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Power Supply Profile

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Foreword

The *Power Supply Profile* (DSP1015) was prepared by the Server Management Working Group.

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

Introduction

The information in this specification and referenced specifications should be sufficient for a provider or consumer of this data to identify unambiguously the classes, properties, methods, and values that shall be instantiated and manipulated to represent and manage power supplies and redundant power supplies of managed systems and subsystems that are modeled using the DMTF CIM core and extended model definitions.

The target audience for this specification is implementers who are writing CIM-based providers or consumers of management interfaces that represent the component described in this document.

Power Supply Profile

1 Scope

The *Power Supply Profile* extends the management capabilities of referencing profiles by adding the capability to represent power supplies for manageability and describe power supplies in a redundant configuration. The power supply as a logical device is modeled as referencing the power supply physical package for physical asset information and profile versioning for the schema implementation version information.

2 Normative References

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

2.1 Approved References

DMTF DSP0200, *CIM Operations over HTTP 1.2.0*

DMTF DSP0004, *CIM Infrastructure Specification 2.3.0*

DMTF DSP1000, *Management Profile Specification Template 1.0.0*

DMTF DSP1001, *Management Profile Specification Usage Guide 1.0.0*

DMTF DSP1011, *Physical Asset Profile 1.0.0*

DMTF DSP1033, *Profile Registration Profile 1.0.0*

2.2 Other References

ISO/IEC Directives, Part 2, *Rules for the structure and drafting of International Standards*

OMG, Unified Modeling Language (UML) from the Open Management Group (OMG)

3 Terms and Definitions

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

3.1
can
used for statements of possibility and capability, whether material, physical, or causal

3.2
cannot
used for statements of possibility and capability, whether material, physical, or causal

3.3
conditional
indicates requirements to be followed strictly in order to conform to the document when the specified conditions are met

3.4
mandatory
indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

3.5
may
indicates a course of action permissible within the limits of the document

3.6
need not
indicates a course of action permissible within the limits of the document

3.7
optional
indicates a course of action permissible within the limits of the document

3.8
referencing profile
indicates a profile that owns the definition of this class and can include a reference to this profile in its "Referenced Profiles" table

3.9
shall
indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

3.10
shall not
indicates requirements to be followed strictly in order to conform to the document and from which no deviation is permitted

3.11
should
indicates that among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required

3.12
should not
indicates that a certain possibility or course of action is deprecated but not prohibited

3.13
Spare Power Supply
indicates an instance of CIM_PowerSupply that represents a spare power supply in any condition

4 Symbols and Abbreviated Terms

4.1
CIM
Common Information Model

4.2
FRU
Field Replaceable Unit

5 Synopsis

Profile Name: Power Supply

Version: 1.0.0

Organization: DMTF

CIM Schema Version: 2.18.0

Central Class: CIM_PowerSupply

Scoping Class: CIM_ComputerSystem

The *Power Supply Profile* extends the management capability of the referencing profiles by adding the capability to describe power supplies and redundant power supplies.

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

Table 1 – Referenced Profiles

Profile Name	Organization	Version	Relationship
Physical Asset	DMTF	1.0.0	Optional
Profile Registration	DMTF	1.0.0	Mandatory

6 Description

The *Power Supply Profile* describes power supplies and power supply redundancies in a managed system. The profile also describes the relationship of the power supply class to the power supply's physical aspects, such as FRU data, and DMTF profile version information.

Figure 1 represents the class schema for the *Power Supply Profile*. For simplicity, the prefix CIM_ has been removed from the names of the classes.

The power supply in a managed system is represented by the instance of CIM_PowerSupply. The capability to disable and enable the power supply is advertised through the CIM_EnabledLogicalElementCapabilities instance.

The managed elements that receive power from the power supply are associated to the instance of CIM_PowerSupply through an instance of CIM_SuppliesPower. When the CIM_PowerSupply instance is not referenced by the CIM_SuppliesPower association, the power supply represented by the CIM_PowerSupply instance supplies power to the managed system that is scoped through the CIM_SystemDevice association.

The power supply's physical aspects can be represented by one or more instances of CIM_PhysicalPackage.

The profile information is represented with the instance of CIM_RegisteredProfile.

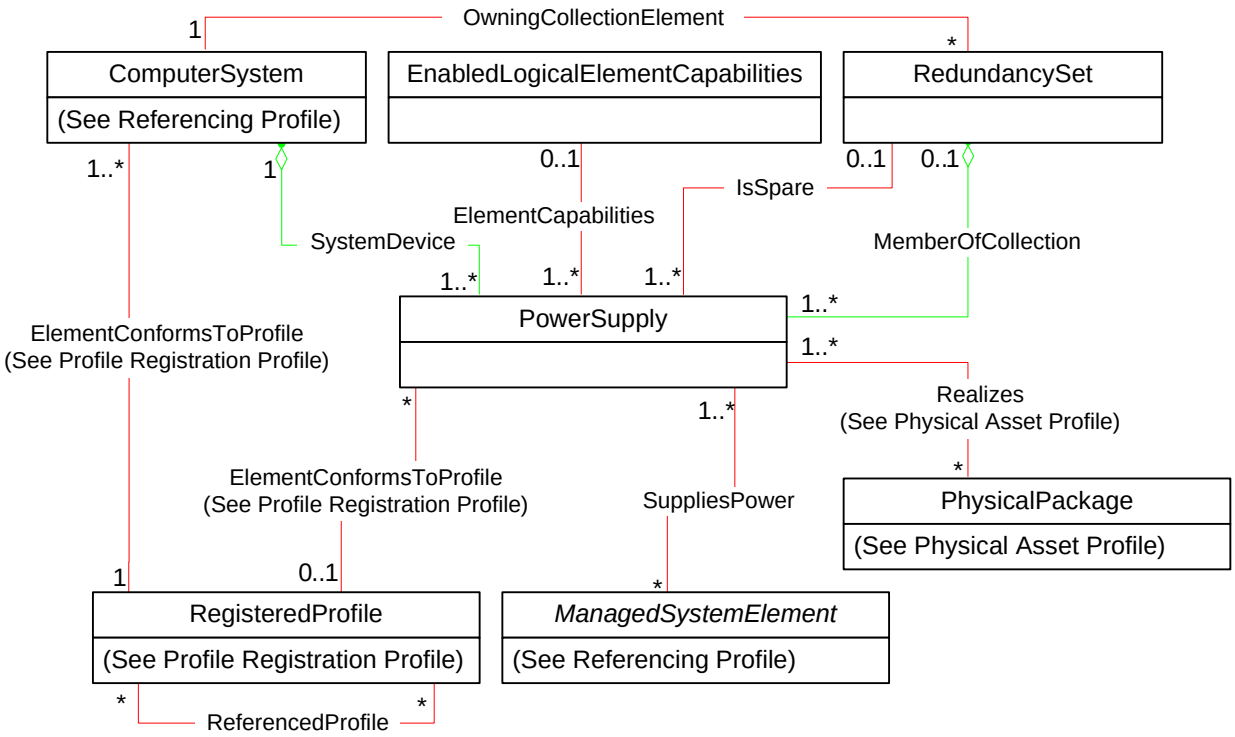


Figure 1 – Power Supply Profile: Class Diagram

6.1 Power Supply Redundancy

An instance of CIM_RedundancySet represents the redundancy of power supplies in a managed system. Each of the instances of CIM_PowerSupply that corresponds to a redundant power supply is associated to the instance of CIM_RedundancySet through an instance of CIM_MemberOfCollection. The Spare Power Supplies within the redundancy are also associated with the CIM_RedundancySet instance through an instance of CIM_IsSpare.

7 Implementation Requirements

Requirements and guidelines for propagating and formulating certain properties of the classes are discussed in this section. Methods are listed in section 8 and properties are listed in section 10.

7.1 CIM_PowerSupply

Zero or more instances of CIM_PowerSupply shall be instantiated.

7.2 CIM_EnabledLogicalElementCapabilities

When the CIM_EnabledLogicalElementCapabilities class is instantiated, the instance of CIM_EnabledLogicalElementCapabilities shall be associated with the CIM_PowerSupply instance through an instance of CIM_ElementCapabilities and used for advertising the capabilities of the CIM_PowerSupply instance.

There shall be at most one instance of CIM_EnabledLogicalElementCapabilities associated with a given instance of CIM_PowerSupply.

7.2.1 CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported

CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported is an array that contains the supported requested states for the instance of CIM_PowerSupply. This property shall be the super set of the values to be used as the RequestedState parameter in the RequestStateChange( ) method (see section 8.1). The value of the CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported property shall be an empty array or contain any combination of the following values: 2 (Enabled), 3 (Disabled), 6 (Offline), or 11 (Reset).

7.2.2 CIM_EnabledLogicalElementCapabilities.ElementNameEditSupported

This property shall have a value of TRUE when the implementation supports client modification of the CIM_PowerSupply.ElementName property.

7.2.3 CIM_EnabledLogicalElementCapabilities.MaxElementNameLen

The MaxElementNameLen property shall be implemented when the ElementNameEditSupported property has a value of TRUE.

7.3 Power Supply State Management

Power supply state management is optional. The power supply state management consists of the CIM_PowerSupply.RequestStateChange( ) method being supported (see section 8.1) and the value of the CIM_PowerSupply.RequestedState not matching 12 (Not Applicable).

7.3.1 Power Supply State Management Support

When no CIM_EnabledLogicalElementCapabilities instance is associated with the CIM_PowerSupply instance, the power supply state management shall not be supported.

When a CIM_EnabledLogicalElementCapabilities instance is associated with the CIM_PowerSupply instance but the value of the CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported property is an empty array, the power supply state management shall not be supported.

When a CIM_EnabledLogicalElementCapabilities instance is associated with the CIM_PowerSupply instance and the value of the CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported property is not an empty array, the power supply state management shall be supported.

7.4 CIM_PowerSupply.RequestedState

The CIM_PowerSupply.RequestedState property shall have a value of 12 (Not Applicable), 5 (No Change), or a value contained in the CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported property array of the associated CIM_EnabledLogicalElementCapabilities instance (see section 7.2.1).

When the power supply state management is supported and the RequestStateChange( ) method is successfully executed, the RequestedState property shall be set to the value of the parameter RequestedState of RequestStateChange( ) method. After the RequestStateChange( ) method has successfully executed, RequestedState and EnabledState shall have equal values with the exception of the transitional requested state 11 (Reset). The value of the RequestedState property may also change as a result of a request for change to the power supply's enabled state by non-CIM implementation.

7.4.1 RequestedState – 12 (Not Applicable) Value

When the power supply state management is not supported, the value of the CIM_PowerSupply.RequestedState property shall be 12 (Not Applicable).

7.4.2 RequestedState – 5 (No Change) Value

When the power supply state management is supported, the initial value of the CIM_PowerSupply.RequestedState property shall be 5 (No Change).

7.5 CIM_PowerSupply.EnabledState

Table 2 describes the mapping between the values of the CIM_PowerSupply.EnabledState property and the corresponding description of the state of the power supply. The CIM_PowerSupply.EnabledState property shall match the values that are specified in Table 2. When the RequestStateChange( ) method executes but does not complete successfully, and the power supply is in an indeterminate state, the CIM_PowerSupply.EnabledState property shall have value of 5 (Not Applicable). The value of this property may also change as a result of a change to the power supply's enabled state by non-CIM implementation.

Table 2 – EnabledState Value Description

Value	Description	Extended Description
0	Unknown	Power supply state is indeterminate.
2	Enabled	Power supply shall be enabled.
3	Disabled	Power supply shall be disabled.
5	Not Applicable	Power supply state is indeterminate, or the power supply state management is not supported.
6	Enabled but Offline	Power supply shall be enabled but shall not actively supply power (used in redundant configuration; see section 7.7).

7.6 CIM_SystemDevice and CIM_SuppliesPower

When no instance of CIM_SuppliesPower references the instance of CIM_PowerSupply, the power supply represented by CIM_PowerSupply supplies power to the whole managed system. In this case, the CIM_ComputerSystem instance and the CIM_PowerSupply instance shall only be associated through an instance of CIM_SystemDevice.

When at least one instance of CIM_SuppliesPower references the instance of CIM_PowerSupply, all of the power-receiving elements shall be associated with the CIM_PowerSupply instance through an instance of CIM_SuppliesPower.

7.7 Modeling Power Supply Redundancy

Modeling of power supply redundancy is optional. Even when a managed system supports and implements the redundancy, the redundant power supplies may co-exist with non-redundant power supplies. The conditions and requirements in this section refer only to the CIM_PowerSupply instances that represent redundant power supplies.

Power supply redundancy is modeled using CIM_RedundancySet, which is associated with the CIM_PowerSupply instances through instances of CIM_MemberOfCollection and CIM_IsSpare.

When power supply redundancy is implemented, at least one instance of CIM_RedundancySet shall exist. The CIM_MemberOfCollection association shall be used to associate the CIM_RedundancySet instance with the CIM_PowerSupply instance. In addition to the CIM_MemberOfCollection association, the CIM_IsSpare association may be used to associate the CIM_RedundancySet instance with the CIM_PowerSupply instance, depending on the type of redundancy implemented (see section 7.7.1).

7.7.1 CIM_RedundancySet.TypeOfSet

When the CIM_RedundancySet.TypeOfSet property contains a value of 3 (Load Balanced), and/or 2 (N+1), or both, and does not contain any other values, the CIM_PowerSupply instances that are associated with the CIM_RedundancySet instance shall comply with the following requirements:

- The CIM_PowerSupply instances shall be associated with the CIM_RedundancySet instance through an instance of CIM_MemberOfCollection.
- The CIM_PowerSupply instances shall not be associated with the CIM_RedundancySet instance through an instance of CIM_IsSpare.
- The CIM_PowerSupply.EnabledState property shall not have value of 6 (Enabled but Offline).

When the CIM_RedundancySet.TypeOfSet property has a value of 4 (Sparing), 5 (Limited Sparing), or both, Spare Power Supplies may exist. The Spare Power Supply shall be associated with the CIM_RedundancySet instance and shall comply with the following requirements:

- The Spare Power Supply shall be associated with the CIM_RedundancySet through instances of both CIM_IsSpare and CIM_MemberOfCollection.
- The Spare Power Supply shall comply to one of the following requirements:
  - When the CIM_PowerSupply.EnabledState property has a value of 6 (Enabled but Offline), the SpareStatus property of the referencing CIM_IsSpare instance shall have a value of 2 (Hot Standby).
  - When the CIM_PowerSupply.EnabledState property has a value of 3 (Disabled), the SpareStatus property of the referencing CIM_IsSpare instance shall have a value of 3 (Cold Standby).
  - When the CIM_PowerSupply.EnabledState property has a value other than 3 (Disabled) or 6 (Enabled but Offline), the SpareStatus property of the referencing CIM_IsSpare instance shall have a value of 0 (Unknown).

7.8 CIM_PowerSupply.ElementName

The CIM_PowerSupply.ElementName property shall be formatted as a free-form string of variable length (pattern ".*").

7.8.1 CIM_PowerSupply.ElementName Is Modifiable

Implementations may allow the CIM_PowerSupply.ElementName to be modified by a client. This behavior is conditional. This section describes the CIM elements and behavior requirements when an implementation supports client modification of the CIM_PowerSupply.ElementName property. CIM_PowerSupply.ElementName property shall be modifiable when the ElementNameEditSupported property of the associated CIM_EnabledLogicalElementCapabilities instance has a value of TRUE.

8 Methods

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

8.1 Method: CIM_PowerSupply.RequestStateChange( )

Invocation of the CIM_PowerSupply.RequestStateChange( ) method will change the element's state to the value that is specified in the RequestedState parameter.

365 Return values for RequestStateChange( ) shall be as specified in Table 3 where the method-execution
366 behavior matches the return-code description. RequestStateChange( ) method's parameters are specified
367 in Table 4.

368 When the power supply state management is supported, the RequestStateChange( ) method shall be
369 implemented and shall not return a value of 1 (Not Supported) (see section 7.3.1).

370 When the value of the RequestedState parameter is 6 (Offline) and the power supply is not a Spare
371 Power Supply, the RequestStateChange( ) method shall return a value of 2 (Error Occurred).

372 Invoking the CIM_PowerSupply.RequestStateChange( ) method multiple times could result in earlier
373 requests being overwritten or lost.

374 No standard messages are defined for this method.

375 **Table 3 – CIM_PowerSupply.RequestStateChange( ) Method: Return Code Values**

Value	Description
0	Request was successfully executed.
1	Method is not supported in the implementation.
2	Error occurred
4096	Job started

376 **Table 4 – CIM_PowerSupply.RequestStateChange( ) Method: Parameters**

Qualifiers	Name	Type	Description/Values
IN	RequestedState	uint16	Valid state values: 2 (Enabled) 3 (Disabled) (see section 8.1.1) 6 (Offline) (see section 8.1.1) 11 (Reset)
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

377 ### 8.1.1 RequestStateChange( ) for the Spare Power Supply

378 After the successful execution of the RequestStateChange( ) method on the Spare Power Supply with the
379 RequestedState parameter set to 6 (Offline), the SpareStatus of the referenced CIM_IsSpare association
380 shall have value of 2 (Hot Standby).

381 After the successful execution of the RequestStateChange( ) method on the Spare Power Supply with the
382 RequestedState parameter set to 3 (Disabled), the SpareStatus of the referenced CIM_IsSpare
383 association shall have value of 3 (Cold Standby).

384 ## 8.2 Method: CIM_RedundancySet.Failover( )

385 The CIM_RedundancySet.Failover( ) method forces a failover from one member of a
386 CIM_RedundancySet collection to another. When the method executes successfully, the power supply
387 that is represented by the CIM_PowerSupply instance referenced by the FailoverFrom parameter will

become inactive. The power supply that is represented by the CIM_PowerSupply instance referenced by the FailoverTo parameter will take over as the active power supply.

The Failover( ) method may be supported if the FailoverSupported property of at least one instance of CIM_IsSpare that references the CIM_RedundancySet has a value of 3 (Manual) or 4 (Both Manual and Automatic).

The Failover( ) method shall not be supported if the FailoverSupported property of every instance of CIM_IsSpare that references the CIM_RedundancySet has a value of 2 (Automatic).

The execution of the Failover( ) method shall return a value of 2 (Error Occurred) under the following conditions:

- The CIM_PowerSupply instance that is referenced by the FailoverTo parameter is not a Spare Power Supply.
- The CIM_PowerSupply instance that is referenced by the FailoverFrom parameter is not associated with the CIM_RedundancySet instance only through the CIM_MemberOfCollection association.

After the Failover( ) method executes successfully:

- The CIM_PowerSupply instance that is referenced by the FailoverTo parameter shall take over as the active power supply. The CIM_PowerSupply instance that is referenced by the FailoverTo parameter shall be associated with the CIM_RedundancySet only through the CIM_MemberOfCollection association.
- The CIM_PowerSupply instance that is referenced by FailoverFrom parameter shall become a Spare Power Supply.
- When the power supply state management is supported, the EnabledState property of the CIM_PowerSupply instance that is referenced by the FailoverFrom parameter shall not have a value of 2 (Enabled) but may have a value of 6 (Enabled but Offline).

CIM_RedundancySet.Failover( ) return values shall be as specified in Table 5.
CIM_RedundancySet.Failover( ) parameters are specified in Table 6.

No standard messages are defined for this method.

Table 5 – CIM_RedundancySet.Failover( ) Method: Return Code Values

Value	Description
0	Request was successfully executed.
1	Method is not supported in the implementation.
2	Error occurred

Table 6 – CIM_RedundancySet.Failover( ) Method: Parameters

Qualifiers	Name	Type	Description/Values
IN, REQ	FailoverFrom	CIM_ManagedElement REF	The redundant element that will become inactive
IN, REQ	FailoverTo	CIM_ManagedElement REF	The redundant element that will become active and take over the inactivated element

8.3 Profile Conventions for Operations

Support for operations for each profile class (including associations) is specified in the following subclauses. Each subclause includes either the statement "All operations in the default list in section 8.3 are supported as described by DSP0200 version 1.2" or a table listing all of the operations that are not supported by this profile or where the profile requires behavior other than that described by DSP0200 version 1.2.

The default list of operations is as follows:

- GetInstance
- EnumerateInstances
- EnumerateInstanceNames
- Associators
- AssociatorNames
- References
- ReferenceNames

A compliant implementation shall support all of the operations in the default list for each class, unless the "Requirement" column states something other than *Mandatory*.

8.4 CIM_ElementCapabilities Operations

Table 7 lists operations that either have special requirements beyond those from DSP0200 version 1.2 or shall not be supported.

Table 7 – CIM_ElementCapabilities Operations

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

8.5 CIM_EnabledLogicalElementCapabilities Operations

All operations in the default list in section 8.3 are supported as described by DSP0200 version 1.2.

8.6 CIM_IsSpare Operations

Table 8 lists operations that either have special requirements beyond those from DSP0200 version 1.2 or shall not be supported.

Table 8 – CIM_IsSpare Operations

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

8.7 CIM_MemberOfCollection Operations

Table 9 lists operations that either have special requirements beyond those from DSP0200 version 1.2 or shall not be supported.

Table 9 – CIM_MemberOfCollection Operations

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

8.8 CIM_OwningCollectionElement Operations

Table 10 lists operations that either have special requirements beyond those from DSP0200 version 1.2 or shall not be supported.

Table 10 – CIM_OwningCollectionElement Operations

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

8.9 CIM_PowerSupply Operations

Table 11 lists operations that either have special requirements beyond those from DSP0200 version 1.2 or shall not be supported.

Table 11 – CIM_PowerSupply Operations

Operation	Requirement	Messages
ModifyInstance	Conditional. See section 8.9.1.	None

8.9.1 CIM_PowerSupply—ModifyInstance

This section details the requirements for the ModifyInstance operation applied to an instance of CIM_PowerSupply. The ModifyInstance operation may be supported.

The ModifyInstance operation shall be supported and CIM_PowerSupply.ElementName shall be modifiable when the ElementNameEditSupported property of the CIM_EnabledLogicalElementCapabilities instance that is associated with the CIM_PowerSupply instance has a value of TRUE. See section 8.9.1.1.

8.9.1.1 CIM_PowerSupply.ElementName

When the ElementNameEditSupported property of the CIM_EnabledLogicalElementCapabilities instance that is associated with the CIM_PowerSupply instance has a value of TRUE, the implementation shall allow the ModifyInstance operation to change the value of the ElementName property of the

466 CIM_PowerSupply instance. The ModifyInstance operation shall enforce the length restriction specified in
467 the MaxElementNameLen property of the CIM_EnabledLogicalElementCapabilities instance.

468 When the ElementNameEditSupported property of the CIM_EnabledLogicalElementCapabilities instance
469 has a value of FALSE or if there is no CIM_EnabledLogicalElementCapabilities associated with the
470 CIM_PowerSupply instance through the CIM_ElementCapabilities association, the implementation shall
471 not allow the ModifyInstance operation to change the value of the ElementName property of the
472 CIM_PowerSupply instance.

473 8.10 CIM_RedundancySet Operations

474 All operations in the default list in section 8.3 are supported as described by DSP0200 version 1.2.

475 8.11 CIM_SuppliesPower Operations

476 Table 12 lists operations that either have special requirements beyond those from DSP0200 version 1.2
477 or shall not be supported.

478 **Table 12 – CIM_SuppliesPower Operations**

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

479 8.12 CIM_SystemDevice Operations

480 Table 13 lists operations that either have special requirements beyond those from DSP0200 version 1.2
481 or shall not be supported.

482 **Table 13 – CIM_SystemDevice Operations**

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

483 9 Use Cases

484 This section contains object diagrams and use cases for the *Power Supply Profile*.

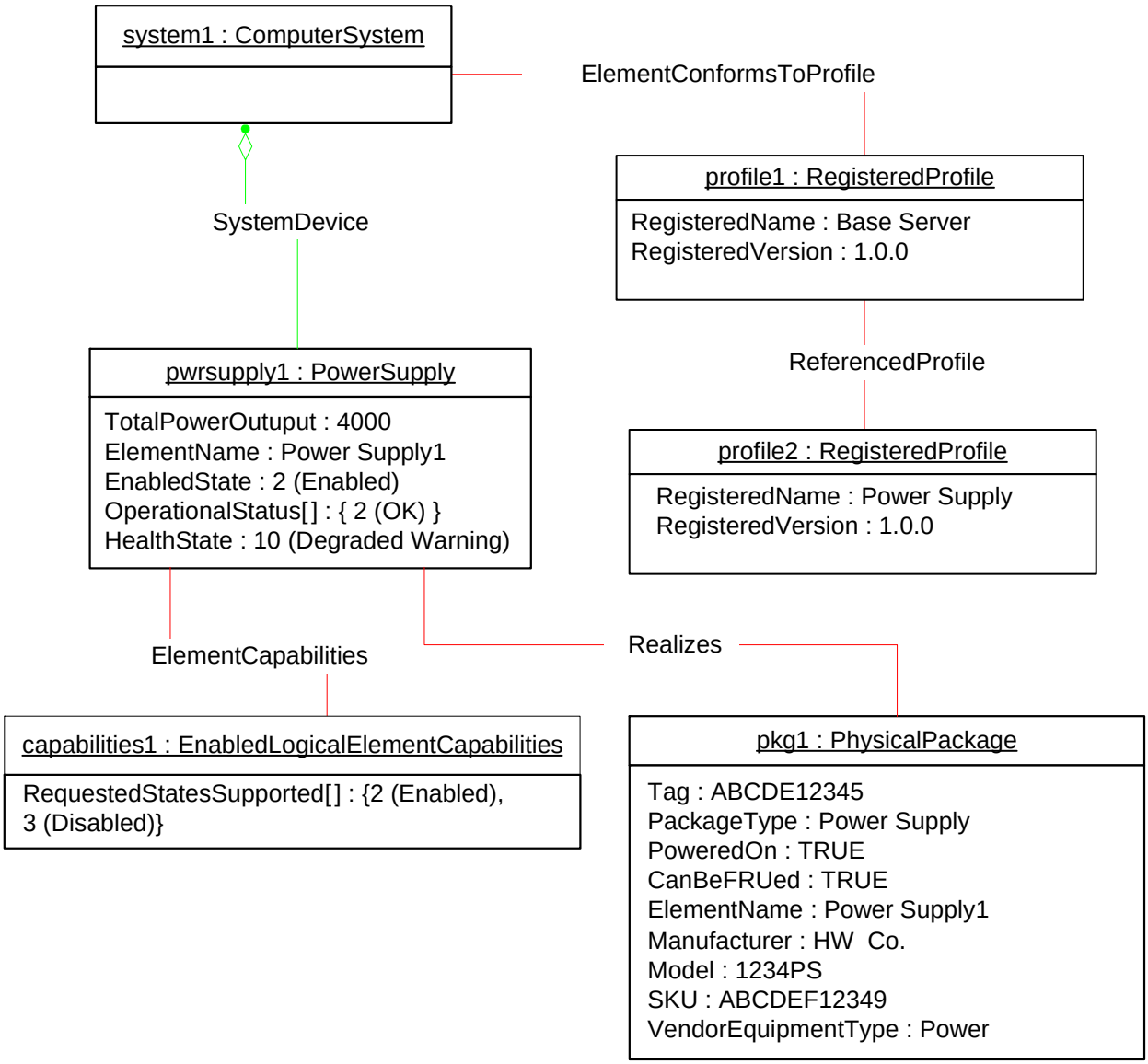
485 9.1 Object Diagrams

486 Figure 2 represents a possible instantiation of the *Power Supply Profile*. In this instantiation, the managed
487 system, system1, has a power supply, pwrsupply1. The power supply is operating but in a degraded
488 state. pwrsupply1 produces 4000 milliwatts of power. pwrsupply1's physical package information is
489 represented as well.

490 Because pwrsupply1 does not have the CIM_SuppliesPower association reference, pwrsupply1 is
491 supplying power to system1, which is denoted by the CIM_SystemDevice association. system1 is also the
492 scoping instance for pwrsupply1. Thus, following the CIM_ElementConformsToProfile association to

493 profile1 and then the referenced CIM_ReferencedProfile association to a CIM_RegisteredProfile instance
494 with the RegisteredName property set to “Power Supply”, the client can retrieve profile2. profile2 will show
495 the version of the current *Power Supply Profile* implementation.

496 For simplicity, the prefix CIM_ has been removed from the names of the classes in the figure.



497

498 **Figure 2 – Power Supply Profile: Object Diagram**

499 Figure 3 represents a possible instantiation of the *Power Supply Profile* with redundancy. system1 has
500 spare power supply redundancy. Because pwrsupply1 is associated with redundancyset1 through the
501 CIM_IsSpare association, and the value of the pwrsupply1’s EnabledState property is 6 (Enabled but
502 Offline), the pwrsupply1 is a Spare Power Supply that is enabled but is not actively providing power to
503 system1. pwrsupply2 is the active power supply of system1 because the value of its EnabledState
504 property is 2 (Enabled) and pwrsupply2 is associated with redundancyset1 only through the
505 CIM_MemberOfCollection association.

If redundancyset1 supports the Failover( ) method, a client can execute the Failover( ) method with the FailoverFrom parameter referencing pwrsupply2 and the FailoverTo parameter referencing pwrsupply1.

When the Failover( ) method executes successfully, pwrsupply1 will be the active power supply for system1 with an EnabledState property value of 2 (Enabled) and will not be associated with redundancyset1 through the CIM_IsSpare association. Additionally, pwrsupply2 will not have an EnabledState property value of 2 (Enabled) and will be associated to redundancyset1 through the CIM_IsSpare association. Because pwrsupply1 and pwrsupply2 do not have the CIM_SuppliesPower association reference, both are supplying power to system1, which is denoted by the CIM_SystemDevice association.

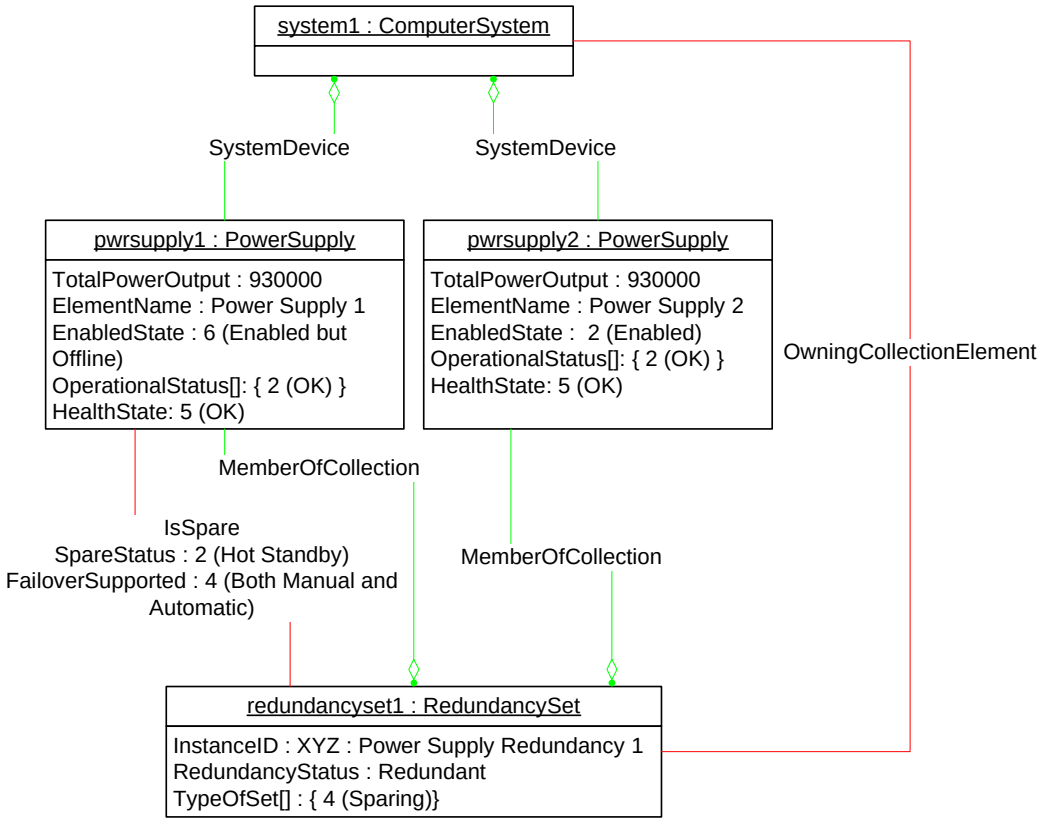


Figure 3 – Power Supply Profile: Redundancy Object Diagram

Figure 4 shows a possible instantiation of the *Power Supply Profile* in which the power supply is dedicated to supply power to a particular managed element. In this diagram, pwrsupply1 is associated to blade2 through the CIM_SuppliesPower association. This association denotes that pwrsupply1 supplies power only to blade2 and does not supply power to modular1 and blade1. In this case, the CIM_SystemDevice association does not reference the element to which pwrsupply1 supplies power.

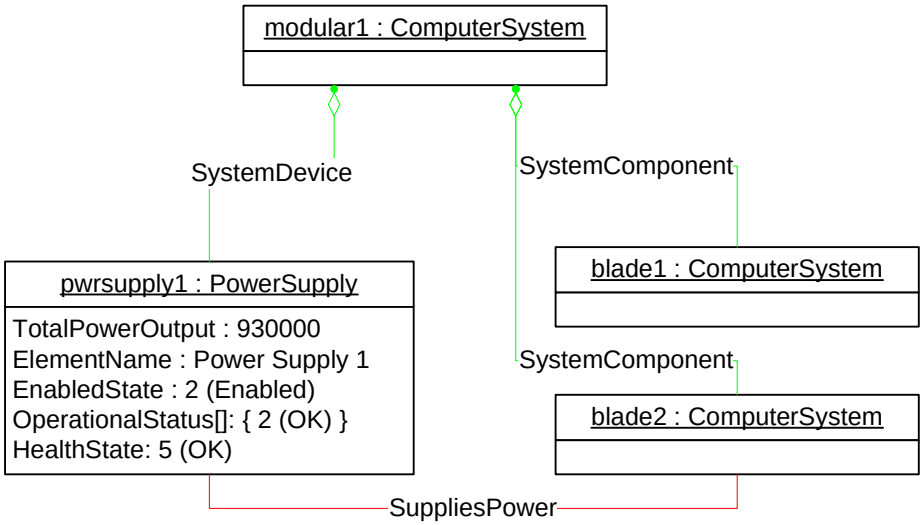


Figure 4 – Power Supply Profile: Dedicated Power Supply

9.2 Retrieve the Power Supply's Power Output Information

A client can determine the power output information for a given instance of CIM_PowerSupply by retrieving the TotalPowerOutput property.

9.3 Reset the Power Supply

A client can reset the power supply as follows:

1) For the given instance of CIM_PowerSupply, find the associated instance of CIM_EnabledLogicalElementCapabilities.
2) If the CIM_EnabledLogicalElementCapabilities.RequestedStatesSupported property is a non-empty array that contains the value 11 (Reset), execute the RequestStateChange( ) method with the value of the RequestedState parameter set to 11 (Reset), which will disable and then enable the power supply represented by this instance.

9.4 Retrieve the Power Supply Redundancy Status

A client can determine the redundancy status for a given instance of CIM_PowerSupply as follows:

1) Find the instance of CIM_RedundancySet that is associated with the instance of CIM_PowerSupply through an instance of CIM_MemberOfCollection.
2) Retrieve the value of the CIM_RedundancySet.RedundancyStatus property.

9.5 Find the Elements to Which the Power Supply Supplies Power

A client can determine the elements to which a given instance of CIM_PowerSupply supplies power as follows:

1) Find all of the CIM_SuppliesPower association instances that reference the given instance of CIM_PowerSupply.
2) If the CIM_SuppliesPower association instances exist, the CIM_SuppliesPower.Dependent properties will reference all the instances of the subclass of CIM_ManagedSystemElement that receive power from the power supply.

3) If no CIM_SuppliesPower association instances exist, select the CIM_ComputerSystem instance associated with the given instance of the CIM_PowerSupply instance through the CIM_SystemDevice association.

9.6 Determine Whether the CIM_PowerSupply.ElementName Is Modifiable

A client can determine whether it can modify the CIM_PowerSupply.ElementName property as follows:

1) Find the CIM_EnabledLogicalElementCapabilities instance that is associated with the CIM_PowerSupply instance.

2) Query the value of the ElementNameEditSupported property of the instance. If the value is TRUE, the client can modify the CIM_PowerSupply.ElementName property.

10 CIM Elements

Table 14 shows the instances of CIM Elements for this profile. Instances of the CIM Elements shall be implemented as described in Table 14. Sections 7 ("Implementation Requirements") and 8 ("Methods") may impose additional requirements on these elements.

Table 14 – CIM Elements: Power Supply Profile

Element Name	Requirement	Description
Classes		
CIM_ElementCapabilities	Conditional	See section 10.1.
CIM_EnabledLogicalElementCapabilities	Optional	See sections 7.2 and 10.2.
CIM_IsSpare	Optional	See section 10.3.
CIM_MemberOfCollection	Conditional	See section 10.4.
CIM_OwningCollectionElement	Conditional	See section 10.9.
CIM_PowerSupply	Mandatory	See sections 7.1 and 10.5.
CIM_RedundancySet	Optional	See sections 7.7 and 10.6.
CIM_RegisteredProfile	Mandatory	See section 10.7.
CIM_SuppliesPower	Optional	See sections 7.6 and 10.10.
CIM_SystemDevice	Mandatory	See sections 7.6 and 10.8.
Indications		
None defined in this profile		

10.1 CIM_ElementCapabilities

CIM_ElementCapabilities is used to associate an instance of CIM_PowerSupply with an instance of CIM_EnabledLogicalElementCapabilities that describes the capabilities of the CIM_PowerSupply instance. CIM_ElementCapabilities is mandatory when the CIM_EnabledLogicalElementCapabilities instance is instantiated.

Table 15 – CIM_ElementCapabilities

Properties	Requirement	Notes
ManagedElement	Mandatory	**Key**: Shall reference the instance of CIM_PowerSupply Cardinality 1..* indicating one or more references
Capabilities	Mandatory	**Key**: Shall reference the instance of CIM_EnabledLogicalElementCapabilities Cardinality 0..1 indicating zero or one reference

10.2 CIM_EnabledLogicalElementCapabilities

CIM_EnabledLogicalElementCapabilities represents the capabilities of the power supply.

Table 16 – CIM_EnabledLogicalElementCapabilities

Properties	Requirement	Notes
InstanceID	Mandatory	**Key**
RequestedStatesSupported	Mandatory	See section 7.2.1.
ElementNameEditSupported	Mandatory	See section 7.2.2.
MaxElementNameLen	Conditional	See section 7.2.3.

10.3 CIM_IsSpare

CIM_IsSpare is used to associate an instance of CIM_PowerSupply with the instance of CIM_RedundancySet of which the CIM_PowerSupply instance is a member and is a Spare Power Supply.

Table 17 – Class: CIM_IsSpare

Properties	Notes	Notes
Antecedent	Mandatory	**Key:** Shall reference the CIM_RedundancySet instance of which the CIM_PowerSupply instance is a member and where the CIM_PowerSupply instance is a spare Cardinality 0..1 indicating zero or one reference
Dependent	Mandatory	**Key:** Shall reference the CIM_PowerSupply instance Cardinality 1..* indicating one or more references
SpareStatus	Mandatory	None
FailoverSupported	Mandatory	None

10.4 CIM_MemberOfCollection

CIM_MemberOfCollection is used to associate an instance of CIM_PowerSupply with the instance of CIM_RedundancySet of which the CIM_PowerSupply is a member. CIM_MemberOfCollection is mandatory when CIM_RedundancySet is instantiated.

Table 18 – Class: CIM_MemberOfCollection

Properties	Requirement	Notes
Collection	Mandatory	**Key:** Shall reference the CIM_RedundancySet instance of which the CIM_PowerSupply instance is a member. Cardinality 0..1 indicating zero or one reference
Member	Mandatory	**Key:** Shall reference the CIM_PowerSupply instance Cardinality 1..* indicating one or many references

10.5 CIM_PowerSupply

CIM_PowerSupply is used to represent the power supply.

Table 19 – Class: CIM_PowerSupply

Properties and Methods	Requirement	Notes
SystemCreationClassName	Mandatory	**Key**
SystemName	Mandatory	**Key**
CreationClassName	Mandatory	**Key**
DeviceID	Mandatory	**Key**
TotalOutputPower	Mandatory	Shall match 0 when the power supply's total output power is unknown
ElementName	Mandatory	See section 7.8.
OperationalStatus	Mandatory	None
HealthState	Mandatory	None
EnabledState	Mandatory	See section 7.5.
RequestedState	Mandatory	See section 7.4.
RequestStateChange( )	Conditional	See section 8.1.

10.6 CIM_RedundancySet

CIM_RedundancySet is used to represent the aggregation of redundant power supplies.

Table 20 – Class: CIM_RedundancySet

Properties and Methods	Requirement	Notes
InstanceID	Mandatory	**Key**
RedundancyStatus	Mandatory	None
TypeOfSet	Mandatory	See section 7.7.1.
MinNumberNeeded	Mandatory	Shall match 0 when the minimum number of power supplies needed for the redundancy is unknown
ElementName	Mandatory	Shall be formatted as a free-form string of variable length (pattern ".*")
Failover( )	Optional	See section 8.1.1.

10.7 CIM_RegisteredProfile

The CIM_RegisteredProfile class is defined by the *Profile Registration Profile*. The requirements denoted in Table 21 are in addition to those mandated by the *Profile Registration Profile*.

Table 21 – Class: CIM_RegisteredProfile

Properties	Requirement	Notes
RegisteredName	Mandatory	This property shall have a value of "Power Supply".
RegisteredVersion	Mandatory	This property shall have a value of "1.0.0".
RegisteredOrganization	Mandatory	This property shall have a value of 2 (DMTF).

NOTE: Previous versions of this document included the suffix "Profile" for the RegisteredName value. If implementations querying for the RegisteredName value find the suffix "Profile", they should ignore the suffix, with any surrounding white spaces, before any comparison is done with the value as specified in this document.

10.8 CIM_SystemDevice

CIM_SystemDevice is used to associate an instance of CIM_PowerSupply with the instance of CIM_ComputerSystem of which the CIM_PowerSupply instance is a member.

Table 22 – Class: CIM_SystemDevice

Properties	Requirement	Notes
GroupComponent	Mandatory	**Key:** Shall reference the CIM_ComputerSystem instance of which the CIM_PowerSupply instance is a member Cardinality 1 indicating one reference
PartComponent	Mandatory	**Key:** Shall reference the CIM_PowerSupply instance Cardinality 1..* indicating one or more references

10.9 CIM_OwningCollectionElement

CIM_OwningCollectionElement is used to associate an instance of CIM_RedundancySet with the instance of CIM_ComputerSystem of which the CIM_RedundancySet instance is a member. The instance of CIM_OwningCollectionElement is conditional on the instantiation of the CIM_RedundancySet class.

Table 23 – Class: CIM_OwningCollectionElement

Properties	Requirement	Notes
OwningElement	Mandatory	**Key:** Shall reference the CIM_ComputerSystem instance of which the CIM_RedundancySet instance is a member Cardinality 1 indicating one reference
OwnedElement	Mandatory	**Key:** Shall reference the CIM_RedundancySet instance Cardinality * indicating zero or more references

10.10 CIM_SuppliesPower

CIM_SuppliesPower is used to associate an instance of CIM_PowerSupply with the instance of CIM_ManagedSystemElement to which the power supply represented by the CIM_PowerSupply instance supplies power. See section 7.6.

Table 24 – Class: CIM_SuppliesPower

Properties	Requirement	Notes
Antecedent	Mandatory	**Key:** Shall reference the CIM_PowerSupply instance Cardinality 1..* indicating one or more references
Dependent	Mandatory	**Key:** Shall reference the instance of the subclass of CIM_ManagedSystemElement that represents the element receiving the power Cardinality * indicating zero or more references

ANNEX 1
(informative)

Change Log

Version	Date	Description
1.0.0c	04/24/2006	Incorporated Cpubs corrections. Release as Preliminary Standard
1.0.0	04/02/2008	Final Standard revision

ANNEX 1
(informative)

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