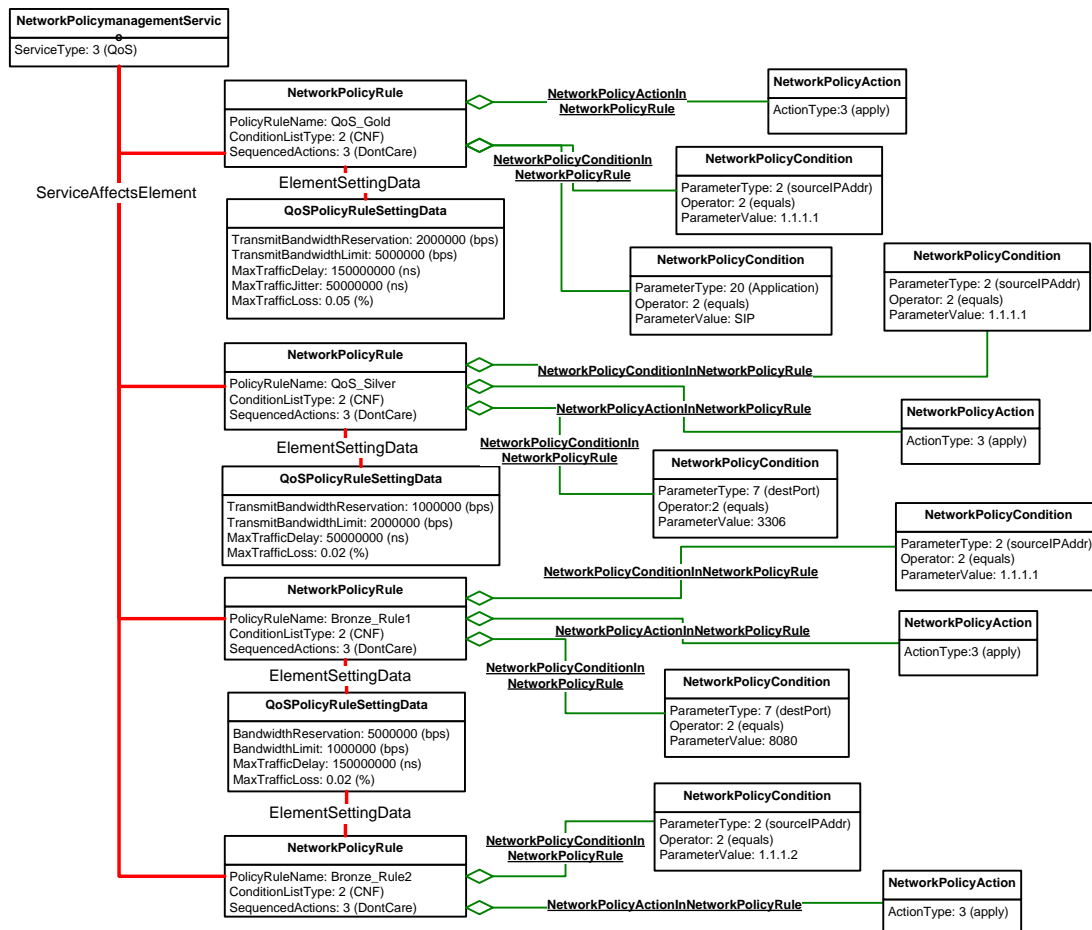
  - BandwidthReservation: 5 Mbps
  - BandwidthLimit: 10 Mbps
  - MaxTrafficDelay: 150 ms
  - RequestedMaxIPTrafficLoss: 0.02%
  - Rule: Match TomCat Application traffic on port 8080

**BRONZE**

469

470

Figure 8 – Example QoS Service configuration



471

472

Figure 9 - Example QoS Service configuration

473 Figure 9 illustrates how various QoS policies can be configured using Network Policy Management  
 474 Profile.

475 **10 CIM Elements**

476 Table 2 shows the instances of CIM Elements for this profile. Instances of the CIM Elements shall be  
 477 implemented as described in Table 2. Clauses 7 (“Implementation”) and 8 (“Methods”) may impose  
 478 additional requirements on these elements.

479 **Table 2 – CIM Elements: Network Policy Management Profile**

Element Name	Requirement	Description
<b>Classes</b>		
CIM_NetworkPolicyManagementService	Required	See clauses 7.1.1
CIM_NetworkPolicyRule	Optional	See clauses 7.2.1
CIM_NetworkPolicyCondition	Optional	See clauses 7.2.2
CIM_NetworkPolicyAction	Optional	See clauses 7.2.3
CIM_NetworkPolicySettingData	Optional	See clauses 7.3.1
CIM_NetworkPolicyActionSettingData	Optional	See clauses 7.3.2
CIM_NetworkPolicyServiceCapabilities	Optional	See clauses 7.1.2
Association and endpoints		
<b>Indications</b>		
None defined in this profile		

480

481  
482  
483  
484

## **ANNEX A (informative)**

### **Change log**

<b>Version</b>	<b>Date</b>	<b>Description</b>
1.0.0c	2016-02-23	DMTF Work in Progress

485  
486