Power Topology Profile

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Foreword

The Power Topology Profile (DCIM1002) was prepared by the Dell CIM Review Board.

Introduction

This specification identifies the necessary classes, properties, methods, and values to be instantiated and manipulated to represent and manage power topology modeled using the DMTF Common Information Model (CIM) core and extended model definitions.

This document is intended for implementers who write CIM-based providers or consumers of management interfaces representing the component described herein.

Power Topology Profile

1   Scope

The Power Topology Profile extends the management capabilities of referencing profiles by adding the capability to represent a hierarchy of power sources: power supplies and external power domains, and their redundancies. The profile provides also information on the client configuration of the power hierarchy, 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 DSP1033, *Profile Registration Profile 1.0.0*

DMTF DSP1015, *Power Supply Profile 1.0.0*

DMTF DSP0200, *CIM Operations over HTTP 1.2.0*

DMTF DSP0004, *CIM Infrastructure Specification 2.3.0*

DMTF DSP1000, *Management Profile Specification Template*

DMTF DSP1001, *Management Profile Specification Usage Guide*

2.2   Other References

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

Unified Modeling Language (UML) from the Open Management Group (OMG), http://www.uml.org

SM Managed Element Addressing Specification (SM ME Addressing) DSP0215, http://www.dmtf.org/spec

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 "Related 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

4   Symbols and Abbreviated Terms

4.1
CIM

Common Information Model

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5 Synopsis

Profile Name: Power Topology Profile

Version: 1.0.0

Organization: Dell

CIM Schema Version: 2.15.0

Dell Schema Version: 1.0.0

Central Class: Dell_OEMPowerConfigurationService

Scoping Class: CIM_ComputerSystem

The Power Topology Profile extends the management capability of the referencing profiles by adding the capability to describe power source topology in a managed system.

The central instance shall be associated with the scoping instance through CIM_HostedService association.

Table 1 identifies profiles that are related to this profile.

Table 1 – Related Profiles

Profile Name	Organization	Version	Relationship
Power Supply Profile	DMTF	1.0	Mandatory
Profile Registration Profile	DMTF	1.0	Mandatory

6 Description

The Power Topology Profile describes the hierarchy of power sources: power supplies and external power domains, and their redundancies. The profile provides also describes the client configuration of the power hierarchy and profile versioning for the schema implementation version information.

Figure 1 represents the class schema for the Power Topology Profile. For simplicity, the prefix CIM_ has been removed from the names of the classes. Dell_ prefixes have been preserved to denote Dell extensions of CIM classes.

The profile information is represented with the instance of CIM_RegisteredProfile.
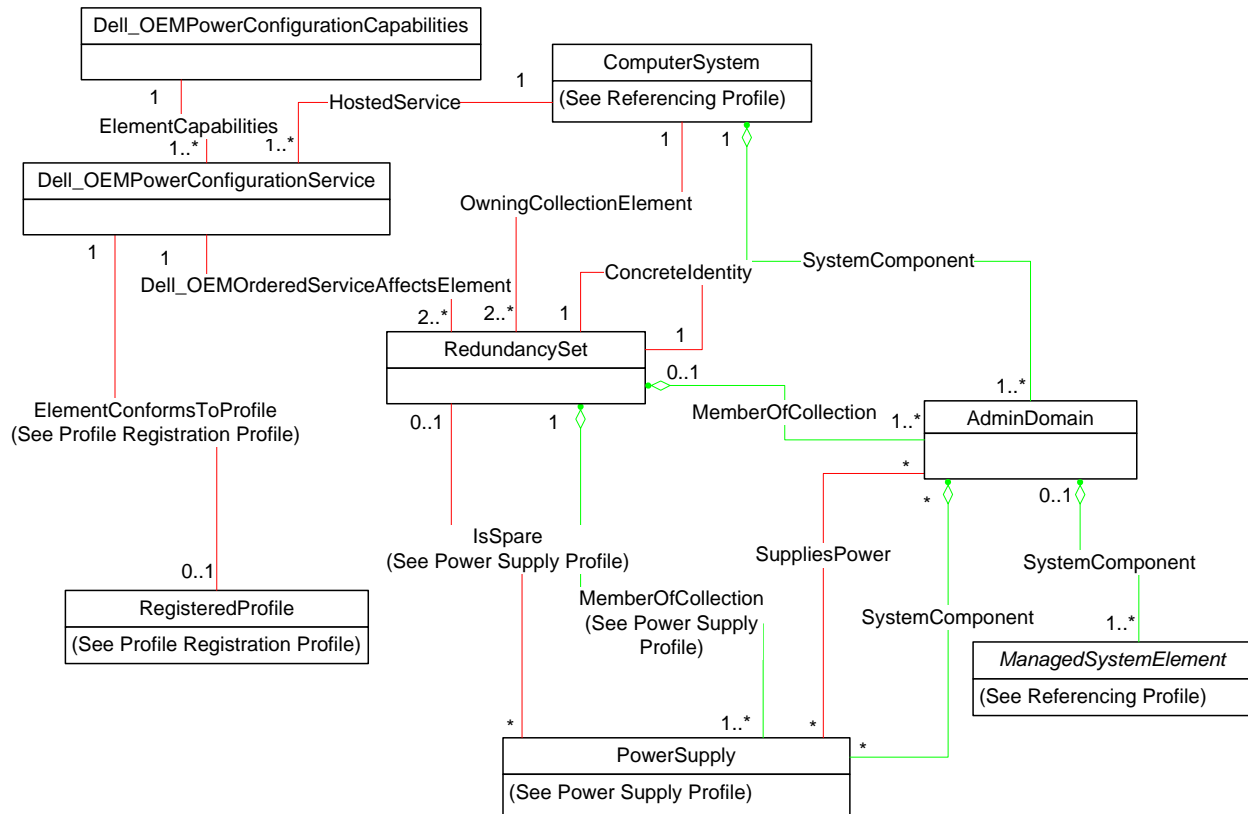
Figure 1 – Power Topology Profile: Class Diagram

6.1 Power Domains

There are two types of power domains modeled within the managed system: internal power domains and external power domains. Internal power domains correspond to internal power grids, where the power domain is supplied power by one or many power supplies. External power domains correspond to the external power sources, where one or many power supplies draw their power from different power domains.

The power domains are only relevant in the scope of the managed system, and may not have one to one correspondence with the power domains that exist in the scope of a datacenter. The instance of CIM_AdminDomain representing the external power domains shall be associated to the scoping instance using CIM_OwningCollectionElement association.

6.1.1 Internal Power Domains

A managed system, depending on the architecture, might have numerous internal power domains. The components of the managed system can draw power from a specific internal power domain and each of the internal power domains are supplied power by designated power supplies. This functionality is modeled by an instance of the CIM_AdminDomain class representing an internal power domain that is associated to the components drawing the power from the domain by CIM_SystemComponent association, and to the power supplies supplying power to the domain by the CIM_SuppliesPower association.

6.1.2   External Power Domains

A managed system, depending on the power infrastructure architecture that it is plugged in to, may have a need to model external power sources as external power domains. The power supplies of the managed system can draw power from a specific external power domain. This functionality is modeled by an instance of the CIM_AdminDomain class representing an external power domain that is associated to the instances of CIM_PowerSupply, representing power supplies drawing the power from the external power domain by the CIM_SystemComponent association.

6.2   Power Source Redundancy

Power source redundancy is defined as the redundancy of power in respect to the consumers of the power sources, and the availability of the power to the consumers if one of the power sources in the power source redundancy malfunctions. There are two levels of such power source redundancy: internal represented by power supply redundancy and external represented by external power domain redundancy.

6.2.1   Power Supply Redundancy

The redundancy of power supplies in a managed system is in respect to the redundancy of the power consumed by managed elements that are supplied by the power supplies constituting the internal power redundancy. The requirements for power supply redundancy are described in DSP1015. This profile describes requirements in addition to the ones specified in DSP1015.

6.2.2   External Power Domain Redundancy

The redundancy of external domains in a managed system is in respect to the redundancy of power consumed by managed elements that originate from the external power sources.

The redundancy of external domains is represented through an instance of CIM_RedudnacySet. Each of the instances of the CIM_AdminDomain instance that corresponds to the external redundant power source is associated to the instance of CIM_RedundancySet through an instance of CIM_MemberOfCollection.

6.3   Power Management Service

The power management service represented by the Dell_OEMPowerConfigurationService class provides the capability for configuring external redundancy, maintaining desired redundancy, and manipulating the requested actions for power overconsumption by the managed system. The capabilities of the service represented by the Dell_OEMPowerConfigurationCapabilities class advertise the supported methods and redundancy levels.

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   Internal Power Domains (Optional)

A system may be responsible for providing power to the components installed in it. When a system supplies power to components, there may be one or more internal power domains of which the components are members. The internal power domains of the system should be modeled. When the internal power domains of a system are modeled, the requirements detailed in the following sub-clauses shall be met.

7.1.1 Representing an Internal Power Domain

There shall be exactly one instance of CIM_AdminDomain for each internal power domain in the system. The instance of CIM_AdminDomain shall be implemented as defined in 10.1.

The instance of CIM_AdminDomain shall be associated with the Scoping Instance through the CIM_SystemComponent association, where the value of GroupComponent reference is the Scoping Instance, and the value of the PartComponent reference is the CIM_AdminDomain instance.

7.1.2 Power Supplies in Internal Domain

Each power supply that provides power to the internal power domain shall be associated with the CIM_AdminDomain instance through the CIM_SuppliesPower association. If more than one power supply is able to supply power to the domain, all the power supplies shall form a single power supply redundancy. Thus if instances of CIM_PowerSupply are associated to the particular CIM_AdminDomain through CIM_SuppliesPower association, these instances of CIM_PowerSupply shall be also associated to an instance of CIM_RedundancySet through CIM_MemberOfCollections. The CIM_RedundancySet instance shall not be associated to any other CIM_PowerSupply instance.

7.1.3 Representing Components in an Internal Power Domain

A component is considered to be in a power domain if it receives power from a power supply in the domain. Each instance of a sub-class of CIM_ManagedSystemElement that represents a component in a power domain shall be associated with the CIM_AdminDomain instance representing the domain through the CIM_SystemComponent association. The Scoping Instance may be associated with the CIM_AdminDomain instance through the CIM_SystemComponent where the Central Instance is the PartComponent reference. This indicates that components within the enclosure that are not explicitly modeled receive power from the domain represented by the CIM_AdminDomain instance.

7.2 External Power Domains

The external power domains of the system, representing the system power draw from one or many external power sources, shall be modeled. While modeling the external power domains, the requirements in the following section shall apply.

7.2.1 Representing an External Power Domain

There shall be exactly one instance of CIM_AdminDomain for each external power domain in the system. The instance of CIM_AdminDomain shall be implemented as defined in 10.2. The instance of CIM_AdminDomain shall be associated with the Scoping Instance through the CIM_SystemComponent association, where the value of the GroupComponent reference is the Scoping Instance and the value of the PartComponent reference is the CIM_AdminDomain instance.

7.2.2 Power Supplies in External Domain

Each power supply that draws power from the external power domain shall be associated with the CIM_AdminDomain instances representing the external power sources for the power supply, through the CIM_SystemComponent association where PartComponent references the CIM_PowerSupply instance and GroupComponent references the CIM_AdminDomain instance.

7.3 Power Redundancy

The power redundancy of the managed system and its components are represented through the redundancy of power supplies, and the redundancy of power domains. Both power redundancies are in respect to the power consuming managed system, or a particular set of its components.

There shall be one and only one CIM_RedundancySet representing the redundancy of external power domains that shall be associated to one and only one instance of CIM_RedundancySet representing the

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redundancy of power supplies. The two CIM_RedundancySet instances shall be associated to each other through CIM_ConcreteIdentity, and shall represent together the power redundancy for the consumer components of the managed system.

7.3.1   Assigned Power Redundancy Priority

The assigned power redundancies' priorities for maintaining the underlying instrumentation shall be represented through the Dell_OrderServiceAffectsElemen.AssignedSequence on the association instance associating the instance of CIM_RedundancySet representing either the power supply or the external power redundancy to the instance of Dell_OEMPowerConfigurationService.

7.3.2   Power Supply Redundancy

The power supply redundancy shall be implemented, and the requirements in DSP1015 section 7.7 shall apply.

7.3.3   External Power Domain Redundancy

Modeling the external power domain redundancy is mandatory and shall be implemented. External power domain redundancy shall be modeled using the CIM_RedundancySet that is associated with the CIM_AdminDomain instances representing the external power domain through instances of CIM_MemberOfCollection. There shall be at least one instance of CIM_AdminDomain associated with the CIM_RedundancySet instance.

There shall be one and only one instance of CIM_RedundancySet representing the external power domain redundancy associated with one and only one instance of CIM_RedundancySet representing the internal power redundancy through the CIM_ConcreteIdentity association.

The requirements in section 10.14 shall apply to the CIM_RedundancySet instance representing the external power domain redundancy.

7.3.3.1   Initial Configuration of External Power Domain Redundancy (Optional)

If the managed system depends on the client input to determine its external power redundancy, the implementation shall either comply with the requirements in section 7.3.3.1.1 or in section 7.3.3.1.2.

7.3.3.1.1   Initial Non-Redundant Configuration

The initial external power domain redundancy shall be represented by an instance of CIM_RedundancySet, where the CIM_RedundancySet.ReduandancyStatus property shall have value of 4 (Redundancy Lost).

One and only one of the instances of CIM_AdminDomain associated to the instance of CIM_RedundancySet shall be associated to instance(s) of CIM_PowerSupply through the CIM_SystemComponent association.

7.3.3.1.2   Initial Unknown Redundancy Configuration

The initial external power domain redundancy shall be represented by an instance of CIM_RedundancySet, where the CIM_RedundancySet.ReduandancyStatus property shall have value of 0 (Unknown).

The instances of CIM_AdminDomain associated to the instance of CIM_RedundancySet shall not be associated to any instance of CIM_PowerSupply through the CIM_SystemComponent association.

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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: Dell_OEMPowerConfigurationService.ChangeAffectedElementsAssigned Sequence ( )

The Dell_OEMPowerConfigurationService.ChangeAffectedElementsAssignedSequence ( ) method requests reassignment of priorities for the power redundancies.

Dell_OEMPowerConfigurationService.ChangeAffectedElementsAssignedSequence ( ) return values shall be as specified in Table 2.

Dell_OEMPowerConfigurationService.ChangeAffectedElementsAssignedSequence ( ) parameters are specified in Table 3.

No standard messages are defined for this method.

Table 2 – 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 3 – CIM_RedundancySet.Failover( ) Method: Parameters

Qualifiers	Name	Type	Description/Values
IN, REQ	ManagedElements	CIM_ManagedElement REF []	The array of power redundancy references for changing the assigned priorities
IN, REQ	AssignedSequence	uint16 []	The array of requested assigned priorities for the corresponding referenced power redundancies
OUT	Job	CIM_ConcreteJob REF	Returned if job started

8.1.1 Dell_OEMPowerConfigurationService.ChangeAffectedElementsAssignedSequence( ) Conditional Support

If the SupportedMethods property array of the associated instance of Dell_OEMPowerConfigurationCapabilities contains the value 2(ChangeAffectedElementsAssignedSequence), the ChangeAffectedElementsAssignedSequence( ) method shall be implemented and shall not return the value 1 (Not Supported).

If the SupportedMethods property array of the associated instance of Dell_OEMPowerConfigurationCapabilities does not contain the value 2(ChangeAffectedElementsAssignedSequence), the ChangeAffectedElementsAssignedSequence( ) method shall not be implemented or shall always return the value 1 (Not Supported).

8.2 Method: Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomainDefaults( )

Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomainDefaults( ) method provides an interface for a client application to specify the external power domains that are supplying power to the power supplies in a default configuration of the managed system. This method is called to configure the default configuration of the managed system for the external power domain redundancy, in the case where the underlying instrumentation is unable to detect the external grid redundancy and instead depends on the client input for its configuration.

Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomainDefaults( ) return values shall be as specified in Table 4.

Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomainDefaults( ) parameters are specified in Table 5.

No standard messages are defined for this method.

Table 4 – Dell_OEMPowerConfigurationService.CreateExternalPowerDomains( ) Method: Return Code Values

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

Table 5 – Dell_OEMPowerConfigurationService.CreateExternalPowerDomains( ) Method: Parameters

Qualifiers	Name	Type	Description/Values
IN, REQ	OwningComputerSystem	CIM_ComputerSystem REF	The scoping managed system for the power redundancy configuration.
IN, REQ	RequestedChange	uint16	2 (Configuration Enabled) – Default external power domain configuration is enabled. 3 (Configuration Removed) – Default external power domain configuration is not enabled or has been removed. The system does not have external power redundancy.
OUT	Job	CIM_ConcreteJob REF	Returned if job started

8.2.1 Dell_OEMPowerConfigurationService.CreateExternalPowerDomainDefaults( ) Conditional Support

If the SupportedMethods property array of the associated instance of Dell_OEMPowerConfigurationCapabilities contains the value 3 (ConfigureExternalPowerDomainDefaults), the ConfigureExternalPowerDomainDefaults( ) method shall be implemented and shall not return the value 1 (Not Supported).

If the SupportedMethods property array of the associated instance of Dell_OEMPowerConfigurationCapabilities does not contain the value 3(ConfigureExternalPowerDomainDefaults), the ConfigureExternalPowerDomainDefaults( ) method shall not be implemented or shall always return the value 1 (Not Supported).

8.3 Method: Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomains( )

Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomains( ) method provides an interface for a client application to specify which external power domains are supplying power to certain power supplies in the managed system. This method is called to configure the managed system configuration for the external power domain redundancy in the case where the underlying instrumentation is unable to detect the external grid redundancy, and instead depends on the client input for its configuration.

Dell_OEMPowerConfigurationService.CreateExternalPowerDomain( ) return values shall be as specified in Table 6.

Dell_OEMPowerConfigurationService.CreateExternalPowerDomain( ) parameters are specified in Table 7.

No standard messages are defined for this method.

Table 6 – Dell_OEMPowerConfigurationService.CreateExternalPowerDomains( ) Method: Return Code Values

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

Table 7 – Dell_OEMPowerConfigurationService.CreateExternalPowerDomains( ) Method: Parameters

Qualifiers	Name	Type	Description/Values
IN, REQ	OwningComputerSystem	CIM_ComputerSystem REF	The scoping managed system for the new power domains
IN, REQ	PowerSupplies	CIM_PowerSupply REF []	Array of references to CIM_PowerSupply instances, which are supplied power from the power domain identified by the corresponding element in the ExternalPowerDomains array parameter.
IN, REQ	ExternalPowerDomains	CIM_AdminDomain REF []	External power domain references array parameter.
OUT	Job	CIM_ConcreteJob REF	Returned if job started

8.3.1 Dell_OEMPowerConfigurationService.CreateExternalPowerDomains( ) Conditional Support

If the SupportedMethods property array of the associated instance of Dell_OEMPowerConfigurationCapabilities contains the value 4 (ConfigureExternalPowerDomains), the ConfigureExternalPowerDomains( ) method shall be implemented and shall not return the value 1 (Not Supported).

If the SupportedMethods property array of the associated instance of Dell_OEMPowerConfigurationCapabilities does not contain the value 4(ConfigureExternalPowerDomains), the ConfigureExternalPowerDomains( ) method shall not be implemented or shall always return the value 1 (Not Supported).

8.4 Method: Dell_OEMPowerConfigurationService.AssignPowerRedundancyPriority ( )

Dell_OEMPowerConfigurationService.AssignPowerRedundancyPriority() method provides an interface for a client application to assign a priority to the redundancy. The priority could be assigned either to the power supply redundancy, or to the external power domain redundancy.

Dell_OEMPowerConfigurationService.AssignPowerRedundancyPriority( ) return values shall be as specified in Table 8.

Dell_OEMPowerConfigurationService.AssignPowerRedundancyPriority() parameters are specified in Table 9.

No standard messages are defined for this method.

Table 8 – Dell_OEMPowerConfigurationService.AssignPowerRedundancyPriority ( ) Method: Return Code Values

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

Table 9 – Dell_OEMPowerConfigurationService.AssignPowerRedundancyPriority ( ) Method: Parameters

Qualifiers	Name	Type	Description/Values
IN	RequestedRedundancyPriority	uint16	The possible values: 2 (None) 3 (Power Supply) 4 (External Power Domain)

8.4.1 Dell_OEMPowerConfigurationService.AssignPowerRedundancyPriority ( ) Conditional Support

If the SupportedMethods property array of the associated instance of Dell_OEMPowerConfigurationCapabilities contains the value 5 (AssignPowerRedundancyPriority), the AssignPowerRedundancyPriority( ) method shall be implemented and shall not return the value 1 (Not Supported).

If the SupportedMethods property array of the associated instance of Dell_OEMPowerConfigurationCapabilities does not contain the value 5(AssignPowerRedundancyPriority), the AssignPowerRedundancyPriority( ) method shall not be implemented or shall always return the value 1 (Not Supported).

8.5 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 8.5 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.

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*.

8.6   CIM_AdminDomain – Internal Power Domain

All operations in the default list in section 8.5 are supported as described by DSP0200 version 1.2.

8.7   CIM_AdminDomain – External Power Domain

All operations in the default list in section 8.5 are supported as described by DSP0200 version 1.2.

8.8   CIM_ConcreteIdentity

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

Table 10 – CIM_ConcreteIdentity Operations

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

8.9   CIM_ElementCapabilities

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

Table 11 – CIM_ElementCapabilities Operations

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

8.10 CIM_HostedService

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

Table 12 – CIM_HostedService Operations

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

8.11 CIM_MemberOfCollection

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

Table 13 – CIM_MemberOfCollection Operations

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

8.12 Dell_OEMOrderedServiceAffectsElement

Table 14 lists operations that either have special requirements beyond those from DSP0200 or shall not be supported.

Table 14 – Dell_OEMOrderedServiceAffectsElement Operations

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

8.13   CIM_OwningCollectionElement

Table 15 lists operations that either have special requirements beyond those from DSP0200 or shall not be supported.

Table 15 – CIM_OwningCollectionElement Operations

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

8.14   Dell_OEMPowerConfigurationCapabilities

All operations in the default list in section 8.5 are supported as described by DSP0200 version 1.2.

8.15   Dell_OEMPowerConfigurationService

All operations in the default list in section 8.5 are supported as described by DSP0200 version 1.2.

8.16   CIM_RedundancySet – External Power Domain

All operations in the default list in section 8.5 are supported as described by DSP0200 version 1.2.

8.17   CIM_SystemComponent

Table 16 lists operations that either have special requirements beyond those from DSP0200 or shall not be supported.

Table 16 – CIM_SystemComponent Operations

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

8.18   CIM_SuppliesPower

Table 17 lists operations that either have special requirements beyond those from DSP0200 or shall not be supported.

Table 17 – CIM_SuppliesPower Operations

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

9   Use Cases

This section contains object diagrams and use cases for the Power Topology Profile.

9.1   Object Diagrams

9.1.1   Profile Registration

Figure 2 represents a possible instantiation of the Power Topology Profile. The registration of this profile is represented by profile2 using the scoping instance methodology. Pmservice1's capabilities, with respect to the methods supported, are represented by capabilities1.
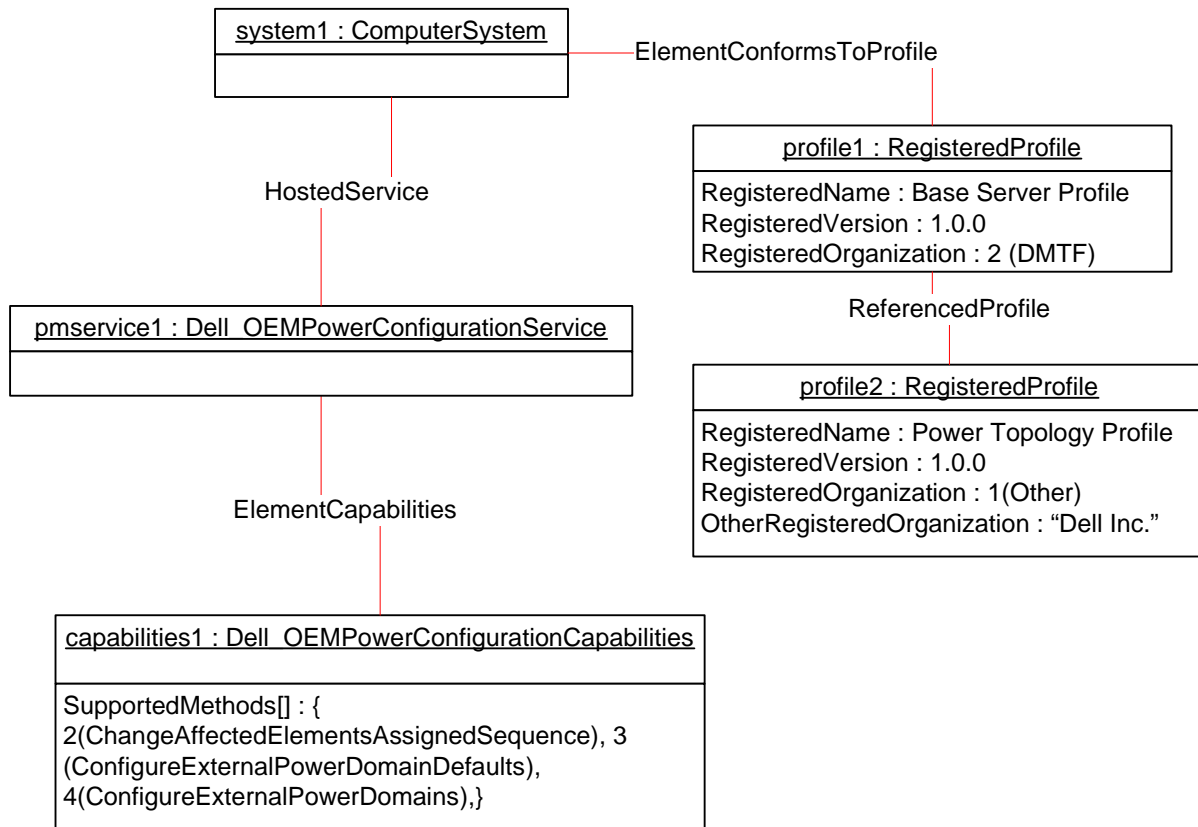
Figure 2 – Power Topology Profile: Profile Registration

9.1.2 Initial External Power Redundancy Configuration

Figure 3 represents a possible instantiation of the Power Topology Profile. This figure represents an initial unknown external power domain redundancy. The managed system, system1, has two external power domains, pwrsrcdom1 and pwrsrcdom2, that are not associated to any power supply, representing that the instrumentation is unaware of the configuration of the external grids with the respect to the power supplies. Redundancyset2, which represents the external power domain redundancy, has a value of 0 (Unknown) for the RedundancyStatus property. When the managed system's power supplies are configured in the external power redundant configuration, upon the successful execution of Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomainDefaults( ) or Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomains( ) the underlying instrumentation will represent the appropriate topology for the power configuration.
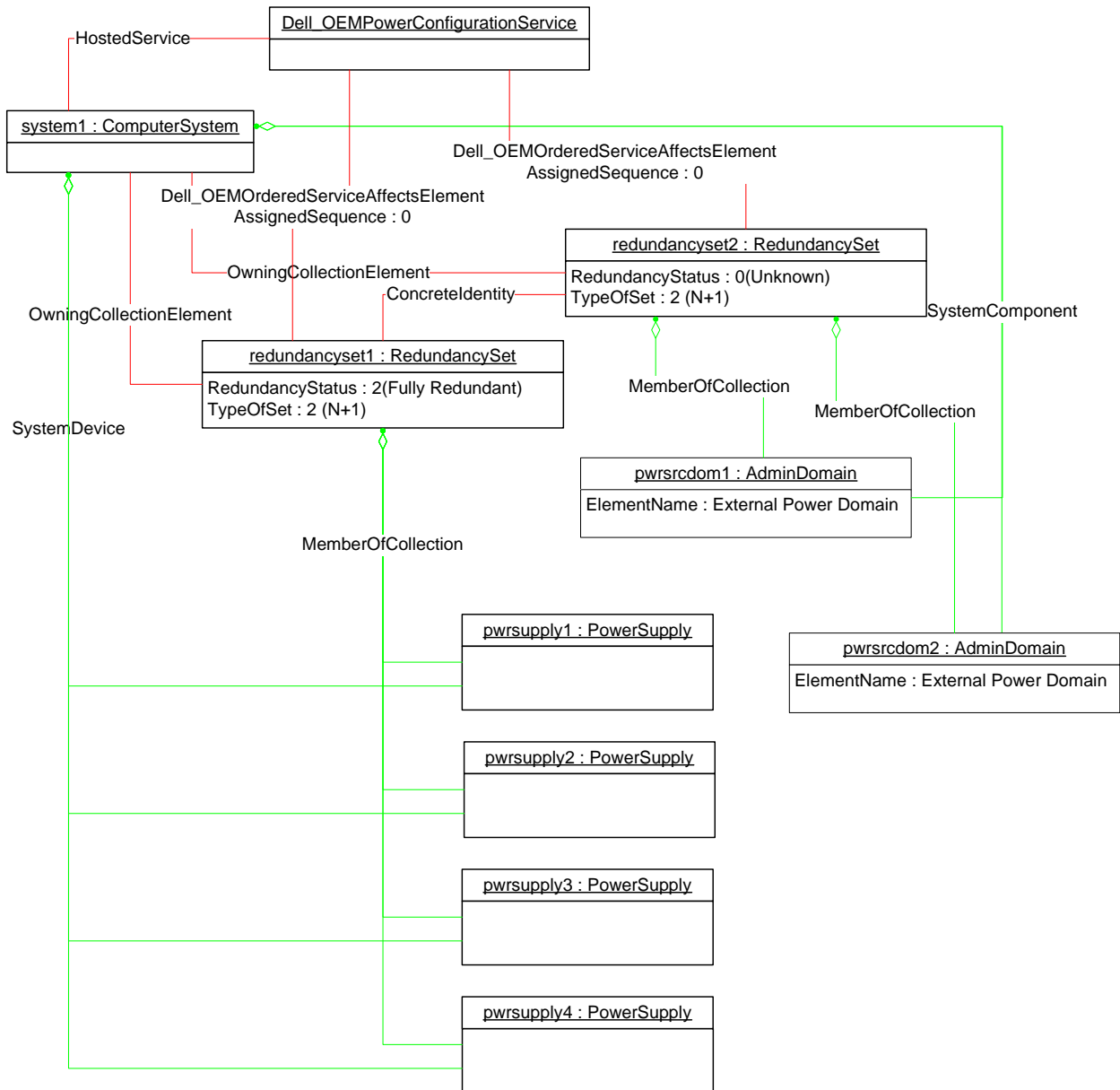
Figure 3 – Power Topology Profile: Initial Power Topology

Figure 4 shows a possible instantiation of the Power Topology Profile. This figure represents an initial non-redundant external power domain redundancy. The managed system, system1, has two external power domains, pwrsrcdom1 and pwrsrcdom2, where only pwsrcdom1 is associated to the power supplies, representing that the instrumentation is assuming a non-redundant configuration for the external grids. Redundancyset2, which represents the external power domain redundancy, has a value of 4 (Redundancy Lost) for the RedundancyStatus property. When the managed system's power supplies are configured in the external power redundant configuration, upon the successful execution of Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomainDefaults( ) or Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomains( ) the underlying instrumentation will represent the appropriate topology for the power configuration.
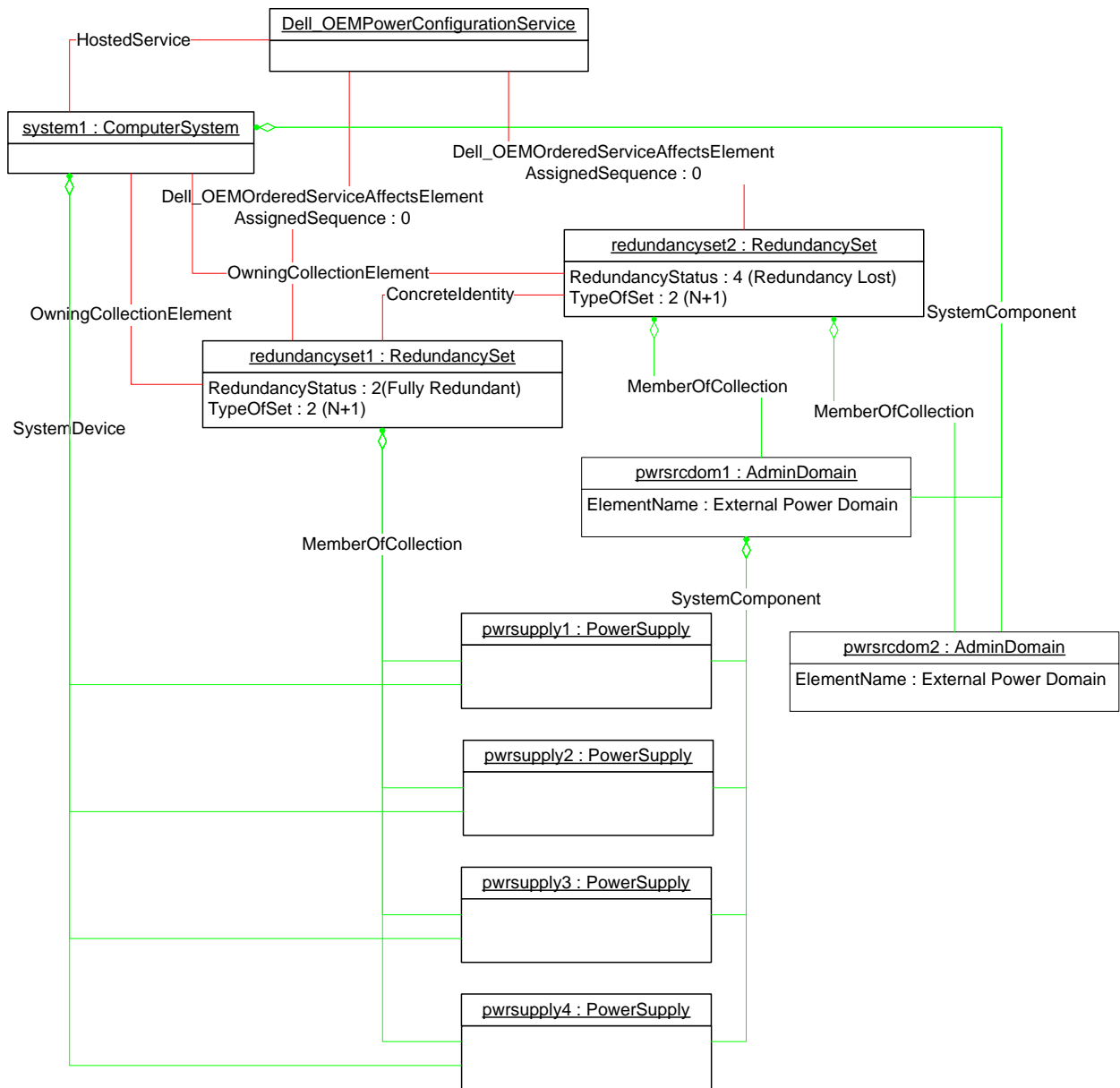
Figure 4 – Power Topology Profile: Initial Power Topology

Figure 5 shows a possible instantiation of the Power Topology Profile. The representation can be the result of either the successful execution of Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomainDefaults(system1, 2(Configuration Enabled)) or Dell_OEMPowerConfigurationService.ConfigureExternalPowerDomains(system1, {pwrsupply1, pwrsupply2, pwrsupply3, pwrsupply4}, {pwrsrcdom1, pwrsrcdom2, pwrsrcdom1, pwrsrcdom2}).
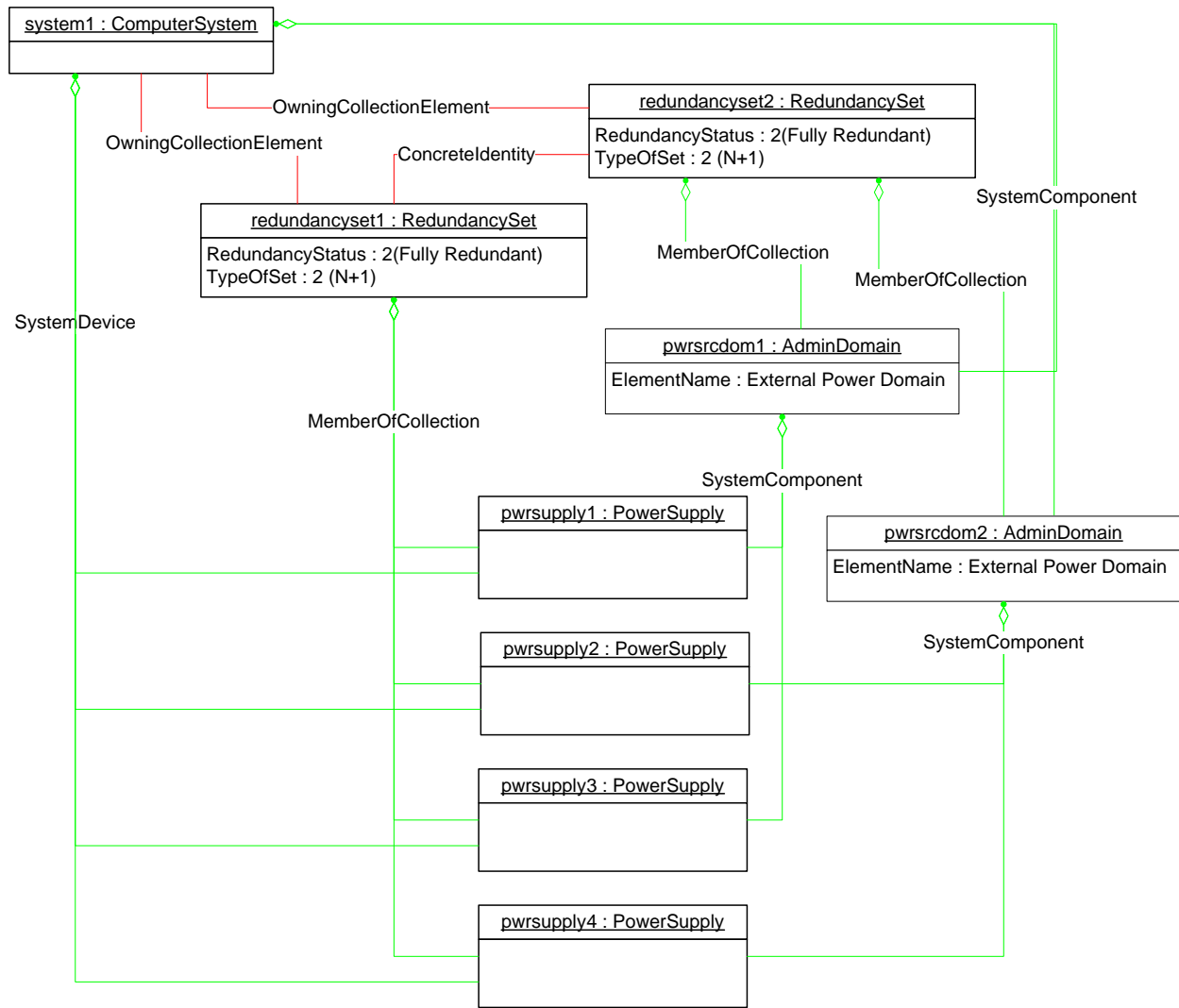
Figure 5 – Power Topology Profile: Power Topology after Executing Configuration Methods

9.1.3 Multiple internal power domains

Figure 6 shows a possible instantiation of the Power Topology Profile. The managed system contains two internal power domains, inpwrdom1 and inpwrdom2. Each domain has a corresponding internal power redundancy set, redundnacyset1 and redundancyset2, which represents whether the internal power domain has power supply redundancy. The external power redundancy for each of the internal power domains are represented by exredundancyset1 and exredundancyset2, which are associated to the corresponding internal power supply redundancy set through CIM_ConcreteIdentity association.

In this case inpwrdom2 is not external power redundant because the power supplies supplying power to the internal domain, pwrsupply3 and pwrsupply4, are consuming power from the same external power domain, pwrsrcdom2. The exredundancyset2 has the RedundancyStatus representing the external power domain redundancy status set to 4 (Redundancy Lost).
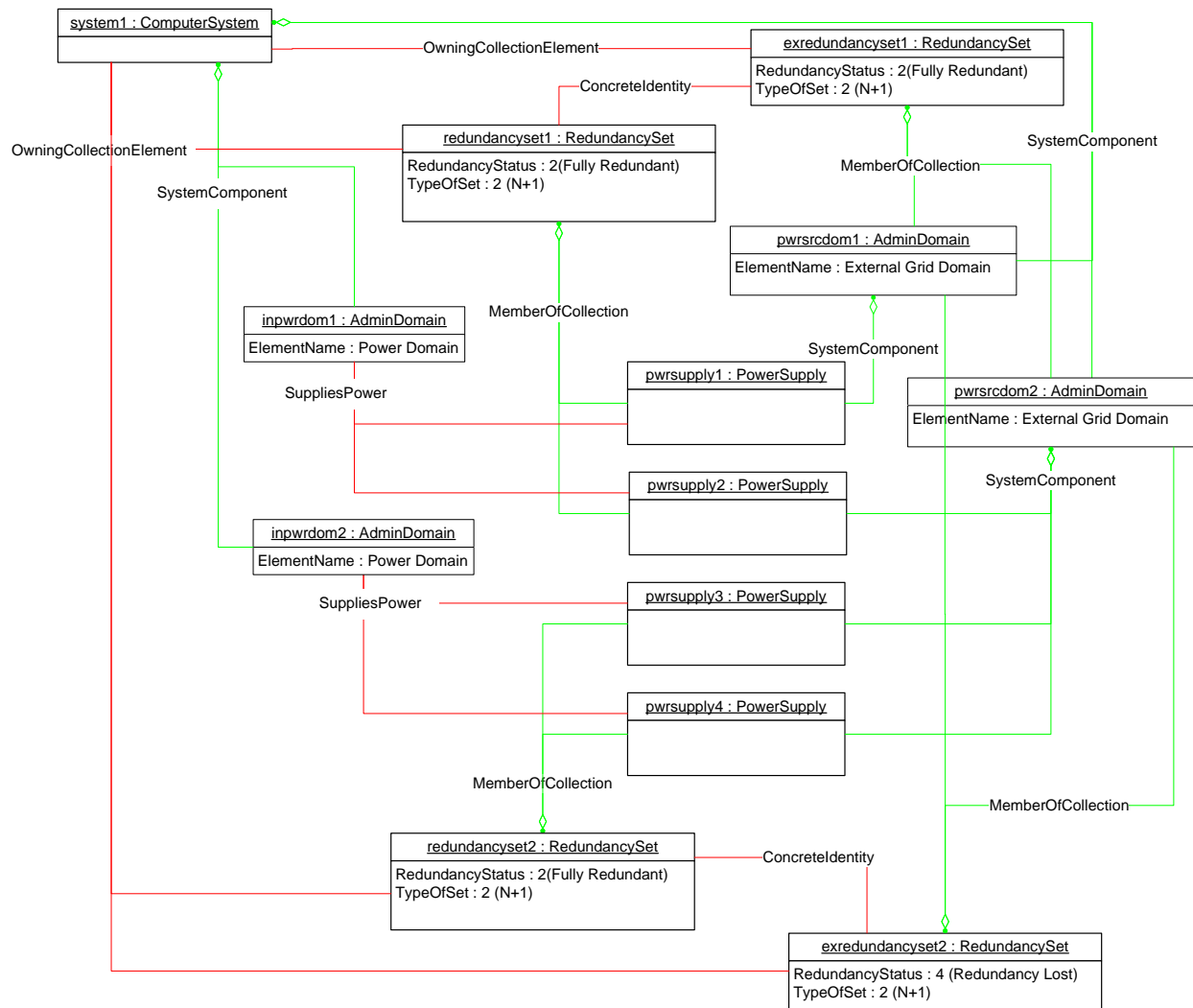
Figure 6 – Power Topology Profile: Changing Power Topology

Figure 7 shows a possible instantiation of the Power Topology Profile as an extension to Figure 6. Based on capabilities1, the client can manipulate the assigned priority to the external and internal power redundancies for each of the internal power domains. The AssignedSequence property having the value of 1 on the association referencing exredundancyset1 versus the AssignedSequence property having a higher value of 2 on the association referencing redundancyset1 represents that the exredundancyset1.RedundancyStatus property takes precedence over redundancyset1.RedundancyStatus property, and represents the overall power redundancy for the internal power domain.

On the other hand, both AssignedSequence properties having value of 0 for redundancyset2 and exredundancyset2 represents that the power redundancy for the internal domain does not need to be maintained.

The AssignedSequence property could be changed by the client by a successful execution of the Dell_OEMPowerConfigurationService.ChangeAffectedElementsAssignedSequence () method.
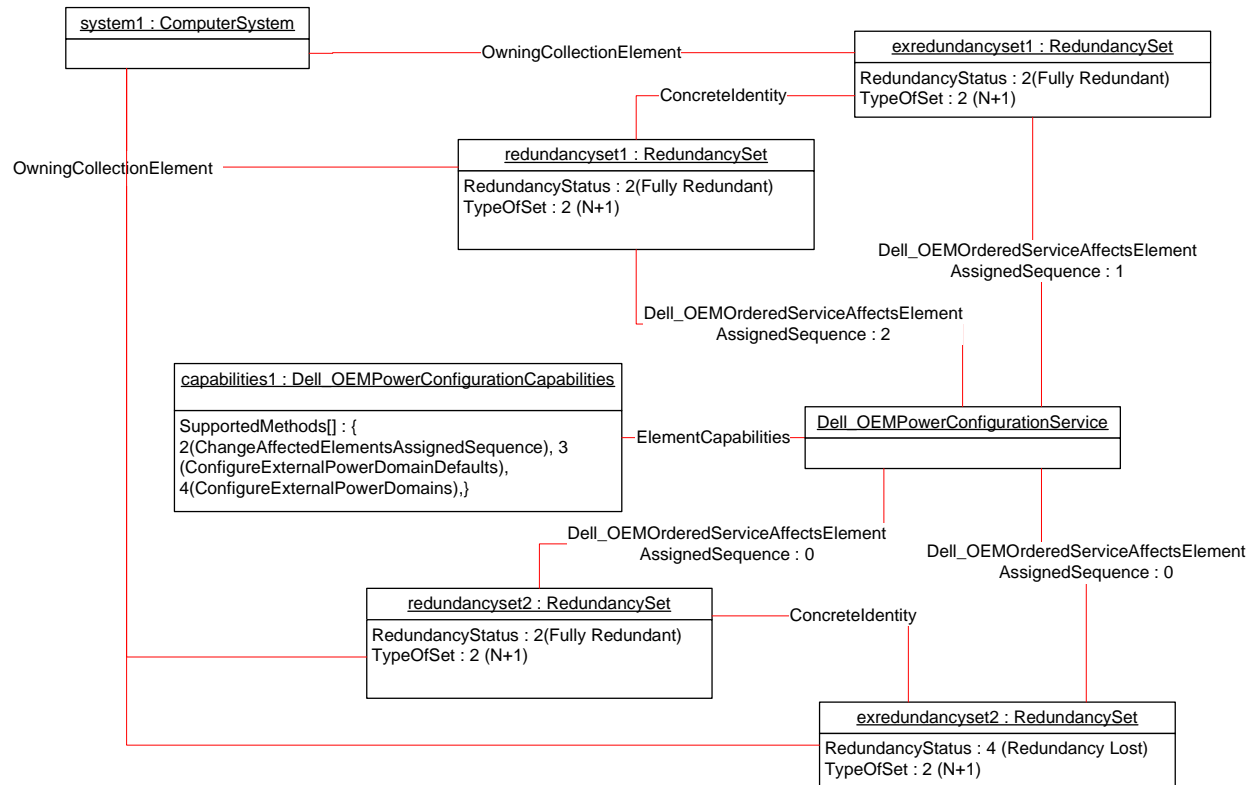
Figure 7 – Power Topology Profile: Changing User Assigned Priority

9.2   Retrieve the Power 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.

3) Find the referencing instance of Dell_OEMOrderedServiceAffectsElement, and retrieve the AssignedSequence property.

4) Find the instance of CIM_RedundancySet that is associated with the selected instance of CIM_RedundancySet through an instance of CIM_ConcreteIdentity.

5) Retrieve the value of the CIM_RedundancySet.RedundancyStatus property.

6) Find the referencing instance of Dell_OEMOrderedServiceAffectsElement, and retrieve the AssignedSequence property.

7) If both AssignedSequence properties are equal, then the two values of RedundancyStatus yield the overall power redundancy status of the managed system per the client's discretion.

8) Or if one of the values of AssignedSequence is lower but is not zero, then the RedundancyStatus of the lower AssignedSequence referencing CIM_RedundancySet instance represents the overall power redundancy of the system.

9) Or if one of the values of AssignedSequence is zero, then the RedundancyStatus of the higher non-zero AssignedSequence referencing CIM_RedundancySet instance represents the overall power redundancy of the system.

10   CIM Elements

Table 18 shows the instances of CIM Elements for this profile. Instances of the CIM Elements shall be implemented as described in Table 18. Sections 7 ("Implementation Requirements") and 8 ("Methods") may impose additional requirements on these elements.

Table 18 – CIM Elements: Power Topology Profile

Element Name	Requirement	Description
Classes		
CIM_AdminDomain – Internal Power Domain	Optional	See section 10.1 and 7.1.
CIM_AdminDomain – External Power Domain	Mandatory	See section 7.2 and 10.2
CIM_ConcreteIdentity	Mandatory	See section 7.3 and 10.3
CIM_ElementCapabilities	Mandatory	See section 10.4
CIM_HostedService	Mandatory	See section 10.5
CIM_MemberOfCollection	Mandatory	See section 7.3.2 and 10.6
CIM_MemberOfCollection	Mandatory	See section 7.3.3 and 10.7
Dell_OEMOrderedServiceAffectsElement	Mandatory	See section 7.3.1 and **Error! Reference source not found.**
CIM_OwningCollectionElement	Mandatory	See section 10.9.
Dell_OEMPowerConfigurationCapabilities	Mandatory	See section **Error! Reference source not found.**
Dell_OEMPowerConfigurationService	Mandatory	See section **Error! Reference source not found.**
CIM_PowerSupply	Mandatory	See section 10.12
CIM_RedundancySet – Power Supply	Mandatory	See section 7.3.2 and 10.13
CIM_RedundancySet – External Power Domain	Mandatory	See section 7.3.3 and 10.14.
CIM_RegisteredProfile	Mandatory	See section 10.15
CIM_SystemComponent – Scoping Instance	Mandatory	See section 10.16
CIM_SystemComponent – Internal Power Domain	Optional	See section 10.17
CIM_SystemComponent – External Power Domain	Optional	See section 10.18
CIM_SuppliesPower	Optional	See section 10.19.
Indications		
None defined in this profile		

10.1   CIM_AdminDomain – Internal Power Domain

The CIM_AdminDomain class is used to represent power domains of the managed system. Table 19 contains the requirements for properties of the instance.

Table 19 – Class: CIM_AdminDomain – Internal Power Domain

Properties	Requirement	Notes
Name	Mandatory	**Key**

CreationClassName	Mandatory	**Key**
ElementName	Mandatory	matches "Power Domain"

10.2   CIM_AdminDomain – External Power Domain

The CIM_AdminDomain class is used to represent power domains of the managed system. Table 20 contains the requirements for properties of the instance.

Table 20 – Class: CIM_AdminDomain – External Power Domain

Properties	Requirement	Notes
Name	Mandatory	**Key**
CreationClassName	Mandatory	**Key**
ElementName	Mandatory	matches "External Power Domain"

10.3   CIM_ConcreteIdentity

CIM_ConcreteIdentity is used to associate an instance of CIM_RedundancySet representing the redundancy of power supplies with an instance of CIM_RedundancySet representing the redundancy of external power domains. Table 21 contains the requirements for elements of this class.

Table 21 – Class: CIM_ConcreteIdentity

Elements	Requirement	Notes
SystemElement	Mandatory	**Key:** This property shall be a reference to CIM_RedundancySet representing power supply redundancy. Cardinality 1 indicating one and only one reference
Dependent	Mandatory	**Key:** This property shall be a reference to CIM_RedundancySet representing external power domain redundancy Cardinality 1 indicating one and only one reference

10.4   CIM_ElementCapabilities

CIM_ElementCapabilities is used to associate an instance of Dell_PowerConfigurationService with an instance of Dell_PowerConfigurationCapabilities that describes the capabilities of the Dell_PowerConfigurationService instance.

Table 22 – CIM_ElementCapabilities

Properties	Requirement	Notes
ManagedElement	Mandatory	**Key**: Shall reference the instance of Dell_PowerConfigurationService Cardinality 1..* indicating one or more references
Capabilities	Mandatory	**Key**: Shall reference the instance of Dell_PowerConfigurationCapabilities Cardinality 1 indicating one and only one reference

10.5   CIM_HostedService

CIM_HostedService is used to associate an instance of Dell_OEMPowerConfigurationService with an instance of CIM_ComputerSystem that is the computer system hosting the service. Table 23 contains the requirements for elements of this class.

Table 23 – Class: CIM_HostedService

Elements	Requirement	Notes
Antecedent	Mandatory	Key: This property shall reference the instance of CIM_ComputerSystem. Cardinality 1 indicating one and only one reference
Dependent	Mandatory	Key: This property shall reference the instance of CIM_RoleBasedAuthorizationService. Cardinality 1..* indicating one or more references

10.6   CIM_MemberOfCollection – Power Supply

CIM_MemberOfCollection is used to associate an instance of CIM_PowerSupply with the instance of CIM_RedundancySet of which the CIM_PowerSupply instance is a member. This class is defined in DSP1015, and shall be implemented according to DSP1015. The requirements in this section are in addition to those detailed in DSP1015.

Table 24 – Class: CIM_MemberOfCollection – Power Supply

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

10.7   CIM_MemberOfCollection – External Power Domain

CIM_MemberOfCollection is used to associate an instance of CIM_AdminDomain with the instance of CIM_RedundancySet of which the CIM_AdminDomain instance representing the external power domain is a member.

Table 25 – Class: CIM_MemberOfCollection – External Power Domain

Properties	Requirement	Description
Collection	Mandatory	**Key:** Shall reference the CIM_RedundancySet instance of which the CIM_AdminDomain instance is a member. Cardinality 1 indicating one and only one reference
Member	Mandatory	**Key:** Shall reference the CIM_PowerSupply instance Cardinality 1..* indicating one or many references

10.8   Dell_OEMOrderedServiceAffectsElement

Dell_OEMOrderedServiceAffectsElement is used to associate an instance of
Dell_OEMPowerConfigurationService with an instance of CIM_RedundancySet representing power
supply or external power domain redundancy that is managed by the service.

Table 26 – Class: Dell_OEMOrderedServiceAffectsElement

Elements	Requirement	Notes
AffectedElement	Mandatory	Key: This property shall reference the instance of CIM_RedundancySet. Cardinality 2..* indicating two or more references
AffectingElement	Mandatory	Key: This property shall reference the instance of Dell_OEMPowerConfigurationService. Cardinality 1
ElementAffects	Mandatory	Matches 5 (Manages)
AssignedSequence	Mandatory	

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 27 – Class: CIM_OwningCollectionElement

Properties	Requirement	Description
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 2..* indicating two or more references

10.10   Dell_OEMPowerConfigurationCapabilities

Dell_OEMPowerConfigurationCapabilities represents the capabilities of the power management service.

Table 28 – Dell_OEMPowerConfigurationCapabilities

Properties	Requirement	Notes
InstanceID	Mandatory	**Key**
SupportedMethods	Mandatory	

10.11   Dell_OEMPowerConfigurationService

Dell_OEMPowerConfigurationService represents the capabilities of the power management service.

Table 29 – Dell_OEMPowerConfigurationService

Properties	Requirement	Notes
SystemCreationClassName	Mandatory	**Key**
SystemName	Mandatory	**Key**
CreationClassName	Mandatory	**Key**
Name	Mandatory	**Key**
DynamicEngageEnabled	Mandatory	
PerformanceDegradationEnabled	Mandatory	
ChangeAffectedElementsAssignedSequence	Conditional	
ConfigureExternalPowerDomainDefaults	Conditional	
ConfigureExternalPowerDomains	Conditional	

10.12   CIM_PowerSupply

CIM_PowerSupply is used to represent the power supply. This class is defined in DSP1015, and shall be implemented according to DSP1015.

10.13   CIM_RedundancySet – Power Supplies

CIM_RedundancySet is used to represent the aggregation of redundant power supplies. This class is defined in DSP1015, and shall be implemented according to DSP1015.

10.14   CIM_RedundancySet – External Power Domain

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

Table 30 – Class: CIM_RedundancySet – External Power Domain

Properties and Methods	Requirement	Description
InstanceID	Mandatory	**Key**
RedundancyStatus	Mandatory	
TypeOfSet	Mandatory	Shall be set to 2 (N+1)
MinNumberNeeded	Mandatory	Shall match 1 or higher integer
ElementName	Mandatory	Shall be formatted as a free-form string of variable length (pattern ".*")

10.15   CIM_RegisteredProfile

The CIM_RegisteredProfile class is defined by the Profile Registration Profile. The requirements listed in

Table 31 are in addition to those mandated by the Profile Registration Profile.

Table 31 – Class: CIM_RegisteredProfile

Properties	Requirement	Description
RegisteredName	Mandatory	This property shall have a value of "Power Topology Profile".
RegisteredVersion	Mandatory	This property shall have a value of "1.0.0".
RegisteredOrganization	Mandatory	This property shall have a value of 1 (Other).
OtherRegisteredOrganization	Mandatory	This property shall match "Dell Inc."

10.16 CIM_SystemComponent – Scoping Instance

CIM_SystemComponent is used to associate the Scoping Instance with CIM_AdminDomain that represents internal or external power domains.

Table 32 – Class: CIM_SystemComponent – Scoping Instance

Properties	Requirement	Notes
GroupComponent	Mandatory	**Key:** Shall reference the CIM_ComputerSystem instance, Scoping Instance, which the CIM_AdminDomain instance is scoped to. Cardinality 1 indicating one reference
PartComponent	Mandatory	**Key:** Shall reference the CIM_AdminDomain instance Cardinality 1..* indicating one or more references

10.17 CIM_SystemComponent – Internal Power Domain

CIM_SystemComponent is used to associate CIM_AdminDomain representing the internal power domain with CIM_ManagedElement, representing the managed elements that receive their power from the internal power domain.

Table 33 – Class: CIM_SystemComponent – Internal Power Domain

Properties	Requirement	Notes
GroupComponent	Mandatory	**Key:** Shall reference the CIM_AdminDomain instance representing internal power domain. Cardinality 0..1 indicating zero or one reference
PartComponent	Mandatory	**Key:** Shall reference the CIM_ManagedSystemElement instance representing managed system element consuming power from internal power domain. Cardinality * indicating zero or more references

10.18 CIM_SystemComponent – External Power Domains

CIM_SystemComponent is used to associate the CIM_AdminDomain representing the external power domain with CIM_PowerSupply representing the power supplies that receive their power from the internal power domain.

Table 34 – Class: CIM_SystemComponent – External Power Domain

Properties	Requirement	Notes
GroupComponent	Mandatory	**Key:** Shall reference the CIM_AdminDomain instance representing external power domain. Cardinality * indicating zero or more references
PartComponent	Mandatory	**Key:** Shall reference the CIM_PowerSupply instance representing power supply consuming power from external power domain. Cardinality * indicating zero or more references

10.19   CIM_SuppliesPower

CIM_SuppliesPower is used to associate an instance of CIM_PowerSupply with the instance of CIM_AdminDomain representing the internal power domain that is supplied power by the power supply.

Table 35 – Class: CIM_SuppliesPower

Properties	Requirement	Description
Antecedent	Mandatory	**Key:** Shall reference the CIM_PowerSupply instance Cardinality * indicating zero or more references
Dependent	Mandatory	**Key:** Shall reference the instance of CIM_AdminDomain that represents the element receiving the power Cardinality * indicating zero or more references

ANNEX A
(informative)

Dell MOF

NOTE: This may not be the most up-to-date MOF. Please, for implementation purposes refer to the MOF published separately from the profiles.

// Copyright (c) 2007 Dell All rights reserved.

// ==

// Dell_OEMPowerConfigurationCapabilities

// ==

// Preliminary Approved

[Experimental, Version ("1.0.0"),

   Description (

      "Dell_OEMPowerConfigurationCapabilities describes the capabilities "

      "of the associated CIM_PowerConfigurationService.")]

class Dell_OEMPowerConfigurationCapabilities : CIM_EnabledLogicalElementCapabilities {

     [Description (

        "Each enumeration corresponds to support for the "

        "like-named method of the Dell_OEMPowerConfigurationService. "),

      ValueMap { "2", "3", "4", "5", "..", "0x8000.." },

      Values { "ChangeAffectedElementsAssignedSequence",

        "ConfigureExternalPowerDomainDefaults",

        "ConfigureExternalPowerDomains",

        "AssignPowerRedundancyPriority",

        "DMTF Reserved", "Vendor Specific" }]

   uint16 SupportedMethods[];

};

```
// ==================================================================

// Dell_OEMPowerConfigurationService

// ==================================================================

// Preliminary Approved


   [Experimental, Version ( "1.0.0" ), Description (

      "This class extends CIM_Service to provide interface to manage "

      "the overall power topology of the system.")]
class Dell_OEMPowerConfigurationService : CIM_Service {


     [Experimental, Description (

        "DynamicEngageEnabled is an integer enumeration that indicates "

        "the enabled and disabled states of power supplies dynamic "

        "engagement. Enabled (2) indicates that the dynamic power supply "

        "engagement is enabled and the power supplies maybe turned off "

        "or on based on the redundancy configuration and the power "

        "consumption. Disabled (3) indicates that the dynamic power "

        "supply engagement feature is disabled."),

       ValueMap {"2", "3" },

       Values { "Enabled", "Disabled" }]
   uint16 DynamicEngageEnabled;


     [Experimental,  Description (

        "PerformanceDegradationEnabled is an integer enumeration that "

        "indicates the enabled and disabled states of systems "

        "performance degradation based on the power consumption needs. "

        "Enabled (2) indicates that the performance degradation is "

        "enabled based on the power consumption of the system the system "

        "performance may be impacted. Disabled (3) indicates that the "

        "performance degradation feature is disabled."),
```

    ValueMap {"2", "3" },

    Values { "Enabled", "Disabled" }]

  uint16 PerformanceDegradationEnabled;

  [Description (

    "This method is called to change the order of the "

    "ManagedElements in which sequence they are affected by the "

    "Service. An ordered array of ManagedElement instances is passed "

    "to this method. Each ManagedElement instance shall be already "

    "be associated with this Service instance via an instance of "

    "Dell_OEMOrderedServiceAffectsElement. If not, the implementation "

    "shall return a value of \"Error Occured\". \n"

    "Upon successful execution of this method, if the "

    "AssignedSequence parameter is NULL, the value of the "

    "AssignedSequence property on each instance of "

    "Dell_OEMOrderedServiceAffectsElement shall be updated such that "

    "the values of AssignedSequence properties shall be "

    "monotonically increasing in correlation with the position of "

    "the referenced ManagedElement instance in the ManagedElements "

    "input parameter. That is, the first position in the array shall "

    "have the lowest value for AssignedSequence. The second position "

    "shall have the second lowest value, and so on. \n "

    "Upon successful execution, if the AssignedSequence parameter is "

    "not NULL, the value of the AssignedSequence property on each "

    "instance of Dell_OEMOrderedServiceAffectsElement referencing the "

    "ManagedElement instance in the ManagedElements array shall be "

    "updated to value of the corresponding index of the Priority "

    "parameter array.\n "

    "For ManagedElements instances which are associated with the "

    "Service instance via Dell_OEMOrderedServiceAffectsElement and not "

    "present in the ManagedElements parameter array, the "

    "AssignedSequence property on the OrderedComponent association "

"shall be assigned a value of 0."),

ValueMap { "0", "1", "2", "3", "4", "5", "6", "7..32767",

"32768..65535" },

Values { "Completed with No Error", "Not Supported",

"Error Occured", "Busy", "Invalid Reference",

"Invalid Parameter", "Access Denied", "DMTF Reserved",

"Vendor Specified" }]

uint32 ChangeAffectedElementsAssignedSequence (

[IN, Description (

"An array of ManagedElements.")]

CIM_ManagedElement REF ManagedElements[],

[IN, Description (

"An array of integers representing AssignedSequence of the "

"ManagedElement in the corresponding index of the "

"ManagedElements parameter.")]

uint16 AssignedSequence[],

[IN (false), OUT, Description (

"Reference to the job spawned if the operation continues "

"after the method returns. (May be null if the task is "

"completed).")]

CIM_ConcreteJob REF Job);

[Description (

"This method is called to configure the default configuration of "

"the managed system for the external grid redundancy in the case "

"the underlying instrumentation is unable to detect the external "

"grid redundancy and depends on the client input for its "

"configuration. \n "

"If there is no at least one instance of CIM_RedundancySet "

"representing the power supplies redundancy or there is no at "

"least one instance of CIM_RedundancySet representing external "

"power domain redundancy associated to the instance of "

        "CIM_ComputerSystem referenced in the OwningComputerSystem "

        "parameter through CIM_OwningCollectionElement association, the "

        "implementation shall return a value of \"Error Occured\". "

        "Upon the sudccessful execution CIM_AdminDomain instances "

        "belonging to external power domain redundancy shall be "

        "associated to one or more CIM_PowerSupply instances belonging "

        "to power supply redundancy through the CIM_SystemComponent "

        "association where the GroupComponent references the "

        "CIM_AdminDomain instance. Upon the successful execution of the "

        "method, the Dell_OEMOrderedServiceAffectsElement.AssignedSequence "

        "property on the associations referencing the instance of "

        "Dell_OEMPowerConfigurationService may change."),

      ValueMap { "0", "1", "2", "3", "4", "5", "6", "7..32767",

        "32768..65535" },

      Values { "Completed with No Error", "Not Supported",

        "Error Occured", "Busy", "Invalid Reference",

        "Invalid Parameter", "Access Denied", "DMTF Reserved",

        "Vendor Specified" }]

    uint32 ConfigureExternalPowerDomainDefaults (

      [IN, Description (

        "Reference to the instance of CIM_ComputerSystem that the "

        "power supplies and external power domains and their "

        "redundancies belong to.")]

      CIM_ComputerSystem REF OwningComputerSystem,

      [IN, Description (

        "Defines whether the default external power domain "

        "configuration for the managed system has been deployed or "

        "not. "),

      ValueMap { "2", "3", "..", "32768..65535" },

      Values { "Configuration Enabled", "Configuration Removed",

        "DMTF Reserved", "Vendor Reserved" }]

```
uint16 RequestedChange,


  [IN ( false ), OUT, Description (
     "Reference to the job spawned if the operation continues "
     "after the method returns. (May be null if the task is "
     "completed).")]
CIM_ConcreteJob REF Job);


[Description (
   "This method is called to configure external grid redundancy in "
   "the case the underlying instrumentation is unable to detect the "
   "external grid redundancy and depends on the client input for "
   "its configuration. The indexed array of external power domains, "
   "the ExternalPowerDomains parameter, corresponds to the power "
   "supplies index array, the PowerSupplies parameter, where each "
   "power supply at the corresponding index recieves power from the "
   "power domain at the same index of the array. "
   "If the PowerSupplies parameter array is not of the same length "
   "as ExternalPowerDomains parameter array, or one of the array "
   "parameters are of zero length, the implementation shall return "
   "a value of \"Error Occured\". Upon the successful execution "
   "each CIM_PowerSupply instance referenced in the PowerSupplies "
   "paremeter array shall be associated with the instance of "
   "CIM_AdminDomain referenced in the corresponding index of the "
   "ExternalPowerDomains parameter through the CIM_SystemComponent "
   "association where the GroupComponent references the "
   "CIM_AdminDomain instance."),
 ValueMap { "0", "1", "2", "3", "4", "5", "6", "7..32767",
   "32768..65535" },
 Values { "Completed with No Error", "Not Supported",
   "Error Occured", "Busy", "Invalid Reference",
   "Invalid Parameter", "Access Denied", "DMTF Reserved",
```

```
      "Vendor Specified" }]
  uint32 ConfigureExternalPowerDomains (
      [IN, Description (
          "Reference to the instance of CIM_ComputerSystem that the "
          "power supplies and external power domains and their "
          "redundancies belong to.")]
     CIM_ComputerSystem REF OwningComputerSystem,
      [IN, Description (
          "An array of CIM_PowerSupply instances."),
          ArrayType ("Indexed")]
     CIM_PowerSupply REF PowerSupplies[],
      [IN, Description (
          "An array of CIM_AdminDomain instances representing external "
          "power domains"),
          ArrayType ("Indexed")]
     CIM_AdminDomain REF ExternalPowerDomains[],
       [IN ( false ), OUT, Description (
          "Reference to the job spawned if the operation continues "
          "after the method returns. (May be null if the task is "
          "completed).")]
     CIM_ConcreteJob REF Job);


};


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// ===================================================================
// Dell_OEMOrderedServiceAffectsElement
// ===================================================================
// Preliminary Approved


  [Experimental, Association, Version ( "1.0.0" ), Description (
```

"ServiceAffectsElement represents an association between a "

"Service and the ManagedElements that might be affected by its "

"execution and the order in which the service might affect its "

"element. Instantiating this association indicates that "

"running the service may change, manage, provide functionality "

"for,or pose some burden on the ManagedElement in a specific "

"sequence. This burden might affect performance, throughput, "

"availability, and so on.")]

class Dell_OEMOrderedServiceAffectsElement : CIM_ServiceAffectsElement {

   [Experimental, Description (

"AssignedSequence is an unsigned integer 'n' that indicates the "

"relative sequence in which order the ManagedElement instances "

"are affected. When 'n' is a positive integer, it indicates a "

"place in the sequence of affected elements, with smaller "

"integers indicating earlier positions in the sequence. The "

"special value '0' indicates 'don't care'. If two or more "

"affected elements have the same non-zero sequence number, then "

"the ordering between those elements is irrelevant, but they "

"must all be serviced in the appropriate order in the overall "

"sequence. \n"

"A series of examples will make order of elements clearer: "

"If all elements affected have the same sequence number, \n"

"regardless of whether it is '0' or non-zero, any \n"

"order is acceptable. \n"

"The values: \n"

"1:ELEMENT A \n"

"2:ELEMENT B \n"

"1:ELEMENT C \n"

"3:ELEMENT D \n"

"indicate two acceptable orders: A,C,B,D or C,A,B,D, \n"

"since A and C can be ordered in either sequence, but \n"

"only at the '1' position. \n"

```
        "\n"

        "Note that the non-zero sequence numbers need not start with "

        "'1', and they need not be consecutive. All that matters is "

        "their relative magnitude.")]
  uint16 AssignedSequence;


};
```

ANNEX B
(informative)

Change Log

Version	Date	Description
1.0.0	2/12/2009	Initial version.

ANNEX C
(informative)

Acknowledgments

The authors wish to acknowledge the following people.

Editor:

- Khachatur Papanyan – Dell Inc.

Contributors:

- Jon Hass – Dell Inc.
- Khachatur Papanyan – Dell Inc.
- Michael Brundridge – Dell Inc.