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141



143

## Foreword

144 The *KVM Redirection Profile* (DSP1076) was prepared by the Physical Platform Profiles Working Group  
145 of the DMTF.

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

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160

161

## Introduction

162 The information in this specification and referenced specifications is intended to be sufficient for a  
163 provider or consumer of this data to identify unambiguously the classes, properties, methods, and values  
164 that shall be instantiated and manipulated using the DMTF CIM core and common model definitions.

165 The target audience for this specification is implementers who are writing CIM based providers or  
166 consumers of management interfaces representing the components described in this document.



167

# KVM Redirection Profile

## 168 1 Scope

169 The *KVM Redirection Profile* extends the management capabilities of referencing profiles and providing  
170 the capability to manage KVM (Keyboard, Video and Mouse) console redirections provided by the  
171 system.

## 172 2 Normative References

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

176 DMTF DSP0004, *CIM Infrastructure Specification 2.6*,  
177 [http://www.dmtf.org/standards/published\\_documents/DSP0004\\_2.6.pdf](http://www.dmtf.org/standards/published_documents/DSP0004_2.6.pdf)

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

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

182 DMTF DSP1004, *Base Server Profile 1.0*,  
183 [http://www.dmtf.org/standards/published\\_documents/DSP1004\\_1.0.pdf](http://www.dmtf.org/standards/published_documents/DSP1004_1.0.pdf)

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

186 DMTF DSP1077, *USB Redirection Profile 1.0*,  
187 [http://www.dmtf.org/standards/published\\_documents/DSP1077\\_1.0.pdf](http://www.dmtf.org/standards/published_documents/DSP1077_1.0.pdf)

188 IETF RFC 5234, *Augmented BNF for Syntax Specifications: ABNF*  
189 <http://www.ietf.org/rfc/rfc5234.txt>

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

## 192 3 Terms and Definitions

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

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

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

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

206 The terms defined in [DSP0004](#), [DSP0200](#), and [DSP1001](#) apply to this document. The following additional  
207 terms are used in this document.

### 208 3.1

#### 209 **Original Destination**

210 the destination of a KVM console flow prior to it being redirected. The Original Destination is modeled as  
211 instances of CIM\_Keyboard, CIM\_DisplayController and CIM\_PointingDevice in this profile but could be  
212 potentially another type of logical device.

### 213 3.2

#### 214 **KVM Console Flow**

215 a KVM console flow is the bidirectional KVM console stream which original flows to the Original  
216 Destination. The KVM console flow may be redirected to a new KVM Console Flow destination, which  
217 modeled as an instance of CIM\_ProtocolEndpoint.

### 218 3.3

#### 219 **KVM Redirection**

220 composed of an instance of CIM\_RedirectionService, an instance of CIM\_KVMRedirectionSAP and the  
221 instance of the CIM\_ServiceAccessBySAP between the two

### 222 3.4

#### 223 **KVM Redirection Service**

224 the instance of CIM\_RedirectionService which is part of a KVM Redirection

### 225 3.5

#### 226 **KVM Redirection Session**

227 the instance of CIM\_KVMRedirectionSAP which is part of a KVM Redirection

### 228 3.6

#### 229 **Service**

230 a KVM Redirection Service

### 231 3.7

#### 232 **Session**

233 a KVM Redirection Session

### 234 3.8

#### 235 **Singular KVM Redirection**

236 a KVM Redirection in which the MaxCurrentEnabledSAPs property of the CIM\_RedirectionService  
237 instance has a value of 1

## 238 **4 Symbols and Abbreviated Terms**

### 239 4.1

#### 240 **KVM**

241 Keyboard, Video and Mouse

## 242 5 Synopsis

243 **Profile Name:** KVM Redirection

244 **Version:** 1.0.1

245 **Organization:** DMTF

246 **CIM Schema Version:** 2.22

247 **Central Class:** CIM\_RedirectionService

248 **Scoping Class:** CIM\_ComputerSystem

249 The *KVM Redirection Profile* extends the management capability of the referencing profiles by adding the  
250 capability to describe KVM Redirections information.

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

252 CIM\_RedirectionService shall be the Central Class of this profile. The instance of  
253 CIM\_RedirectionService shall be the Central Instance of this profile.

254 CIM\_ComputerSystem shall be the Scoping Class of this profile. The instance of CIM\_ComputerSystem  
255 with which the Central Instance is associated via an instance of CIM\_HostedService shall be the Scoping  
256 Instance of this profile.

257

**Table 1 – Related Profiles**

Profile Name	Organization	Version	Relationship	Behavior
<a href="#">Profile Registration</a>	DMTF	1.0	Mandatory	

## 258 6 Description

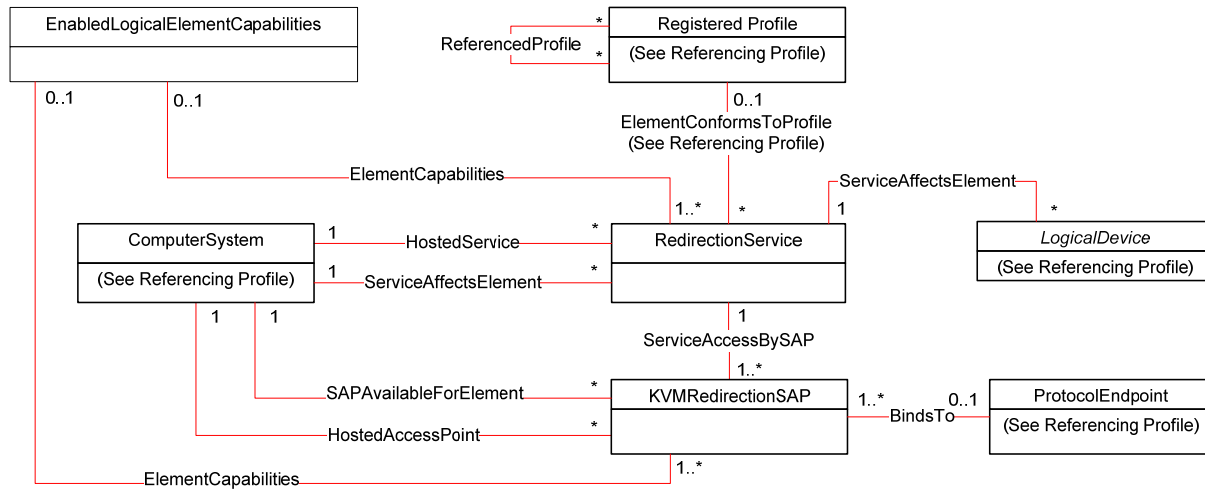
259 The *KVM Redirection Profile* describes the necessary elements needed to provide the capability to  
260 manage the redirection of a keyboard, video and mouse (KVM) console flow. The following describes  
261 KVM redirection capabilities of typical computer systems which the profile could manage.

- 262 • Systems can have multiple sources of bidirectional KVM console flows which can be redirected.  
263 These include keyboards, pointing devices, display controllers or other representations of KVM  
264 Logical Devices.
- 265 • Prior to being redirected, the console flow has an Original Destination. This is typically a local  
266 keyboard, display controller and pointing device to which a terminal is connected in order to  
267 access the KVM console flow.
- 268 • A KVM console flow can be redirected to one or more destinations. A destination can be a  
269 network port. The network port facilitates remote access to the KVM console.
- 270 • The redirection of a KVM console flow can be accomplished while still delivering the KVM  
271 console flow to its Original Destination.
- 272 • This profile does not represent the state of the underlying session that facilitates the redirection.  
273 The representation of the underlying session is beyond the scope of this specification.

274 If the KVM devices are USB Devices and you wish to model them as such, you may use the [USB](#)  
275 [Redirection Profile](#) to manage their redirection instead of this profile.

276 Note that a redirected KVM console flow can be terminated by severing the connection over the transport  
277 protocol.

278 Figure 1 presents the class diagram for the *KVM Redirection Profile*. For simplicity, the prefix CIM\_ has  
 279 been removed from the name of the classes.



280

281

**Figure 1 – KVM Redirection Profile Class Diagram**

282 A KVM Redirection comprises a KVM Redirection Service, a KVM Redirection Session, and the  
 283 relationship between them.

- 284 • The KVM Redirection Service, also referred to as Service in this profile, is represented by an  
 285 instance of CIM\_RedirectionService.
- 286 • The KVM Redirection Session, also referred to as Session in this profile, is represented by an  
 287 instance of CIM\_KVMRedirectionSAP.
- 288 • The relationship between the Service and the Session is represented by an instance of  
 289 CIM\_ServiceAccessBySAP.

290 A KVM Redirection can be in an active, inactive or available state. When the KVM Redirection is active,  
 291 the KVM Console Flow is being actively redirected to a remote console.

292 The state management of the KVM Redirection can be performed using one of two mechanisms. The first  
 293 mechanism is via state management of the Session only. The second mechanism is via state  
 294 management of both the Service and the Session.

295 When state management of the Service is possible, the Service can be in an enabled or disabled state.  
 296 When state management of the Session is possible, the Session can be in an enabled, disabled, or  
 297 enabled but offline state.

298 An instance of CIM\_RedirectionService can be associated to an instance of a concrete subclass of  
 299 CIM\_LogicalDevice which represents the Original Destination of the redirected KVM Console Flow.  
 300 Examples of Original Destinations are keyboards, display controllers and pointing devices.

301 An instance of CIM\_KVMRedirectionSAP can be associated to an instance of CIM\_ProtocolEndpoint  
 302 which represents the endpoint where the redirected KVM console flow can be accessed.

## 303 7 Implementation Requirements

304 This clause describes the classes required by the profile and the class properties required by the profile.  
 305 Clause 8 describes the class methods required by the profile.

## 306 **7.1 Representing a KVM Redirection**

307 A KVM Redirection comprises an instance of CIM\_RedirectionService, an instance of  
308 CIM\_KVMRedirectionSAP and an instance of the CIM\_ServiceAccessBySAP association.

309 An instance of CIM\_ServiceAccessBySAP shall be used to associate the instance of  
310 CIM\_RedirectionService to the instance of CIM\_KVMRedirectionSAP.

311 The CIM\_ServiceAccessBySAP association's Antecedent property shall reference the  
312 CIM\_RedirectionService instance and its Dependent property shall reference the  
313 CIM\_KVMRedirectionSAP instance.

## 314 **7.2 CIM\_RedirectionService.RedirectionServiceType**

315 The CIM\_RedirectionService.RedirectionServiceType property shall be set to 3 (KVM).

## 316 **7.3 Representing the KVM Redirection Service**

317 An instance of CIM\_RedirectionService shall be used to represent the KVM Redirection Service, or  
318 Service.

319 There shall be an instance of the CIM\_HostedService association that associates each instance of  
320 CIM\_RedirectionService to a hosting CIM\_ComputerSystem instance.

321 The CIM\_HostedService association's Antecedent property shall reference the CIM\_ComputerSystem  
322 instance and its Dependent property shall reference the CIM\_RedirectionService instance.

### 323 **7.3.1 Representing the Original Destination**

324 The instance of CIM\_RedirectionService may be associated to one or more instances of a concrete  
325 subclass of CIM\_LogicalDevice which represents the Original Destination. The association shall use an  
326 instance of the CIM\_ServiceAffectsElement association.

327 The CIM\_ServiceAffectsElement association's ManagedElement property shall reference the instance of  
328 a concrete subclass CIM\_LogicalDevice instance and its Service property shall reference the instance of  
329 CIM\_RedirectionService.

### 330 **7.3.2 Representing the System wherein the Original Destination Resides**

331 The instance of CIM\_RedirectionService shall be associated to an instance of CIM\_ComputerSystem  
332 which represents the system wherein the Original Destination resides. The association shall use an  
333 instance of the CIM\_ServiceAffectsElement association.

334 The CIM\_ServiceAffectsElement association's ManagedElement property shall reference the  
335 CIM\_ComputerSystem instance and its Service property shall reference the CIM\_RedirectionService  
336 instance.

### 337 **7.3.3 KVM Console Sharing Mode**

338 When a KVM console flow is redirected, the redirection may be exclusive or shared. Shared redirection  
339 means the original destination of the KVM console is still receiving the KVM console flow. Exclusive  
340 redirection means that the original destination is no longer receiving the KVM console flow.

341 The CIM\_RedirectionService.SharingMode property shall designate whether a KVM Redirection is  
342 exclusive or shared. A value of 2 (Exclusive) for the SharingMode property shall indicate exclusive  
343 redirection. A value of 3 (Shared) for the SharingMode property shall indicate shared redirection.

#### 344 **7.3.4 KVM Sharing Mode Control Capability**

345 KVM Sharing Mode may be controlled.

346 When KVM Sharing Mode control is supported, an instance of CIM\_RedirectionServiceCapabilities shall  
347 exist and the CIM\_RedirectionServiceCapabilities.SharingModeSupported property shall designate  
348 whether a KVM Redirection is capable of being set to exclusive or shared mode.

349 A value of 2 (Exclusive) for the SharingMode property shall indicate that exclusive redirection may be set  
350 on the KVM Redirection.

351 A value of 3 (Shared) for the SharingModeSupported property shall indicate that shared redirection may  
352 be set on the KVM Redirection.

#### 353 **7.3.5 Maximum Number of Concurrent Redirections**

354 A KVM console flow may be redirected to multiple access points; however, there may be a limitation to  
355 the number of concurrent redirections. The limitation could be the result of hardware or software resource  
356 limitations.

357 The CIM\_RedirectionService.MaxCurrentEnabledSAPs property shall contain the maximum number of  
358 instances of CIM\_KVMRedirectionSAP, whose EnabledState property is set to 2 (Enabled), which may be  
359 associated to the instance of CIM\_RedirectionService. The Original Destination shall not be counted as  
360 one of the redirected KVM consoles.

361 A Singular KVM Redirection is a redirection whose instance of CIM\_RedirectionService has a  
362 MaxCurrentEnabledSAPs property with a value of 1.

#### 363 **7.3.6 CIM\_RedirectionService.ElementName**

364 The ElementName property shall be formatted as a free-form string of variable length (pattern “.\*”).

365 The ElementName property may support being modified via the ModifyInstance operation. See 8.11.1.1.  
366 This behavior is conditional. The following subclauses describe the CIM elements and behavior required  
367 to determine whether an implementation supports client modification of the ElementName property.

##### 368 **7.3.6.1 Modifying ElementName Is Supported — Conditional**

369 This subclause describes the CIM elements and behavior requirements when an implementation supports  
370 client modification of the CIM\_RedirectionService.ElementName property.

371 There shall be an instance of CIM\_RedirectionServiceCapabilities associated with the  
372 CIM\_RedirectionService instance via an instance of the CIM\_ElementCapabilities association.

373 The CIM\_RedirectionServiceCapabilities.ElementNameEditSupported property shall have a value of  
374 TRUE.

375 The CIM\_RedirectionServiceCapabilities.MaxElementNameLen property shall be implemented.

##### 376 **7.3.6.2 Modifying ElementName Is Not Supported**

377 This subclause describes the CIM elements and behaviors that shall be implemented when the  
378 CIM\_RedirectionService.ElementName does not support being modified via the ModifyInstance  
379 operation.

380 There may be an instance of CIM\_RedirectionServiceCapabilities associated with the  
381 CIM\_RedirectionServiceCapabilities instance via an instance of CIM\_ElementCapabilities.

382 When an instance of CIM\_RedirectionServiceCapabilities exists, its ElementNameEditSupported  
383 property shall have a value of FALSE.

384 When an instance of CIM\_\_RedirectionServiceCapabilities exists, its MaxElementNameLen property may  
385 be implemented. The MaxElementNameLen property is irrelevant in this context.

## 386 **7.4 Representing the KVM Redirection Session**

387 An instance of CIM\_KVMRedirectionSAP shall be used to represent the KVM Redirection Session, or  
388 simply "Session" as defined in clause 3.

389 The Session is associated to computer systems via two associations. One is the computer system whose  
390 KVM console flow is being redirected. The other is the computer system which contains the endpoint  
391 where the redirected KVM console flow can be accessed.

392 The instance of CIM\_KVMRedirectionSAP shall be associated to an instance of CIM\_ComputerSystem,  
393 which represents the computer system whose KVM console flow is being redirected, via an instance of  
394 CIM\_SAPAvailableForElement.

395 The CIM\_SAPAvailableForElement association's ManagedElement property shall reference the  
396 CIM\_ComputerSystem instance and its AvailableSAP property shall reference the  
397 CIM\_KVMRedirectionSAP instance.

398 The instance of CIM\_KVMRedirectionSAP shall be associated to an instance of CIM\_ComputerSystem,  
399 which represents the computer system which contains the endpoint where the redirect KVM console flow  
400 can be accessed, via an instance of CIM\_HostedAccessPoint.

401 The CIM\_HostedAccessPoint association's Antecedent property shall reference the  
402 CIM\_ComputerSystem instance and its Dependent property shall reference the  
403 CIM\_KVMRedirectionSAP instance.

### 404 **7.4.1 Representing the Destination of the Redirected KVM Console Flow**

405 The instance of CIM\_KVMRedirectionSAP may be associated to at most one instance of  
406 CIM\_ProtocolEndpoint which represents the endpoint where the redirected KVM console flow is  
407 accessed. The association shall use an instance of the CIM\_BindsTo association.

408 The CIM\_BindsTo association's Antecedent property shall reference the CIM\_ProtocolEndpoint instance  
409 and its Dependent property shall reference the CIM\_KVMRedirectionSAP instance.

### 410 **7.4.2 KVM Console Protocol Format**

411 The redirected KVM console can be formatted. Examples of the KVM console formats are raw data  
412 stream and protocols such as RDP or VNC. In raw character stream format, the characters have no  
413 special meaning. In protocol mode format, the data stream is formatted to have special meaning  
414 according to the definition of the protocol.

415 The format of the redirection KVM console protocol shall be designated by the  
416 CIM\_KVMRedirectionSAP.KVMProtocol property.

417 When the redirected KVM console protocol format is a raw data stream, the  
418 CIM\_KVMRedirectionSAP.KVMProtocol property shall be set to a value of 2 (Raw).

419 When the redirected KVM console format is using the RDP protocol, the  
420 CIM\_KVMRedirectionSAP.KVMProtocol property shall be set to a value of 3 (RDP).

421 When the redirected KVM console format is using the VNC protocol, the  
422 CIM\_KVMRedirectionSAP.KVMProtocol property shall be set to a value of 4 (VNC).

423 When the redirected KVM console format is other than Raw, RDP or VNC, the  
424 CIM\_KVMRedirectionSAP.KVMProtocol property shall be set to a value of 1 (Other) and the value of  
425 CIM\_KVMRedirectionSAP.OtherKVMProcol shall contain a string which describes the format.

### 426 **7.4.3 Terminate a Redirected KVM Console**

427 A redirected KVM console session may be terminated via state management of the KVM Redirection  
428 Session. (See 7.5.)

### 429 **7.4.4 CIM\_KVMRedirectionSAP.ElementName**

430 The ElementName property shall be formatted as a free-form string of variable length (pattern “.\*”).

431 The ElementName property may support being modified via the ModifyInstance operation. See 8.12.1.1.  
432 This behavior is conditional. The following subclauses describe the CIM elements and behavior required  
433 to determine whether an implementation supports client modification of the ElementName property.

#### 434 **7.4.4.1 Modifying ElementName Is Supported — Conditional**

435 This subclause describes the CIM elements and behavior requirements when an implementation supports  
436 client modification of the CIM\_KVMRedirectionSAP.ElementName property.

437 There shall be an instance of CIM\_EnabledLogicalElementCapabilities associated with the  
438 CIM\_KVMRedirectionSAP instance via an instance of the CIM\_ElementCapabilities association.

439 The CIM\_EnabledLogicalElementCapabilities.ElementNameEditSupported property shall have a value of  
440 TRUE.

441 The CIM\_EnabledLogicalElementCapabilities.MaxElementNameLen property shall be implemented.

#### 442 **7.4.4.2 Modifying ElementName Is Not Supported**

443 This subclause describes the CIM elements and behaviors that shall be implemented when the  
444 CIM\_KVMRedirectionSAP.ElementName does not support being modified via the ModifyInstance  
445 operation.

446 There may be an instance of CIM\_EnabledLogicalElementCapabilities associated with the  
447 CIM\_KVMRedirectionSAP instance via an instance of CIM\_ElementCapabilities.

448 When an instance of CIM\_EnabledLogicalElementCapabilites exists, its ElementNameEditSupported  
449 property shall have a value of FALSE.

450 When an instance of CIM\_EnabledLogicalElementCapabilities exists, its MaxElementNameLen property  
451 may be implemented. The MaxElementNameLen property is irrelevant in this context.

### 452 **7.5 State Management of a KVM Redirection**

453 The KVM Redirection shall have the states inactive, available, or active:

- 454 • The KVM Redirection is inactive when the KVM Console Flow is not being redirected to the  
455 Session.
- 456 • The KVM Redirection is available when the KVM Console Flow is being redirected to the Session,  
457 but the session is not actively being used.
- 458 • The KVM Redirection is active when the KVM Console Flow is being actively redirected to the  
459 Session and the session is actively being used.

460 The state of a KVM Redirection shall be reported by the implementation using the combined states of the  
461 instance of CIM\_RedirectionService (Service) and the instance of CIM\_KVMRedirectionSAP (Session)  
462 associated via an instance of CIM\_ServiceAccessBySAP, as follows:



- 463 • When the value of CIM\_RedirectionService.EnabledState is 2 (Enabled) and the value of  
464 CIM\_KVMRedirectionSAP.EnabledState is 2 (Enabled), the KVM Redirection shall be considered  
465 in active state.
- 466 • When the value of CIM\_RedirectionService.EnabledState is 2 (Enabled) and the value of  
467 CIM\_KVMRedirectionSAP.EnabledState is 6 (Enabled but Offline), the KVM Redirection shall be  
468 considered in available state.
- 469 • Otherwise, the KVM Redirection shall be considered in inactive state.

470 Table 2 provides details about conditions and KVM Redirection state.

471 **Table 2 – Determining KVM Redirection State**

Condition	State	Description
CIM_RedirectionService.EnabledState = 3 (Disabled) OR CIM_KVMRedirectionSAP.EnabledState = 3 (Disabled)	inactive	Service and Service Access Point have not both been enabled. KVM Console Flow is not being redirected.
CIM_RedirectionService.EnabledState = 2 (Enabled) AND CIM_KVMRedirectionSAP.EnabledState = 6 (Enabled but Offline)	available	Service and Service Access Point have both been enabled. KVM Console Flow is not currently being redirected.
CIM_RedirectionService.EnabledState = 2 (Enabled) AND CIM_KVMRedirectionSAP.EnabledState = 2 (Enabled)	active	Both Service and Service Access Point have been enabled. KVM Console Flow is currently being redirected and the session is actively being used.

472 The state of the KVM Redirection may be affected using: 1) state management of the Session only or 2)  
473 state management of both the Service and the Session. The state of the KVM Redirection may also be  
474 affected by external interactions and events (for example, when a management console application  
475 begins active use of a session). Note that a session may be considered as being actively used by the  
476 implementation even when the flow of data may appear “idle”.

477 The state management of the Service is discussed in 7.6. The state management of the Session is  
478 discussed in 7.7.

479 **7.6 State Management of a KVM Redirection Service (Optional)**

480 Support for managing the state of a KVM Redirection Service is optional behavior. The following  
481 subclauses describe the CIM elements and behaviors that allow the client to determine whether state  
482 management of the KVM Redirection Service is supported.

483 **7.6.1 KVM Redirection Service State Management Is Supported — Conditional**

484 This subclause describes the CIM elements and behaviors that shall be implemented when state  
485 management of the Service is supported.

**486 7.6.1.1 CIM\_RedirectionServiceCapabilities**

487 When state management of the KVM Redirection Service is supported, exactly one instance of  
488 CIM\_RedirectionServiceCapabilities shall be associated with the instance of CIM\_RedirectionService  
489 through an instance of CIM\_ElementCapabilities.

490 The CIM\_ElementCapabilities association's ManagedElement property shall reference the  
491 CIM\_RedirectionService instance and its Capabilities property shall reference the  
492 CIM\_RedirectionServiceCapabilities instance.

**493 7.6.1.1.1 CIM\_RedirectionServiceCapabilities.RequestedStatesSupported**

494 The RequestedStatesSupported property shall contain zero or more of the following values: 2 (Enabled),  
495 3 (Disabled).

**496 7.6.1.2 CIM\_RedirectionService.RequestedState**

497 When the CIM\_RedirectionService.RequestStateChange() method is successfully invoked, the value of  
498 the RequestedState property shall be the value of the RequestedState parameter. If the method is not  
499 successfully invoked, the value of the RequestedState property is indeterminate.

500 The CIM\_RedirectionService.RequestedState property shall have one of the values specified in the  
501 CIM\_RedirectionServiceCapabilities.RequestedStatesSupported property or a value of 5 (No Change).

**502 7.6.1.3 CIM\_RedirectionService.EnabledState**

503 The EnabledState property shall have one of the following values: 2 (Enabled), 3 (Disabled).

504 When the RequestedState parameter has a value of 2 (Enabled) or 3 (Disabled) and the  
505 CIM\_RedirectionService.RequestStateChange() method completes successfully, the value of the  
506 EnabledState property shall equal the value of the CIM\_RedirectionService.RequestedState property.

507 If the method does not complete successfully, the value of the EnabledState property is indeterminate.

**508 7.6.2 KVM Redirection Service State Management Is Not Supported**

509 This subclause describes the CIM elements and behaviors that shall be implemented when management  
510 of the Service state is not supported.

**511 7.6.2.1 CIM\_RedirectionServiceCapabilities**

512 When state management is not supported, an instance of CIM\_RedirectionServiceCapabilities may be  
513 associated with the CIM\_RedirectionService instance through an instance of CIM\_ElementCapabilities.  
514 The existence of the CIM\_ElementCapabilities instance is conditional on the existence of the  
515 CIM\_RedirectionServiceCapabilities instance.

516 The CIM\_ElementCapabilities association's ManagedElement property shall reference the  
517 CIM\_RedirectionService instance and its Capabilities property shall reference the  
518 CIM\_RedirectionServiceCapabilities instance.

**519 7.6.2.1.1 CIM\_RedirectionServiceCapabilities.RequestedStatesSupported**

520 The CIM\_RedirectionServiceCapabilities.RequestedStatesSupported property shall not contain any  
521 values.

**522 7.6.2.2 CIM\_RedirectionService.RequestedState**

523 The RequestedState property shall have the value of 12 (Not Applicable).

### 524 7.6.2.3 CIM\_RedirectionService.EnabledState

525 The EnabledState property shall have one of the following values: 2 (Enabled) 3 (Disabled) or 5 (Not  
526 Applicable). The value of 5 (Not Applicable) may be set when non-CIM instrumentation has manipulated  
527 the instance of CIM\_RedirectionService.

## 528 7.7 State Management of a KVM Redirection Session (Optional)

529 Support for managing the state of a KVM Redirection Session (Session) is optional behavior. The  
530 following subclauses describe the CIM elements and behaviors that allow the client to determine whether  
531 state management of the Session is supported.

### 532 7.7.1 Session State Management Is Supported — Conditional

533 This subclause describes the CIM elements and behaviors that shall be implemented when state  
534 management of the Session is supported.

#### 535 7.7.1.1 CIM\_EnabledLogicalElementCapabilities

536 When state management of the Session is supported, exactly one instance of  
537 CIM\_EnabledLogicalElementCapabilities shall be associated with each instance of  
538 CIM\_KVMRedirectionSAP through an instance of CIM\_ElementCapabilities.

539 The CIM\_ElementCapabilities association's ManagedElement property shall reference the  
540 CIM\_KVMRedirectionSAP instance and its Capabilities property shall reference the  
541 CIM\_EnabledLogicalElementCapabilities instance.

#### 542 7.7.1.1.1 CIM\_EnabledLogicalElementCapabilities.RequestedStatesSupported

543 The RequestedStatesSupported property shall contain zero or more of the following values: 2 (Enabled),  
544 3 (Disabled) or 6 (Enabled but Offline).

#### 545 7.7.1.2 CIM\_KVMRedirectionSAP.RequestedState

546 When the CIM\_KVMRedirectionSAP.RequestStateChange() method is successfully invoked, the value of  
547 the RequestedState property shall be the value of the RequestedState parameter. If the method is not  
548 successfully invoked, the value of the RequestedState property is indeterminate.

549 The CIM\_KVMRedirectionSAP.RequestedState property shall have one of the values specified in the  
550 CIM\_EnabledLogicalElementCapabilities.RequestedStatesSupported property or a value of 5 (No  
551 Change).

#### 552 7.7.1.3 CIM\_KVMRedirectionSAP.EnabledState

553 The EnabledState property shall have one of the following values: 2 (Enabled), 3 (Disabled) or 6 (Enabled  
554 but Offline). Note that the value of EnabledState is affected by the RequestStateChange() method and  
555 the current state of the KVM Redirection and Console Flow (see 7.5).

556 When the RequestedState parameter has a value of 2 (Enabled) and the  
557 CIM\_KVMRedirectionSAP.RequestStateChange() method completes successfully, the value of the  
558 EnabledState property shall equal either 2 (Enabled) or 6 (Enabled but Offline).

559 When the RequestedState parameter has a value of 6 (Enabled but Offline) and the  
560 CIM\_KVMRedirectionSAP.RequestStateChange() method completes successfully, the value of the  
561 EnabledState property shall equal either 2 (Enabled) or 6 (Enabled but Offline).

562 When the RequestedState parameter has a value of 3 (Disabled) and the  
563 CIM\_KVMRedirectionSAP.RequestStateChange() method completes successfully, the value of the  
564 EnabledState property shall equal 3 (Disabled).

565 If the method does not complete successfully, the value of the EnabledState property is indeterminate.

## 566 **7.7.2 Session State Management Is Not Supported**

567 This subclause describes the CIM elements and behaviors that shall be implemented when management  
568 of the Session state is not supported.

### 569 **7.7.2.1 CIM\_EnabledLogicalElementCapabilities**

570 When state management of the Session is not supported, an instance of  
571 CIM\_EnabledLogicalElementCapabilities may be associated with the CIM\_KVMRedirectionSAP instance  
572 through an instance of CIM\_ElementCapabilities. The existence of the CIM\_ElementCapabilities instance  
573 is conditional on the existence of the CIM\_EnabledLogicalElementCapabilities instance.

574 The CIM\_ElementCapabilities association's ManagedElement property shall reference the  
575 CIM\_KVMRedirectionSAP instance and its Capabilities property shall reference the  
576 CIM\_EnabledLogicalElementCapabilities instance.

#### 577 **7.7.2.1.1 CIM\_EnabledLogicalElementCapabilities.RequestedStatesSupported**

578 The CIM\_EnabledLogicalElementCapabilities.RequestedStatesSupported property shall not contain any  
579 values.

#### 580 **7.7.2.2 CIM\_KVMRedirectionSAP.RequestedState**

581 The RequestedState property shall have the value of 12 (Not Applicable).

#### 582 **7.7.2.3 CIM\_KVMRedirectionSAP.EnabledState**

583 The EnabledState property shall have one of the following values: 2 (Enabled), 3 (Disabled), 5 (Not  
584 Applicable), or 6 (Enabled but Offline). The value of 5 (Not Applicable) may be set when non-CIM  
585 instrumentation has manipulated the instance of CIM\_KVMRedirectionSAP.

## 586 **8 Methods**

### 587 **8.1 CIM\_RedirectionService.RequestStateChange()**

588 Invocation of the RequestStateChange() method changes the element's state to the value specified in the  
589 RequestedState parameter. The 2 (Enabled), and 3 (Disabled) values of the RequestedState parameter  
590 shall correspond to the enabled and disabled states of the KVM Redirection Service, respectively.

591 It is implementation specific whether the method will complete successfully if there are active sessions.

592 Detailed requirements of the RequestStateChange() method are specified in Table 3 and Table 4.

593 No standard messages are defined.

594 Invoking the RequestStateChange() method multiple times could result in earlier requests being  
595 overwritten or lost.

596 **Table 3 – CIM\_RedirectionService.RequestStateChange() Method: Return Code Values**

Value	Description
0	Request was successfully executed.
1	Method is unsupported.
2	Error occurred
4096	Job started: REF returned to started CIM_ConcreteJob

597 **Table 4 – CIM\_RedirectionService.RequestStateChange() Method: Parameters**

Qualifiers	Name	Type	Description/Values
IN	RequestedState	uint16	Valid state values: 2 (Enabled) 3 (Disabled)
OUT	Job	CIM_ConcreteJob REF	Returned if job started
IN	TimeoutPeriod	datetime	Client specified maximum amount of time the transition to a new state is supposed to take: 0 or NULL – No time requirements <interval> – Maximum time allowed

598 **8.1.1 CIM\_RedirectionService.RequestStateChange() — Conditional Support**

599 When an instance of CIM\_RedirectionServiceCapabilities is associated with the CIM\_RedirectionService  
600 instance and the CIM\_RedirectionServiceCapabilities.RequestedStatesSupported property contains at  
601 least one value, the CIM\_RedirectionService.RequestStateChange() method shall be implemented and  
602 supported. The CIM\_RedirectionService.RequestStateChange() method shall not return a value of 1 (Not  
603 Supported).

604 **8.2 CIM\_KVMRedirectionSAP.RequestStateChange()**

605 Invocation of the RequestStateChange() method changes the element’s state to the value specified in the  
606 RequestedState parameter. The 2 (Enabled), 3 (Disabled) and 6 (Enabled but Offline) values of the  
607 RequestedState parameter shall correspond to enabling, disabling, and enabled but offline states the  
608 Session, respectively.

609 Detailed requirements of the RequestStateChange() method are specified in Table 5 and Table 6.

610 No standard messages are defined.

611 Invoking the RequestStateChange() method multiple times could result in earlier requests being  
612 overwritten or lost.

613 **Table 5 – CIM\_KVMRedirectionSAP.RequestStateChange() Method: Return Code Values**

Value	Description
0	Request was successfully executed.
1	Method is unsupported.
2	Error occurred
4096	Job started: REF returned to started CIM_ConcreteJob

614

**Table 6 – CIM\_KVMRedirectionSAP.RequestStateChange() Method: Parameters**

Qualifiers	Name	Type	Description/Values
IN	RequestedState	uint16	Valid state values: 2 (Enabled) 3 (Disabled) 6 (Enabled but Offline)
OUT	Job	CIM_ConcreteJob REF	Returned if job started
IN	TimeoutPeriod	datetime	Client specified maximum amount of time the transition to a new state is supposed to take: 0 or NULL – No time requirements <interval> – Maximum time allowed

### 615 **8.2.1 CIM\_KVMRedirectionSAP.RequestStateChange() — Conditional Support**

616 When an instance of CIM\_EnabledLogicalElementCapabilities is associated with the  
617 CIM\_KVMRedirectionSAP instance and the  
618 CIM\_EnabledLogicalElementCapabilities.RequestedStatesSupported property contains at least one  
619 value, the CIM\_KVMRedirectionSAP.RequestStateChange() method shall be implemented and  
620 supported. The CIM\_KVMRedirectionSAP.RequestStateChange() method shall not return a value of 1  
621 (Not Supported).

### 622 **8.2.2 Enabling a Singular KVM Redirection**

623 When multiple instances of CIM\_KVMRedirectionSAP are associated with an instance of  
624 CIM\_RedirectionService, the service shall guarantee that the number of CIM\_KVMRedirectionSAP with  
625 the value of EnabledState as 2 (Enabled) do not exceed the MaxCurrentEnabledSAPs property value.  
626 When CIM\_KVMRedirectionSAP.RequestedState parameter has a value of 2 (Enabled) and there are  
627 MaxCurrentEnabledSAPs instances of CIM\_KVMRedirectionSAP with the value of EnabledState as 2  
628 (Enabled), then CIM\_KVMRedirectionSAP.RequestStateChange() shall complete with an error.

629 When the instance of CIM\_KVMRedirectionSAP is associated to an instance of CIM\_RedirectionService  
630 whose MaxCurrentEnabledSAPs property has a value of 1, the method shall exhibit the following  
631 additional behavior.

632 When the CIM\_KVMRedirectionSAP.RequestedState parameter has a value of 2 (Enabled) and the  
633 CIM\_KVMRedirectionSAP.RequestStateChange() method completes successfully, the value of the  
634 EnabledState property of all other instances of CIM\_KVMRedirectionSAP associated with the instance of  
635 CIM\_RedirectionService shall be set to 3 (Disabled).

### 636 **8.3 Profile Conventions for Operations**

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

639 The default list of operations is as follows:

- 640 • GetInstance
- 641 • Associators
- 642 • AssociatorNames
- 643 • References
- 644 • ReferenceNames



664

**Table 9 – CIM\_RedirectionServiceCapabilities Operations**

Operation	Requirement	Messages
GetInstance	Mandatory	None
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

## 665 8.7 CIM\_HostedService Operations

666 Table 10 lists implementation requirements for operations. If implemented, these operations shall be  
 667 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 10, all operations  
 668 in the default list in 8.3 shall be implemented as defined in [DSP0200](#).

669 NOTE: Related profiles may define additional requirements on operations for the profile class.

670

**Table 10 – CIM\_HostedService Operations**

Operation	Requirement	Messages
GetInstance	Mandatory	None
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

## 671 8.8 CIM\_HostedAccessPoint Operations

672 Table 11 lists implementation requirements for operations. If implemented, these operations shall be  
 673 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 11, all operations  
 674 in the default list in 8.3 shall be implemented as defined in [DSP0200](#).

675 NOTE: Related profiles may define additional requirements on operations for the profile class.

676

**Table 11 – CIM\_HostedAccessPoint Operations**

Operation	Requirement	Messages
GetInstance	Mandatory	None
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

## 677 8.9 CIM\_ServiceAffectsElement Operations

678 Table 12 lists implementation requirements for operations. If implemented, these operations shall be  
 679 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 12, all operations  
 680 in the default list in 8.3 shall be implemented as defined in [DSP0200](#).

681 NOTE: Related profiles may define additional requirements on operations for the profile class.



682

**Table 12 – CIM\_ServiceAffectsElement Operations**

Operation	Requirement	Messages
GetInstance	Mandatory	None
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

683 **8.10 CIM\_ServiceAccessBySAP Operations**

684 Table 13 lists implementation requirements for operations. If implemented, these operations shall be  
 685 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 13, all operations  
 686 in the default list in 8.3 shall be implemented as defined in [DSP0200](#).

687 NOTE: Related profiles may define additional requirements on operations for the profile class.

688

**Table 13 – CIM\_ServiceAccessBySAP Operations**

Operation	Requirement	Messages
GetInstance	Mandatory	None
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

689 **8.11 CIM\_RedirectionService Operations**

690 Table 14 lists implementation requirements for operations. If implemented, these operations shall be  
 691 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 14, all operations  
 692 in the default list in 8.3 shall be implemented as defined in [DSP0200](#).

693 NOTE: Related profiles may define additional requirements on operations for the profile class.

694

**Table 14 – CIM\_RedirectionService Operations**

Operation	Requirement	Messages
GetInstance	Mandatory	None
ModifyInstance	Optional	See 8.11.1.
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

695 **8.11.1 CIM\_RedirectionService — ModifyInstance Operation**

696 This subclause details the specific requirements for the ModifyInstance operation applied to an instance  
 697 of CIM\_RedirectionService.

### 698 **8.11.1.1 CIM\_RedirectionService.ElementName property**

699 When there is an instance of CIM\_RedirectionServiceCapabilities associated with the  
 700 CIM\_RedirectionService instance and the  
 701 CIM\_RedirectionServiceCapabilities.ElementNameEditSupported property has a value of TRUE, the  
 702 implementation shall allow the ModifyInstance operation to change the value of the ElementName  
 703 property of the CIM\_RedirectionService instance. The ModifyInstance operation shall enforce the length  
 704 restriction specified in the MaxElementNameLen property of the CIM\_RedirectionServiceCapabilities.

705 When there is not an instance of CIM\_RedirectionServiceCapabilities associated with the  
 706 CIM\_RedirectionService instance, or the ElementNameEditSupported property of the  
 707 CIM\_RedirectionServiceCapabilities has a value of FALSE, the implementation shall not allow the  
 708 ModifyInstance operation to change the value of the ElementName property of the  
 709 CIM\_RedirectionService instance.

## 710 **8.12 CIM\_KVMRedirectionSAP Operations**

711 Table 15 lists implementation requirements for operations. If implemented, these operations shall be  
 712 implemented as defined in [DSP0200](#). In addition, and unless otherwise stated in Table 15, all operations  
 713 in the default list in 8.3 shall be implemented as defined in [DSP0200](#).

714 NOTE: Related profiles may define additional requirements on operations for the profile class.

715 **Table 15 – CIM\_KVMRedirectionSAP Operations**

Operation	Requirement	Messages
GetInstance	Mandatory	None
ModifyInstance	Optional	See 8.12.1.
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

### 716 **8.12.1 CIM\_KVMRedirectionSAP — ModifyInstance Operation**

717 This subclause details the specific requirements for the ModifyInstance operation applied to an instance  
 718 of CIM\_KVMRedirectionSAP.

#### 719 **8.12.1.1 CIM\_KVMRedirectionSAP.ElementName property**

720 When there is an instance of CIM\_EnabledLogicalElementCapabilities associated with the  
 721 CIM\_KVMRedirectionSAP instance and the  
 722 CIM\_EnabledLogicalElementCapabilities.ElementNameEditSupported property has a value of TRUE, the  
 723 implementation shall allow the ModifyInstance operation to change the value of the ElementName  
 724 property of the CIM\_KVMRedirectionSAP instance. The ModifyInstance operation shall enforce the length  
 725 restriction specified in the MaxElementNameLen property of the  
 726 CIM\_EnabledLogicalElementCapabilities.

727 When there is not an instance of CIM\_EnabledLogicalElementCapabilities associated with the  
 728 CIM\_KVMRedirectionSAP instance, or the ElementNameEditSupported property of the  
 729 CIM\_EnabledLogicalElementCapabilities has a value of FALSE, the implementation shall not allow the  
 730 ModifyInstance operation to change the value of the ElementName property of the  
 731 CIM\_KVMRedirectionSAP instance.

732 **9 Use Cases**

733 This subclause contains object diagrams and use cases specific to *KVM Redirection Profile*. The use  
 734 cases are informative and are not intended to define the requirements for conformance.

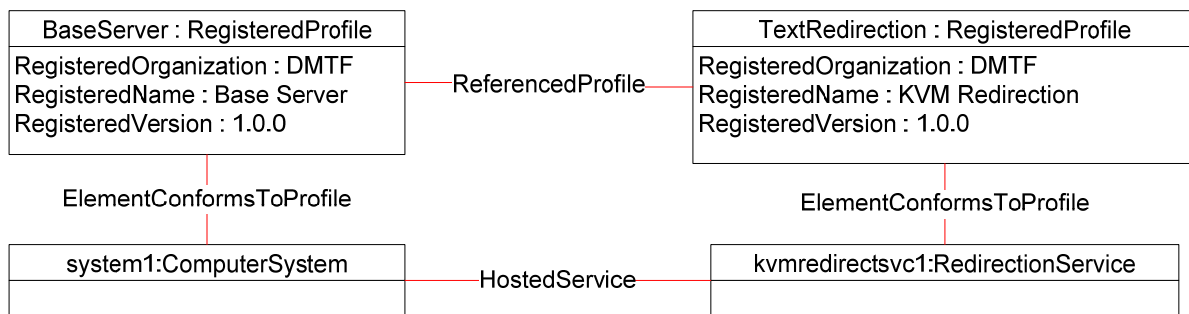
735 **9.1 Advertising the Profile Conformance**

736 The object diagram in Figure 2 shows how instances of CIM\_RegisteredProfile are used to identify the  
 737 version of the *KVM Redirection Profile* with which an instance of CIM\_RedirectionService and its  
 738 associated instances are conformant.

739 An instance of CIM\_RegisteredProfile exists for each profile that is instrumented in the system. One  
 740 instance of CIM\_RegisteredProfile identifies the DMTF [Base Server Profile](#), version 1.0.0. The other  
 741 instance identifies the DMTF *KVM Redirection Profile*, version 1.0.0. The Central Instance is the  
 742 CIM\_RedirectionService. The Scoping Instance is the CIM\_ComputerSystem instance.

743 This instance of CIM\_ComputerSystem is conformant with the DMTF [Base Server Profile](#) version 1.0.0 as  
 744 indicated by the CIM\_ElementConformsToProfile association to the CIM\_RegisteredProfile instance.

745 This instance of CIM\_RedirectionService is conformant with the DMTF *KVM Redirection Profile* version  
 746 1.0.0 as indicated by the CIM\_ElementConformsToProfile association to the CIM\_RegisteredProfile  
 747 instance.



748

749

**Figure 2 – Registered Profile**

750 **9.2 Object Diagram for a Monolithic Server**

751 Figure 3 shows the object diagram for a monolithic server, *system1*, which has a Service which can  
 752 redirect the KVM console devices to the network port. Both the KVM devices and the network port are  
 753 part of *system1* and modeled by the instances of CIM\_SystemDevice.

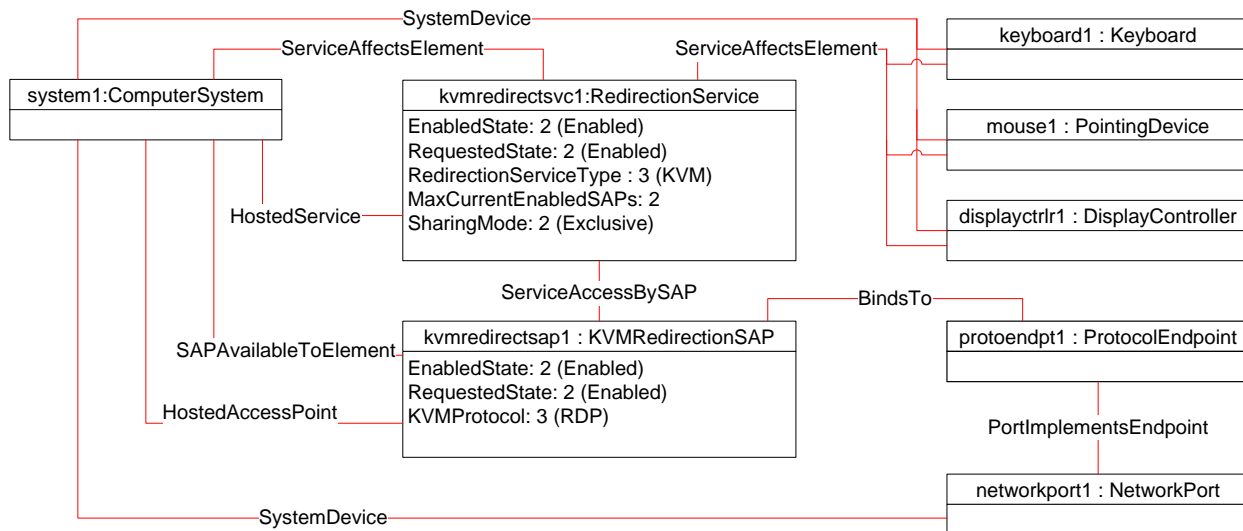
754 The KVM console session is represented with a source (*kvmredirectsvc1*), a destination  
 755 (*kvmredirectsap1*) and the instance of CIM\_ServiceAccessBySAP association between them. The KVM  
 756 Redirection Service (*kvmredirectsvc1*) is hosted on *system1* as represented by the CIM\_HostedService  
 757 association between *system1* and *kvmredirectsvc1*. The service (*kvmredirectsvc1*) affects *system1* as  
 758 represented by the CIM\_ServiceAffectsElement association between *system1* and *kvmredirectsvc1*. This  
 759 signifies that *system1* is the source of the KVM console which can be redirected.

760 The service also affects *keyboard1*, *displayctrlr1* and *mouse1* as represented by the  
 761 CIM\_ServiceAffectsElement association between *keyboard1*, *displayctrlr1* and *mouse1* and  
 762 *kvmredirectsvc1*. *Keyboard1* is an instance of CIM\_Keyboard, *displayctrlr1* is an instance of  
 763 CIM\_DisplayController and *mouse1* is an instance of CIM\_PointingDevice, all of which are a concrete  
 764 subclass of CIM\_LogicalDevice. This signifies that *keyboard1*, *displayctrlr1* and *mouse1* are the Original  
 765 Destination of a KVM console which can be redirected.

766 The KVM Redirection Session (*kvmredirectsap1*) is hosted on *system1* as represented by the  
 767 CIM\_HostedAccessPoint association between *system1* and *kvmredirectsap1*. The Session  
 768 (*kvmredirectsap1*) provides a SAP for *system1* as represented by the CIM\_SAPAvailableForElement  
 769 association between *system1* and *kvmredirectsap1*. Note that any properties, such as encryption  
 770 algorithms or settings, for the KVM Protocol's transport can be included on the Protocol Endpoint  
 771 *protoendpt1*.

772 From *kvmredirectsap1*, the CIM\_BindsTo association can be traversed to the CIM\_ProtocolEndpoint  
 773 (*protoendpt1*). From *protoendpt1*, the CIM\_PortImplementsEndpoint association can be traversed to the  
 774 network port (*networkport1*), a device on *system1*.

775 In the figure, the KVM Redirection specified by *kvmredirectsvc1* and *kvmredirectsap1* is active, because  
 776 the state of the *kvmredirectsvc1* is 2 (Enabled) and the state of the *kvmredirectsap1* is 2 (Enabled).



777

778 **Figure 3 – Monolithic System Object Diagram**

779 **9.3 Object Diagram for Monolithic Server with Service Processor**

780 Figure 4 shows the object diagram for a monolithic server with a service processor.

781 The diagram is similar to Figure 3, except there is now an instance of CIM\_ComputerSystem, *sp1*,  
 782 representing the service processor which has a network port.

783 The KVM Redirection Service (*kvmredirectsvc1*) is hosted on *sp1* as represented by the  
 784 CIM\_HostedService association between *sp1* and *kvmredirectsvc1*.

785 The service affects *system1* as represented by the CIM\_ServiceAffectsElement association between  
 786 *system1* and *kvmredirectsvc1*. This signifies that *system1* is the source of the KVM console which can be  
 787 redirected.

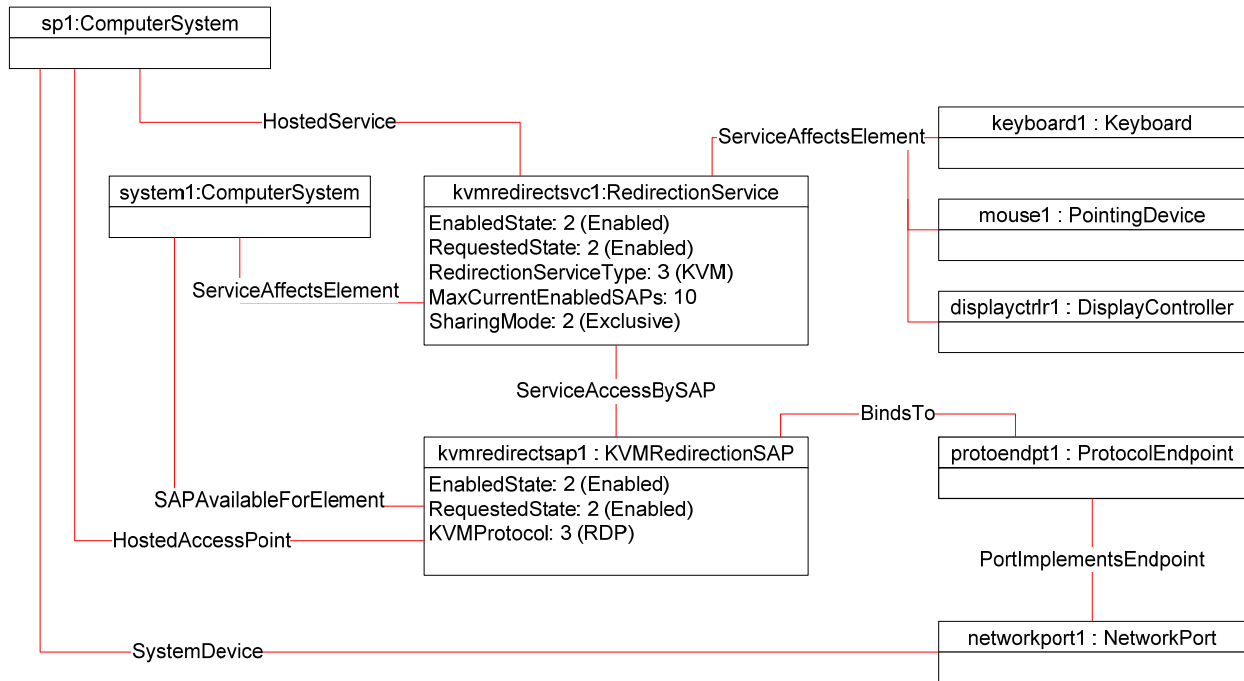
788 The service also affects *keyboard1*, *displayctrlr1* and *mouse1* as represented by the  
 789 CIM\_ServiceAffectsElement association between *keyboard1*, *displayctrlr1* and *mouse1* and  
 790 *kvmredirectsvc1*. This signifies that *keyboard1*, *displayctrlr1* and *mouse1* are the Original Destination of a  
 791 KVM console which can be redirected. *keyboard1*, *displayctrlr1* and *mouse1* are associated to *system1*  
 792 through CIM\_SystemDevice (not shown).

793 The KVM Redirection Session (*kvmredirectsap1*) is hosted on *sp1* as represented by the  
 794 CIM\_HostedAccessPoint association between *sp1* and *kvmredirectsap1*. The Session (*kvmredirectsap1*)

795 provides a SAP for *system1* as represented by the CIM\_SAPAvailableForElement association between  
 796 *system1* and *kvmredirectsap1*.

797 From *kvmredirectsap1*, the CIM\_BindsTo association can be traversed to the CIM\_ProtocolEndpoint  
 798 (*protoendpt1*). From *protoendpt1*, the CIM\_PortImplementsEndpoint association can be traversed to the  
 799 network port (*networkport1*), a device on *sp1*.

800 In the figure, the KVM Redirection specified by *kvmredirectsvc1* and *kvmredirectsap1* is active, because  
 801 the state of the *kvmredirectsvc1* is 2 (Enabled) and the state of the *kvmredirectsap1* is 2 (Enabled).



802

803 **Figure 4 – Monolithic System with Service Processor Object Diagram**

804 **9.4 Object Diagram for a Modular System**

805 The Figure 5 shows a modular system which can redirect the KVM devices on a blade to the network port  
 806 of the chassis management module (CMM) or the network port of the blade. The chassis management  
 807 module is represented with an instance of CIM\_ComputerSystem, *chassismgr1*. The blade is represented  
 808 with an instance of CIM\_ComputerSystem, *blade1*.

809 The KVM Redirection Service (*kvmredirectsvc1*) is hosted on *chassismgr1* as represented by the  
 810 CIM\_HostedService association between *chassismgr1* and *kvmredirectsvc1*. The service affects *blade1*  
 811 as represented by the CIM\_ServiceAffectsElement association between *blade1* and *kvmredirectsvc1*.  
 812 This signifies that *blade1* is the source of the KVM console which can be redirected.

813 The service also affects *keyboard1*, *displayctrlr1* and *mouse1* as represented by the  
 814 CIM\_ServiceAffectsElement association between *keyboard1*, *displayctrlr1* and *mouse1* and  
 815 *kvmredirectsvc1*. This signifies that *keyboard1*, *displayctrlr1* and *mouse1* are the Original Destination of a  
 816 KVM console which can be redirected. The instance *keyboard1*, *displayctrlr1* and *mouse1* are associated  
 817 to *blade1* via an instance of CIM\_SystemDevice.

818 There are two KVM Redirection Sessions, *kvmredirectsap1* and *kvmredirectsap2*. Each is associated to  
 819 the Service via an instance of the CIM\_ServiceAccessBySAP associations.

820 One KVM Redirection Session (*kvmredirectsap1*) is hosted on blade1 as represented by the  
 821 CIM\_HostedAccessPoint association between *blade1* and *kvmredirectsap1*. This shows that the  
 822 resources of *blade1* are used to host the redirection session. The Session (*kvmredirectsap1*) provides a  
 823 SAP for *blade1* as represented by the CIM\_SAPAvailableForElement association between *blade1* and  
 824 *kvmredirectsap1*.

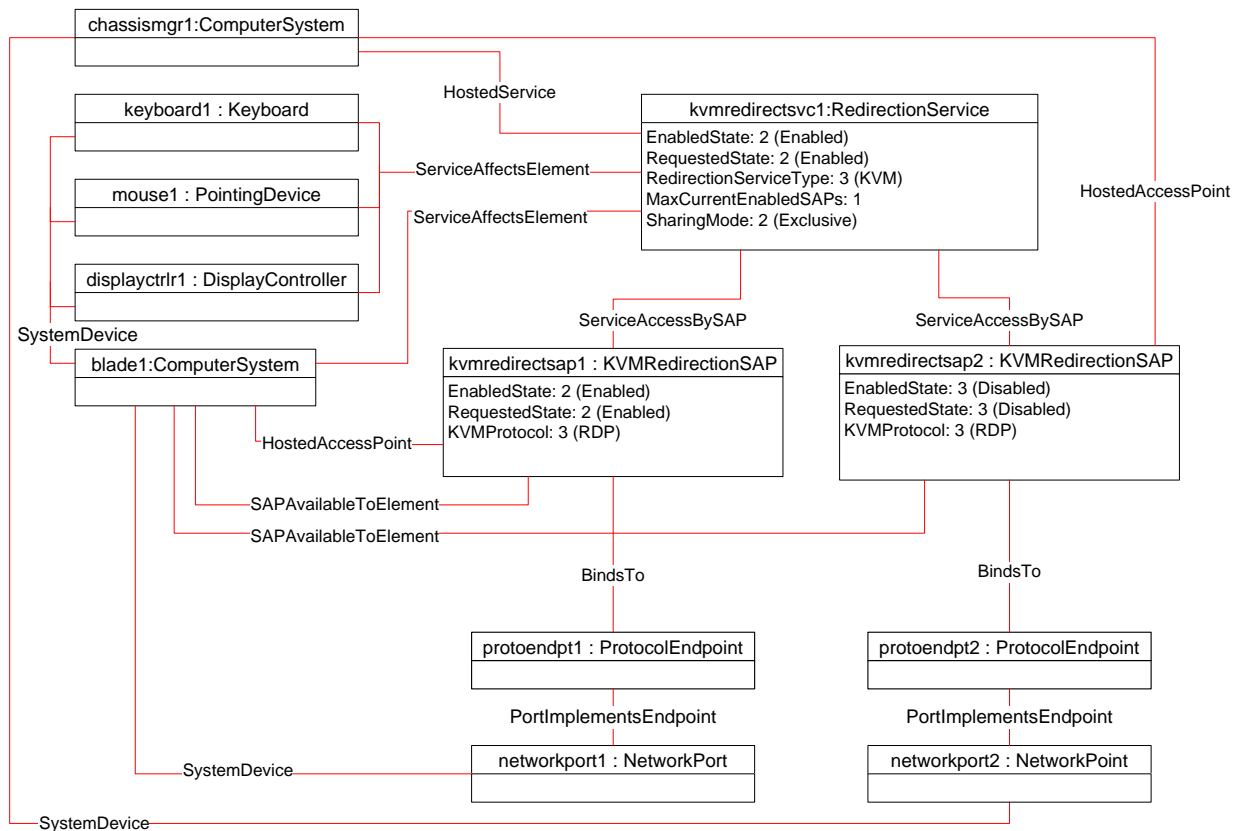
825 From *kvmredirectsap1*, the CIM\_BindsTo association can be traversed to the CIM\_ProtocolEndpoint  
 826 (*protoendpt1*). From *protoendpt1*, the CIM\_PortImplementsEndpoint association can be traversed to the  
 827 network port (*networkport1*), a device on *blade1*.

828 The other KVM Redirection Session (*kvmredirectsap2*) is hosted on *chassismgr1* as represented by the  
 829 CIM\_HostedAccessPoint association between *chassismgr1* and *kvmredirectsap2*. This shows that the  
 830 resources of *chassismgr1* are used to host the redirection session. The Session (*kvmredirectsap2*) also  
 831 provides a SAP for *blade1* as represented by the CIM\_SAPAvailableForElement association between  
 832 *blade1* and *kvmredirectsap2*.

833 From *kvmredirectsap2*, the CIM\_BindsTo association can be traversed to the CIM\_ProtocolEndpoint  
 834 (*protoendpt2*). From *protoendpt2*, the CIM\_PortImplementsEndpoint association can be traversed to the  
 835 network port (*networkport2*), a device on *chassismgr1*.

836 Note that both *kvmredirectsap1* and *kvmredirectsap2* are associated to *blade1* with the  
 837 CIM\_SAPAvailableForElement, because *blade1* is the source of the KVM Redirection regardless of  
 838 whether the SAP is hosted on the *blade1* or *chassismgr1*.

839 In Figure 5, the KVM Redirection specified by *kvmredirectsvc1* and *kvmredirectsap1* is active, because  
 840 the state of *kvmredirectsvc1* is 2 (Enabled) and the state of *kvmredirectsap1* is 2 (Enabled). The state of  
 841 *kvmredirectsap2* is 3 (Disabled), which means that the session specified by *kvmredirectsvc1* and  
 842 *kvmredirectsap2* is not permitted to be made active.



843

844

Figure 5 – Modular System Object Diagram

## 845 **9.5 Determine Whether a System Has KVM Consoles That Can Be Redirected.**

846 A client can determine whether a computer system of interest has KVM consoles that can be redirected  
847 as follows:

- 848 1) Start at the instance of CIM\_ComputerSystem which represents the computer system whose  
849 KVM consoles are of interest.
- 850 2) Enumerate the instances of the CIM\_RedirectionService which are associated to the  
851 CIM\_ComputerSystem via an instance of the CIM\_ServiceAffectsElement association.
- 852 3) If the enumeration is zero, the computer system has no KVM console that can be redirected.
- 853 4) Otherwise, the computer system has at least one KVM console that can be redirected. Each  
854 instance of CIM\_RedirectionService so found represents a Service on the computer system.

## 855 **9.6 Determine Whether a Keyboard, Display Controller or Pointing Device Can 856 Be Redirected**

857 A client can determine whether a keyboard, display controller or pointing device of interest can be  
858 redirected as follows:

- 859 1) Start at the instance of CIM\_Keyboard, CIM\_DisplayController and/or CIM\_PointingDevice  
860 which represents the device(s) of interest.
- 861 2) Enumerate the instances of the CIM\_RedirectionService which are associated to the  
862 CIM\_Keyboard, CIM\_DisplayController and/or CIM\_PointingDevice via an instance of the  
863 CIM\_ServiceAffectsElement association.
- 864 3) If the enumeration is zero, the KVM console cannot be redirected.
- 865 4) Otherwise, the keyboard, display controller or pointing device of interest is the Original  
866 Destination for at least one KVM Redirection. Each session can be found by using the  
867 CIM\_RedirectionService, so found, as the Service.
- 868 5) It is advisable to enumerate the instances of any other CIM\_LogicalDevice with which the  
869 CIM\_RedirectionService is associated, because this service may affect more than one device.  
870 To do that, enumerate the instances of CIM\_LogicalDevice, such as CIM\_Keyboard,  
871 CIM\_DisplayController and/or CIM\_PointingDevice which are associated to the instance of  
872 CIM\_RedirectionService via an instance of the CIM\_ServiceAffectsElement association (other  
873 than the one found in step 2).

## 874 **9.7 Find the KVM Redirection Services for a Computer System**

875 A client can determine the KVM Redirection Service on a computer system of interest as follows:

- 876 1) Start at the instance of CIM\_ComputerSystem which represents the computer system of  
877 interest.
- 878 2) Enumerate the instances of the CIM\_RedirectionService which are associated to the  
879 CIM\_ComputerSystem via an instance of the CIM\_ServiceAffectsElement association and  
880 which have a CIMRedirectionService.RedirectionServiceType set to 3 (KVM).
- 881 3) Each instance of CIM\_RedirectionService, so found, is a KVM Redirection Service for the  
882 computer system of interest.

## 883 **9.8 Find the Original Destinations on a Computer System**

884 A client can determine the sources of KVM Console Flows (or Original Destinations) on a computer  
885 system of interest as follows:

- 886 1) Start at the instance of CIM\_ComputerSystem which represents the computer system of  
887 interest.

- 888           2) Determine the KVM Redirection Services for the computer system using the use case in 9.7.
- 889           3) From each instance of CIM\_RedirectionService so found, determine if there is an instance of  
890           CIM\_LogicalDevice which is associated to the instance of CIM\_RedirectionService via an  
891           instance of the CIM\_ServiceAffectsElement association.
- 892           4) If an instance of CIM\_LogicalDevice does not exist, there may be no further information to  
893           determine the Original Destination of the KVM Redirection Service.
- 894           5) Each instance of CIM\_LogicalDevice, so found, is a Original Destination for the computer  
895           system of interest.

## 896   **9.9 Find the KVM Redirection Sessions for a Service**

897   A client can determine the KVM Redirection Sessions for a Service of interest as follows:

- 898           1) Start at the instance of CIM\_RedirectionService of interest. (The instance could be found using  
899           the use case in 9.6).
- 900           2) Enumerate the instances of CIM\_KVMRedirectionSAP which are associated via an instance of  
901           CIM\_ServiceAccessBySAP.
- 902           3) Each instance of CIM\_KVMRedirectionSAP, so found, is a KVM Redirection Session for the  
903           computer system of interest.

## 904   **9.10 Find the Destinations for the Redirected KVM Console Flow for a Service**

905   A client can determine the KVM Redirection destinations redirected from a Service of interest as follows:

- 906           1) Start at the instance of CIM\_RedirectionService of interest. (The instance could be found using  
907           the use case in 9.6.)
- 908           2) Determine the KVM Redirection Sessions using the use case in 9.9.
- 909           3) From each instance of CIM\_KVMRedirectionSAP, determine if there is an instance of a  
910           subclass of CIM\_ProtocolEndpoint which is associated to the instance of  
911           CIM\_KVMRedirectionSAP via an instance of the CIM\_BindsTo association.
- 912           4) If an instance of CIM\_ProtocolEndpoint does not exist, there may be no further information to  
913           determine the Destination of the KVM RedirectionSession.
- 914           5) Otherwise, for each instance of CIM\_ProtocolEndpoint, so found, traverse the  
915           CIM\_PortImplementsEndpoint association to the instance of CIM\_NetworkPort.
- 916           6) Each instance of CIM\_NetworkPort, so found, is a destination of the redirected KVM Console  
917           Flow for the Service.

## 918   **9.11 Find a KVM Redirection**

919   Finding a KVM Redirection involves finding the KVM Redirection Service and the KVM Redirection  
920   Session.

921   A client can find a KVM Redirection as follows:

- 922           1) Use the steps described in 9.7 to find the instance of CIM\_RedirectionService of interest.
- 923           2) Use the steps described in 9.9 to find the instance of CIM\_KVMRedirectionSAP of interest.
- 924           3) The instance of CIM\_RedirectionService and instance of CIM\_KVMRedirectionSAP, so found,  
925           are components the KVM Redirection of interest.



## 926 9.12 Determine the Type of KVM Redirection State Management Supported

927 A client can determine whether a KVM Redirection is managed via the state of Session only or via the  
928 states of both the Service and Session as follows:

- 929 1) Start at the instance of CIM\_RedirectionService which is a part of the KVM Redirection of  
930 interest.
- 931 2) Determine if an instance of CIM\_ElementCapabilities exists which associates the instance of  
932 CIM\_RedirectionService to an instance of CIM\_RedirectionServiceCapabilities.
- 933 3) If the instance does not exist, the KVM Redirection Session is managed via the state of the  
934 Session only.
- 935 4) Otherwise, on the instance of CIM\_RedirectionServiceCapabilities so found, query the value of  
936 the RequestedStateSupported property array.
- 937 5) If the RequestedStatesSupported property array contains no values, the KVM Redirection is  
938 managed via the state of the Session only.
- 939 6) Otherwise, the KVM Redirection can be managed via the state of both Service and Session.

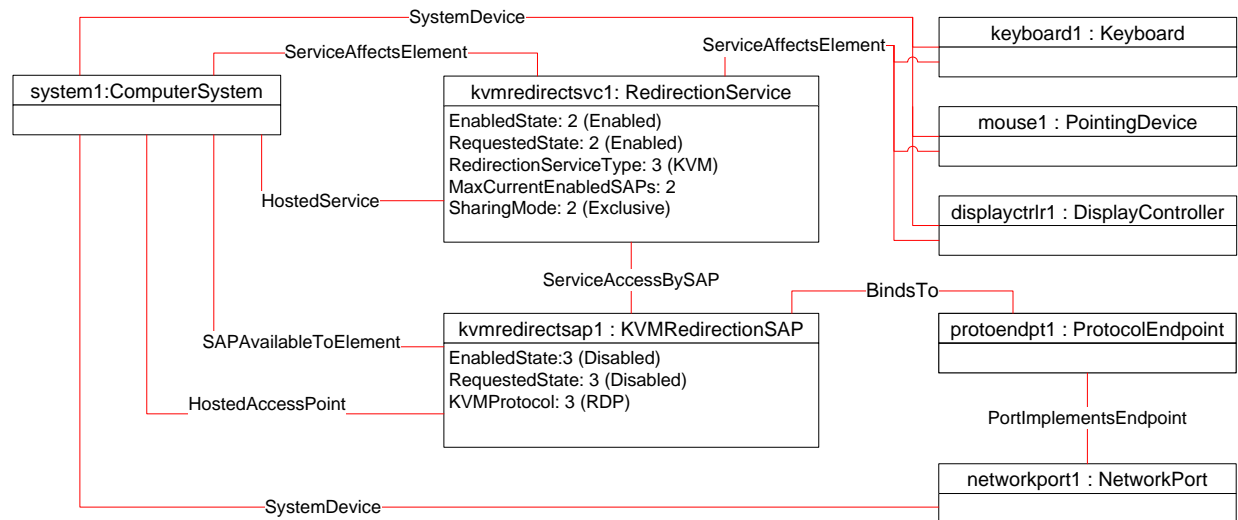
## 940 9.13 Activate a KVM Redirection — Session Only

941 When the KVM Redirection is managed via the state of the Session only, a client can start a KVM  
942 Redirection as follows:

- 943 1) Start at the instance of the CIM\_KVMRedirectionSAP which is a component of the KVM  
944 Redirection of interest.
- 945 2) Invoke the RequestStateChange() method with the RequestedState parameter set to 2  
946 (Enabled).
- 947 3) Verify that the CIM\_KVMRedirectionSAP.EnabledState property is set to a value of 6 (Enabled  
948 but Offline) or 2 (Enabled).
- 949 4) The KVM Redirection is now available, and may be active.

950 Figure 6 shows an initial state of the KVM Redirection as inactive, because the state of *kvmredirectsvc1* is  
951 2 (Enabled), but the state of *kvmredirectsap1* is 3 (Disabled). The steps described above will change the  
952 state of the *kvmredirectsap1* to 6 (Enabled but Offline), thereby activating the KVM Redirection specified  
953 by *kvmredirectsvc1* and *kvmredirectsap1*. When the implementation detects that KVM Redirection Flow is  
954 active, the diagram of the active KVM Redirection will look like Figure 3.

955



956

957

**Figure 6 – An Initial State of a Session Managed via the Session State Only**

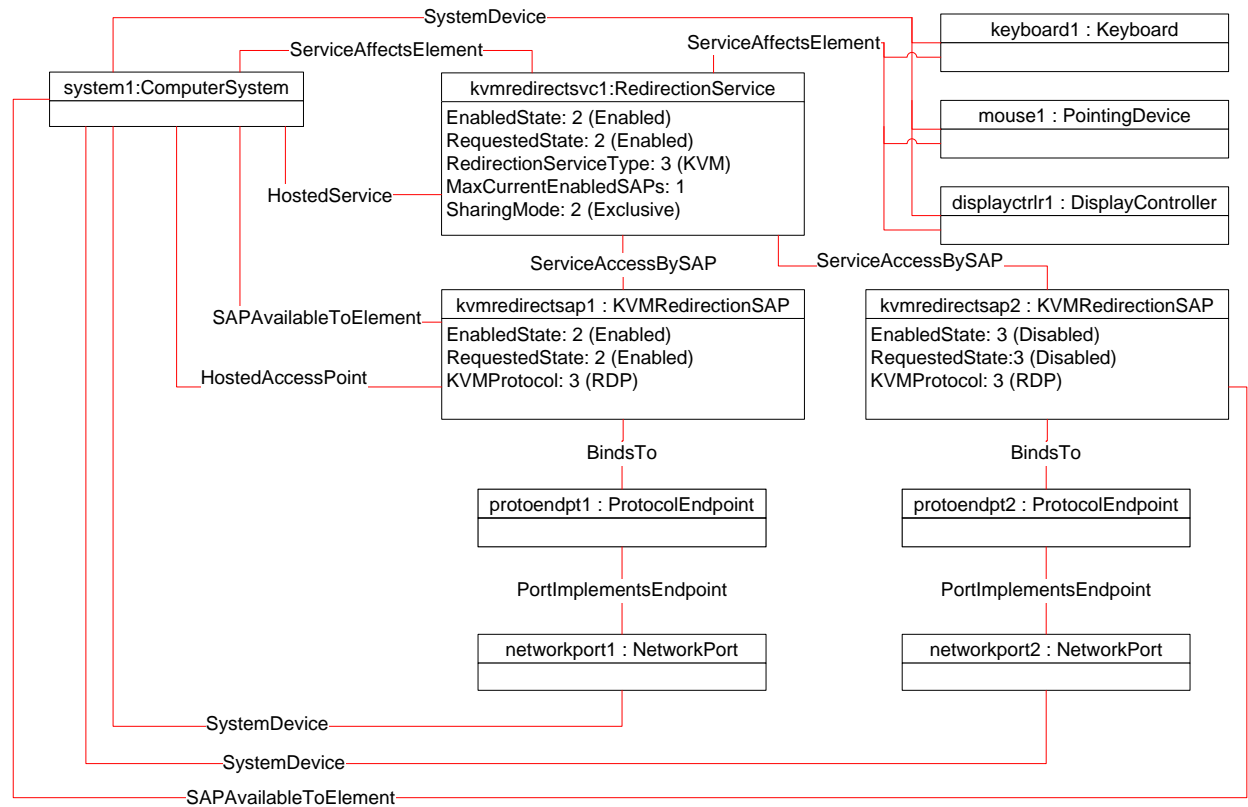
#### 958 9.14 Activate a Singular KVM Redirection

959 When the KVM Redirection is a Singular KVM Redirection, a client can atomically activate a KVM  
 960 Redirection and deactivate a previously activated KVM Redirection (see 8.2.2).

961 This above behavior is accomplished as follows:

- 962 1) Start at the instance of the CIM\_KVMRedirectionSAP which is a component of the KVM  
 963 Redirection of interest.
- 964 2) Invoke the RequestStateChange() method with the RequestedState parameter set to 2  
 965 (Enabled).
- 966 3) Verify that the CIM\_KVMRedirectionSAP.EnabledState property is set to a value of 6 (Enabled  
 967 but Offline) or 2 (Enabled).
- 968 4) The KVM Redirection is now available and may be active and any previously active session is  
 969 now inactive.

970 Figure 7 shows the object diagram of the initial state of a Singular KVM Redirection. Note that the  
 971 MaxCurrentEnabledSAPs property of *kvmredirectsvc1* is 1, by definition. The state of the Singular KVM  
 972 Redirection, specified by *kvmredirectsvc1* and *kvmredirectsap1*, is active, because the state of  
 973 *kvmredirectsvc1* is 2 (Enabled) and the state of *kvmredirectsap1* is 2 (Enabled).



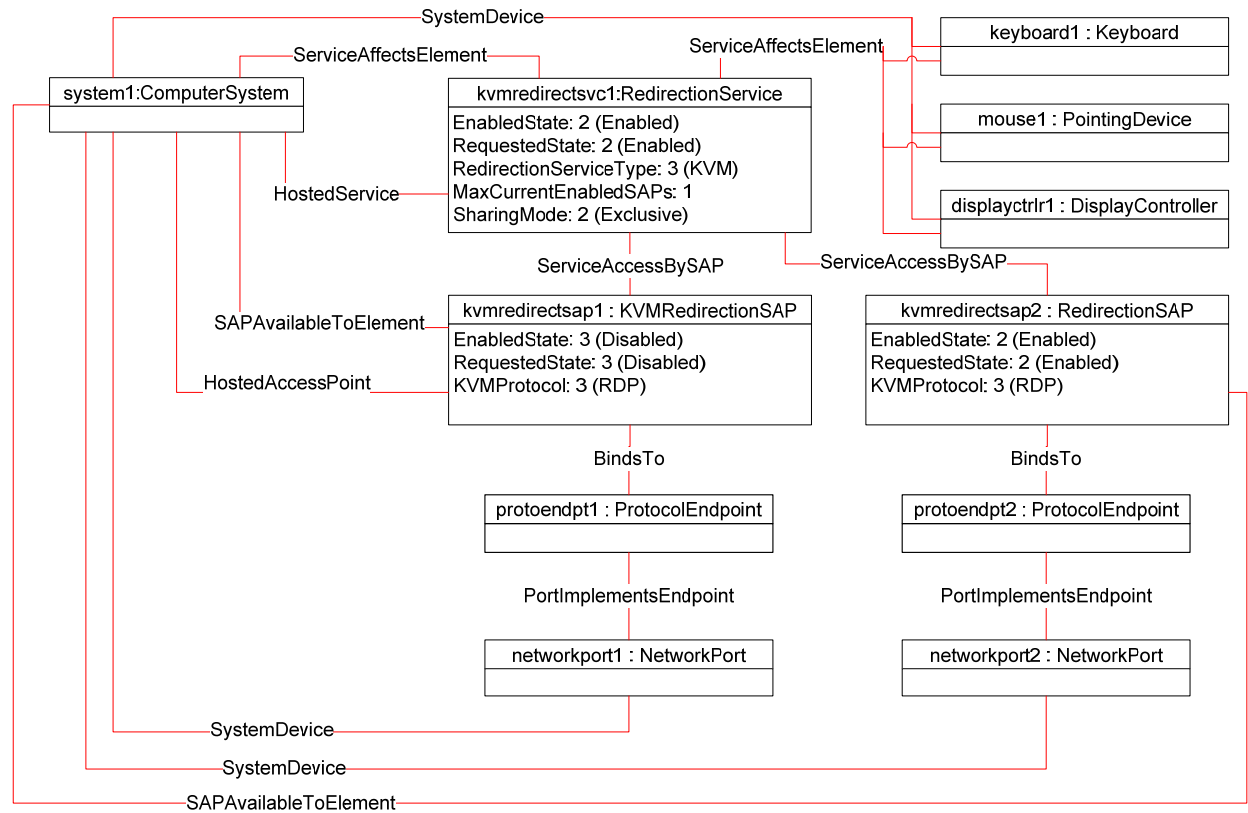
974

975

**Figure 7 – The Initial State of a Singular KVM Redirection**

976 If the CIM\_KVMRedirectionSAP described in step one above is *kvmredirectsap2*, then the steps  
 977 described above will change the state of the *kvmredirectsap1* to 3 (Disabled) and the state of the  
 978 *kvmredirectsap2* to 6 (Enabled but Offline) or 2 (Enabled) because MaxCurrentEnabledSAPs is set to 1.  
 979 This will result in the KVM Redirection Session specified by *kvmredirectsvc1* and *kvmredirectsap2* being  
 980 available or active, while the session specified by *kvmredirectsvc1* and *kvmredirectsap1* is inactive.

981 Figure 8 is an object diagram of the final state of the Singular KVM Redirection, when the call to the  
 982 RequestedStateChange() method completes successfully and the implementation detects that the KVM  
 983 Redirection Flow is active..



984

985

**Figure 8 – The Final State of a Singular KVM Redirection**

### 986 9.15 Stop All KVM Redirection Associated with the Source — Session Only

987 In the following use case, it is assumed that the client knows the instance of CIM\_RedirectionService  
 988 which specify the KVM Redirection Source of interest.

989 When the KVM Redirection is managed via the state of the Session only, a client can stop all KVM  
 990 Redirection as follows:

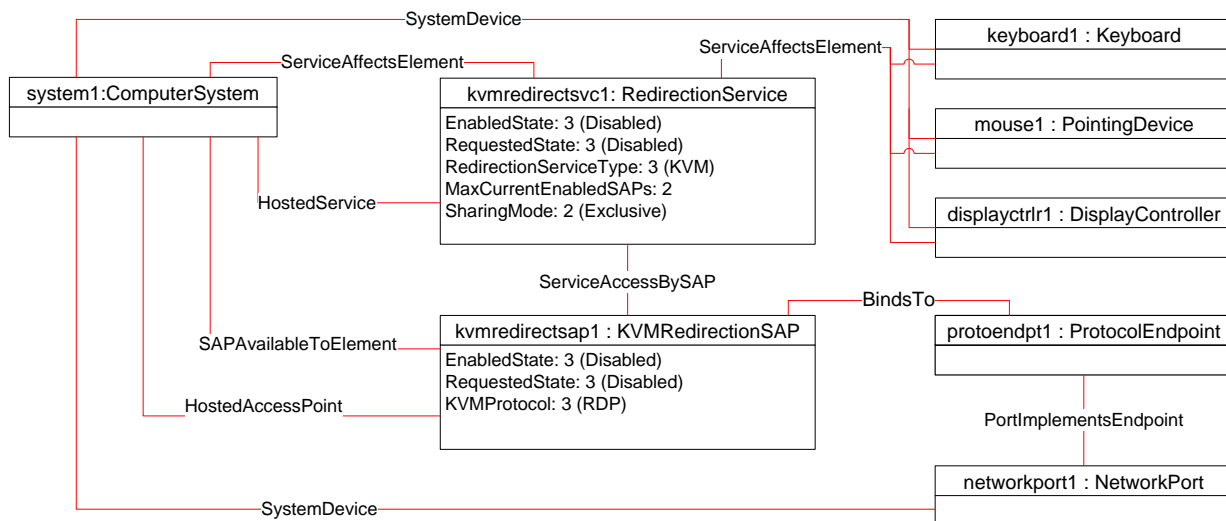
- 991 1) Start at the instance of the CIM\_RedirectionService which represents the KVM Redirection  
 992 Service of interest.
- 993 2) Enumerate the instances of CIM\_KVMRedirectionSAP which are associated to the instance of  
 994 CIM\_RedirectionService via an instance of CIM\_ServiceAccessBySAP.
- 995 3) For each instance of CIM\_KVMRedirectionSAP so found, query the value of the EnabledState  
 996 property.
- 997 4) If the state of the CIM\_KVMRedirectionSAP is not 3 (Disabled), invoke the  
 998 RequestStateChange() method with the RequestedState parameter set to 3 (Disabled).
- 999 5) Verify that the CIM\_KVMRedirectionSAP.EnabledState property is set to a value of 3  
 1000 (Disabled)).
- 1001 6) Each KVM Redirection redirected from the Service is now inactive.

1002 **9.16 Activate a KVM Redirection — Service and Session State Management**

1003 When the KVM Redirection is managed via the states of both the Service and Session, a client can start a  
 1004 KVM Redirection as follows:

- 1005 1) Start at the instance of CIM\_RedirectionService of interest.
- 1006 2) Invoke the CIM\_RedirectionService.RequestStateChange() method with the RequestedState  
 1007 parameter set to 2 (Enabled).
- 1008 3) Verify that the CIM\_RedirectionService.EnabledState property is set to a value of 2 (Enabled).
- 1009 4) Invoke the CIM\_KVMRedirectionSAP.RequestStateChange() method with the RequestedState  
 1010 parameter set to 2 (Enabled).
- 1011 5) Verify that the CIM\_KVMRedirectionSAP.EnabledState property is set to a value of 6 (Enabled  
 1012 but Offline) or 2 (Enabled).
- 1013 6) The KVM Redirection is now available or, if KVM Redirection Flow has started, active.

1014 Figure 9 shows an initial state of the KVM Redirection as inactive, because the state of *kvmredirectsvc1* is  
 1015 3 (Disabled), and the state of *kvmredirectsap1* is 3 (Disabled) The steps described above will change the  
 1016 state of *kvmredirectsap1* to 6 (Enabled but Offline) and the state of *kvmredirectsvc1* to 2 (Enabled),  
 1017 thereby enabling the KVM Redirection specified by *kvmredirectsvc1* and *kvmredirectsap1* for use. When  
 1018 the implementation detects that the KVM Redirection Flow has started, the diagram of the active KVM  
 1019 Redirection will look like Figure 3.



1020  
 1021 **Figure 9 – An Initial State of a Session Managed via the Service and Session State**

1022 **9.17 Stop All KVM Redirection — Service and Session State Management**

1023 When the KVM Redirection is managed via the states of both the Service and Session, a client can stop  
 1024 all KVM Redirections associated with the Service as follows:

- 1025 1) Start at the instance of the CIM\_RedirectionService which represents the KVM Redirection  
 1026 Service of interest.
- 1027 2) Change the state of the CIM\_RedirectionService by invoking the RequestStateChange()  
 1028 method with the RequestedState parameter set to 3 (Disabled).
- 1029 3) All KVM Redirections with the CIM\_RedirectionService as the Service is now inactive.

## 1030 9.18 Find the Number of Active KVM Redirection Access Points

1031 A client can find the number of active KVM Redirections for a Service of interest as follows:

- 1032 1) Start at the instance of CIM\_RedirectionService of interest.
- 1033 2) Query the value of the EnabledState property.
- 1034 3) If the EnabledState property is 3 (Disabled), then the number of active KVM Redirection is zero.
- 1035 4) If the EnabledState property is 2 (Enabled), then find all instances of CIM\_KVMRedirectionSAP
- 1036 associated via an instance of CIM\_ServiceAccessBySAP.
- 1037 5) For each CIM\_KVMRedirectionSAP query the value of the EnabledState property.
- 1038 6) Count all the CIM\_KVMRedirectionSAP.EnabledState properties whose value is 2 (Enabled).

## 1039 9.19 Determine Whether CIM\_RedirectionService.ElementName Can Be Modified

1040 A client can determine whether the ElementName can be modified as follows:

- 1041 1) Start at the instance of CIM\_RedirectionService.
- 1042 2) Get the CIM\_RedirectionServiceCapabilities instance associated by traversing the
- 1043 CIM\_ElementCapabilities association.
- 1044 3) Query the value of the ElementNameEditSupported property of the instance.
- 1045 4) If the value is TRUE, the CIM\_RedirectionService.ElementName property can be modified by a
- 1046 client.

1047 If there is not an instance of CIM\_RedirectionServiceCapabilities associated with the  
 1048 CIM\_RedirectionService instance, modifying the CIM\_RedirectionService.ElementName property is not  
 1049 supported.

## 1050 10 CIM Elements

1051 This clause lists the required properties and method for each class required for this profile. Additional  
 1052 requirements on these elements may have been imposed in clauses 7 (“Implementation Requirements”)  
 1053 and 8 (“Methods”).

1054 Table 16 lists the CIM Elements which are required for this profile. The subsequent subclauses contain  
 1055 those CIM Elements where additional normative statements can be made.

1056 **Table 16 – CIM Elements: KVM Redirection Profile**

Element Name	Requirement	Description
CIM_RegisteredProfile	Mandatory	See 10.1.
CIM_BindsTo	Optional	See 10.2.
CIM_ElementCapabilities	Conditional	Referencing CIM_RedirectionService. See 10.3.
CIM_ElementCapabilities	Conditional	Referencing CIM_KVMRedirectionSAP. See 10.4.
CIM_RedirectionServiceCapabilities	Optional	Associated to CIM_RedirectionService. See 10.5.
CIM_EnabledLogicalElementCapabilities	Optional	Associated to CIM_KVMRedirectionSAP. See 10.6.

Element Name	Requirement	Description
CIM_HostedAccessPoint	Mandatory	See 10.7.
CIM_HostedService	Mandatory	See 10.8.
CIM_SAPAvailableForElement	Mandatory	See 10.9.
CIM_ServiceAccessBySAP	Mandatory	See 10.10.
CIM_ServiceAffectsElement	Mandatory	Referencing CIM_ComputerSystem. See 10.11.
CIM_ServiceAffectsElement	Optional	Referencing CIM_LogicalDevice. See 10.12.
CIM_RedirectionService	Mandatory	See 10.13.
CIM_KVMRedirectionSAP	Mandatory	See 10.14.

1057 **10.1 CIM\_RegisteredProfile**

1058 CIM\_RegisteredProfile identifies the *KVM Redirection Profile* in order for a client to determine whether an  
 1059 instance of CIM\_ComputerSystem is conformant with this profile. The CIM\_RegisteredProfile class is  
 1060 defined by the [Profile Registration Profile](#). With the exception of the mandatory values specified for the  
 1061 properties in Table 17, the behavior of the RegisteredProfile instance is per the [Profile Registration](#)  
 1062 [Profile](#).

1063 **Table 17 – Class: CIM\_RegisteredProfile**

Properties	Requirement	Notes
RegisteredName	Mandatory	This property shall have a value of "KVM Redirection".
RegisteredVersion	Mandatory	This property shall have a value of "1.0.1".
RegisteredOrganization	Mandatory	This property shall have a value of 2 (DMTF).

1064 **10.2 CIM\_BindsTo**

1065 The CIM\_BindsTo association is used to relate the CIM\_KVMRedirectionSAP to the  
 1066 CIM\_ProtocolEndpoint which is the destination of the redirected KVM console.

1067 Table 18 contains the requirements for elements of this class.

1068 **Table 18 – Class: CIM\_BindsTo**

Properties	Requirement	Notes
Antecedent	Mandatory	This shall be a reference to an instance of the CIM_ProtocolEndpoint class. See 7.4.1. Cardinality is "0..1".
Dependent	Mandatory	This shall be a reference to an instance of the CIM_KVMRedirectionSAP. See 7.4.1. Cardinality is "1..*".

1069 **10.3 CIM\_ElementCapabilities Relating CIM\_RedirectionService to**  
 1070 **CIM\_RedirectionServiceCapabilities**

1071 The CIM\_ElementCapabilities association is used to relate an instance of  
 1072 CIM\_RedirectionServiceCapabilities with the instance of CIM\_RedirectionService.

1073 Table 19 contains the requirements for elements of this class.

1074 **Table 19 – Class: CIM\_ElementCapabilities Referencing CIM\_RedirectionService**

Properties	Requirement	Description
ManagedElement	Mandatory	This shall be a reference to an instance of CIM_RedirectionService. See 7.6.1.1 and 7.6.2.1. Cardinality is "1..*".
Capabilities	Mandatory	This shall be a reference to an instance of CIM_RedirectionServiceCapabilities. See 7.6.1.1 and 7.6.2.1. Cardinality is "0..1".

1075 **10.4 CIM\_ElementCapabilities Relating CIM\_KVMRedirectionSAP to**  
 1076 **CIM\_EnabledLogicalElementCapabilities**

1077 The CIM\_ElementCapabilities association is used to relate an instance of  
 1078 CIM\_EnabledLogicalElementCapabilities with the instance of CIM\_KVMRedirectionSAP.

1079 Table 20 contains the requirements for elements of this class.

1080 **Table 20 – Class: CIM\_ElementCapabilities Referencing CIM\_KVMRedirectionSAP**

Properties	Requirement	Description
ManagedElement	Mandatory	This shall be a reference to an instance of CIM_KVMRedirectionSAP. See 7.7.1.1 and 7.7.2.1. Cardinality is "1..*".
Capabilities	Mandatory	This shall be a reference to an instance of CIM_EnabledLogicalElementCapabilities. See 7.7.1.1 and 7.7.2.1. Cardinality is "0..1".

1081 **10.5 CIM\_RedirectionServiceCapabilities Associated to CIM\_RedirectionService**

1082 CIM\_RedirectionServiceCapabilities indicates support for managing the KVM Redirection Service.

1083 Table 21 contains the requirements for elements of this class.

1084 **Table 21 – Class: CIM\_RedirectionServiceCapabilities Associated to CIM\_RedirectionService**

Elements	Requirement	Notes
InstanceID	Mandatory	<b>Key</b>
RequestedStatesSupported	Mandatory	See 7.6.1.1 and 7.6.2.1.
ElementNameEditSupported	Mandatory	See 7.3.6.1 and 7.3.6.2.
MaxElementNameLen	Conditional	See 7.3.6.1 and 7.3.6.2.
SharingModeSupported	Mandatory	See 7.3.3.



1085 **10.6 CIM\_EnabledLogicalElementCapabilities Associated to**  
 1086 **CIM\_KVMRedirectionSAP**

1087 CIM\_EnabledLogicalElementCapabilities indicates support for managing the KVM Redirection Session.

1088 Table 22 contains the requirements for elements of this class.

1089 **Table 22 – Class: CIM\_EnabledLogicalElementCapabilities Associated to**  
 1090 **CIM\_KVMRedirectionSAP**

Elements	Requirement	Notes
InstanceID	Mandatory	<b>Key</b>
RequestedStatesSupported	Mandatory	See 7.7.1.1 and 7.7.2.1.
ElementNameEditSupported	Mandatory	See 7.4.4.1 and 7.4.4.2.
MaxElementNameLen	Conditional	See 7.4.4.1 and 7.4.4.2.

1091 **10.7 CIM\_HostedAccessPoint**

1092 The CIM\_HostedAccessPoint association is used to relate the CIM\_KVMRedirectionSAP to the  
 1093 CIM\_ComputerSystem to which the KVM console is redirected.

1094 Table 23 contains the requirements for elements of this class.

1095 **Table 23 – Class: CIM\_HostedAccessPoint**

Properties	Requirement	Notes
Antecedent	Mandatory	This shall be a reference to an instance of the CIM_ComputerSystem class. See 7.4. Cardinality is "1".
Dependent	Mandatory	This shall be a reference to an instance of the CIM_KVMRedirectionSAP. See 7.4. Cardinality is "**".

1096 **10.8 CIM\_HostedService**

1097 The CIM\_HostedService association is used to relate the CIM\_RedirectionService to the  
 1098 CIM\_ComputerSystem on which it is hosted.

1099 Table 24 contains the requirements for elements of this class.

1100 **Table 24 – Class: CIM\_HostedService**

Properties	Requirement	Notes
Antecedent	Mandatory	This shall be a reference to an instance of the CIM_ComputerSystem class. See 7.2. Cardinality is "1".
Dependent	Mandatory	This shall be a reference to an instance of the CIM_RedirectionService. See 7.2. Cardinality is "**".

1101 **10.9 CIM\_SAPAvailableForElement**

1102 The CIM\_SAPAvailableForElement association is used to relate the instance of CIM\_ComputerSystem to  
 1103 the instances of CIM\_KVMRedirectionSAP which are available as access points for the redirected KVM  
 1104 console.

1105 Table 25 contains the requirements for elements of this class.

1106 **Table 25 – Class: CIM\_SAPAvailableForElement**

Properties	Requirement	Notes
AvailableSAP	Mandatory	This shall be a reference to an instance of the CIM_KVMRedirectionSAP class. See 7.4. Cardinality is "*".
ManagedElement	Mandatory	This shall be a reference to an instance of the CIM_ComputerSystem. See 7.4. Cardinality is "1".

1107 **10.10 CIM\_ServiceAccessBySAP**

1108 The CIM\_ServiceAccessBySAP association is used to relate the instance of CIM\_RedirectionService to  
 1109 the instances of CIM\_KVMRedirectionSAP which are enabled by the service.

1110 Table 26 contains the requirements for elements of this class.

1111 **Table 26 – Class: CIM\_ServiceAccessBySAP**

Properties	Requirement	Notes
Antecedent	Mandatory	This shall be a reference to an instance of the CIM_RedirectionService class. See 7.17.1. Cardinality is "1".
Dependent	Mandatory	This shall be a reference to an instance of the CIM_KVMRedirectionSAP. See 7.17.1. Cardinality is "1..*".

1112 **10.11 CIM\_ServiceAffectsElement Relating CIM\_RedirectionService to**  
1113 **CIM\_ComputerSystem**

1114 The CIM\_ServiceAffectsElement association is used to relate the instance of CIM\_RedirectionService to  
 1115 the instance of CIM\_ComputerSystem which represent the source of the KVM console flow.

1116 Table 27 contains the requirements for elements of this class.

1117 **Table 27 – Class: CIM\_ServiceAffectsElement Referencing CIM\_ComputerSystem**

Properties	Requirement	Notes
AffectingElement	Mandatory	This shall be a reference to an instance of the CIM_RedirectionService class. See 7.1. Cardinality is "*".
AffectedElement	Mandatory	This shall be a reference to an instance of the CIM_ComputerSystem. See 7.1. Cardinality is "1".

1118 **10.12 CIM\_ServiceAffectsElement Relating CIM\_RedirectionService to a Concrete**  
 1119 **Subclass of CIM\_LogicalDevice**

1120 The CIM\_ServiceAffectsElement association is used to relate the instance of CIM\_RedirectionService to  
 1121 the instance of a concrete class of CIM\_LogicalDevice which represent the source of the KVM console  
 1122 flow.

1123 Table 28 contains the requirements for elements of this class.

1124 **Table 28 – Class: CIM\_ServiceAffectsElement Referencing CIM\_LogicalDevice**

Properties	Requirement	Notes
AffectingElement	Mandatory	This shall be a reference to an instance of the CIM_RedirectionService class. See 7.3.2. Cardinality is "1".
AffectedElement	Mandatory	This shall be a reference to an instance of CIM_LogicalDevice. See 7.3.2. Cardinality is "0..1".

1125 **10.13 CIM\_RedirectionService**

1126 The CIM\_RedirectionService class represents the ability to manage the KVM Redirection capabilities of a  
 1127 computer system.

1128 Table 29 contains the requirements for elements of this class.

1129 **Table 29 – Class: CIM\_RedirectionService**

Properties	Requirement	Description
SystemCreationClassName	Mandatory	<b>Key</b>
SystemName	Mandatory	<b>Key</b>
CreationClassName	Mandatory	<b>Key</b>
Name	Mandatory	<b>Key</b>
ElementName	Mandatory	See 7.3.6.
MaxCurrentEnabledSAPs	Mandatory	See 7.3.5.
EnabledState	Mandatory	See 7.6.
RequestedState	Mandatory	See 7.6.
RedirectionServiceType	Mandatory	See 7.2.
SharingMode	Mandatory	See 7.3.3.
RequestStateChange( )	Mandatory	See 8.1.

1130 **10.14 CIM\_KVMRedirectionSAP**

1131 The CIM\_KVMRedirectionSAP class represents a KVM Redirection capability which is possible on a  
 1132 computer system.

1133 Table 30 contains the requirements for elements of this class.

1134 **Table 30 – Class: CIM\_KVMRedirectionSAP**

Properties	Requirement	Description
SystemCreationClassName	Mandatory	<b>Key</b>
SystemName	Mandatory	<b>Key</b>
Name	Mandatory	<b>Key</b>
CreationClassName	Mandatory	<b>Key</b>
ElementName	Mandatory	See 7.4.4.
EnabledState	Mandatory	See 7.7.1.3.
RequestedState	Mandatory	See 7.7.1.2.
KVMProtocol	Mandatory	See 7.4.2.
OtherKVMProtocol	Conditional	See 7.4.2.
RequestStateChange( )	Mandatory	See 8.2.

**ANNEX A**  
(informative)**Change Log**

Version	Date	Description
1.0.0a	2007-08-06	Initial Preliminary Version
1.0.0	2009-06-16	DMTF Standard Release
1.0.1	2010-11-15	Initial Errata Revision for 1.0.1

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