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OS Status Profile

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Foreword

The *OS Status Profile* (DSP1029) was prepared by the Server Desktop Mobile Platform Working Group and Physical Platform Profiles Working Group of the DMTF.

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Introduction

This document defines the classes used to describe an operating system, its status, its relationship to a managed system, as well as its configuration and control. The information in this specification is intended to be sufficient for a provider or consumer of this data to identify unambiguously the classes, properties, methods, and values that are mandatory to be instantiated and manipulated to represent and manage operating systems of managed systems and subsystems that are modeled by 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 components described in this document.

OS Status Profile

1 Scope

The *OS Status Profile* extends the management capabilities of referencing profiles by adding the capability to perform basic management of operating systems installed on a system.

2 Normative references

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

2.1 Approved references

DMTF DSP0004, *CIM Infrastructure Specification 2.5*,
http://www.dmtf.org/standards/published_documents/DSP0004_2.5.pdf

DMTF DSP0200, *CIM Operations over HTTP 1.3*,
http://www.dmtf.org/standards/published_documents/DSP0200_1.3.pdf

DMTF DSP0223, *Generic Operations 1.0*,
http://www.dmtf.org/standards/published_documents/DSP0223_1.0.pdf

DMTF DSP1001, *Management Profile Specification Usage Guide 1.0*,
http://www.dmtf.org/standards/published_documents/DSP1001_1.0.pdf

DMTF DSP1033, *Profile Registration Profile 1.0*,
http://www.dmtf.org/standards/published_documents/DSP1033_1.0.pdf

DMTF DSP1080, *Enabled Logical Element Profile 1.0*,
http://www.dmtf.org/standards/published_documents/DSP1080_1.0.pdf

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

3 Terms and definitions

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

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

The terms "clause", "subclause", "paragraph", and "annex" in this document are to be interpreted as described in ISO/IEC Directives, Part 2, Clause 5.

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

The terms defined in DSP0004, DSP0223, and DSP1001 apply to this document.

4 Symbols and abbreviated terms

The abbreviations defined in DSP0004, DSP0223, and DSP1001 apply to this document. The following additional abbreviations are used in this document

4.1
OS
operating system

5 Synopsis

Profile name: OS Status

Version: 1.1.0

Organization: DMTF

CIM Schema version: 2.35.0

Specializes: DMTF *Enabled Logical Element Profile 1.0*

Central class: CIM_OperatingSystem

Scoping class: CIM_ComputerSystem

The *OS Status Profile* provides the ability to perform basic management of operating systems installed on a managed system. CIM_OperatingSystem shall be the Central Class. CIM_ComputerSystem shall be the Scoping Class. The instance of CIM_ComputerSystem with which the Central Instance is associated through the CIM_InstalledOS association shall be the Scoping Instance.

Table 1 identifies profiles related to this profile.

Table 1 – Related profiles

Profile Name	Organization	Version	Relationship	Behavior
Profile Registration	DMTF	1.0	Mandatory	None
Enabled Logical Element	DMTF	1.0	Specializes	

6 Description

The *OS Status Profile* describes the properties and methods of the operating system that is installed and/or currently running on a managed system.

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

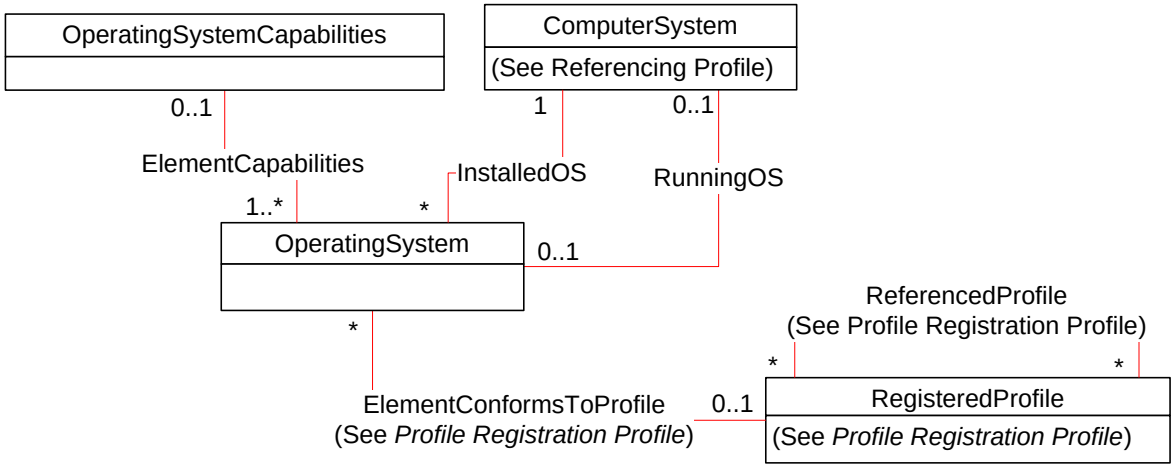


Figure 1 – OS Status Profile: Class diagram

7 Implementation requirements

This clause details the requirements related to the instantiation of instances and their properties for implementations of this profile. The requirements for the implementation of the methods are listed in 7.4.4.

7.1 General requirements

The Central Instance of the *OS Status Profile* shall replace the Central Instance of the *Enabled Logical Element Profile* (DSP1080) and shall be subject to the constraints specified in DSP1080.

7.2 Representing installed operating systems

An instance of CIM_OperatingSystem shall represent each installed operating system. Each instance of CIM_OperatingSystem shall be associated with exactly one instance of CIM_ComputerSystem through the CIM_InstalledOS association.

7.3 Representing the running operating system

The instance of CIM_OperatingSystem that represents the operating system running on the managed system may be associated to the instance of CIM_ComputerSystem through the CIM_RunningOS association. If the CIM_OperatingSystem.EnabledState property has the value 2 (Enabled) or 9 (Quiesce), the CIM_OperatingSystem instance shall be associated through the CIM_RunningOS association to the same instance of CIM_ComputerSystem with which it is associated through CIM_InstalledOS.

An instance of CIM_OperatingSystem shall be associated with at most one instance of CIM_ComputerSystem through the CIM_RunningOS association. An instance of CIM_ComputerSystem shall be associated with at most one instance of CIM_OperatingSystem through the CIM_RunningOS association.

7.4 Interpretation of state

This clause describes constraints related to the interpretation of states specific to modeling operating systems. These constraints are in addition to those specified for state management in DSP1080.

7.4.1 Enabled state

The CIM_OperatingSystem.EnabledState property shall have one of the following values: 0 (Unknown), 2 (Enabled), 3 (Disabled), 5 (Not Applicable), or 9 (Quiesce).

Table 2 describes the mapping between values of the EnabledState property and the corresponding description of the state of the operating system. Additional values have the semantics defined in DSP1080.

Table 2 – EnabledState property value descriptions

ValueMap	Value	Extended Description
2	Enabled	Operating System shall be the running OS. The operating system shall not be in the process of starting up or shutting down.
3	Disabled	Operating System shall not be the running OS.
9	Quiesce	Operating System shall be in standby or hibernate mode.

The CIM_OperatingSystem.EnabledState property shall not have the value 2 (Enabled) or 9 (Quiesce), unless the instance of CIM_OperatingSystem is associated with the Scoping Instance through the CIM_RunningOS association. A CIM_OperatingSystem instance shall not be associated with the CIM_ComputerSystem instance through the CIM_RunningOS association if the CIM_OperatingSystem.EnabledState property has the value 3 (Disabled).

7.4.2 Requested state transitions

The CIM_OperatingSystem.RequestedState property shall have one the following values: 0 (Unknown), 2 (Enabled), 3 (Disabled), 5 (No Change), 9 (Quiesce), 11 (Reset), or 12 (Not Applicable).

Table 3 describes the mapping between values of the RequestedState property and the corresponding state transition initiated for the operating system.

Table 3 – RequestedState property value descriptions

ValueMap	Value	Extended Description
3	Disabled	A request to shut down the operating system was received.
9	Quiesce	A request to standby or hibernate the operating system was received.
11	Reset	A request to reboot the operating system was received.

Table 4 describes the mapping between values of the RequestedState parameter of RequestStateChange( ) method and the corresponding state transition initiated for the operating system.

Table 4 – RequestedState parameter value descriptions

ValueMap	Value	Extended Description
3	Disabled	Initiate a shutdown of the operating system.
9	Quiesce	Standby or hibernate the operating system.
11	Reset	Initiate a reboot of the operating system.

7.4.3 Representing In-Progress transitions

If In-Progress transitions are modeled, the CIM_OperatingSystem.TransitioningToState property shall have one the following values: 2 (Enabled), 3 (Disabled), 5 (No Change), or 9 (Quiesce).

Table 5 describes the mapping between values of the TransitioningToState property and the corresponding description of the state of the operating system.

Table 5 – TransitioningToState property value descriptions

ValueMap	Value	Extended Description
2	Enabled	The operating system shall be starting up.
3	Disabled	The operating system shall be shutting down.
5	No Change	The operating system is currently not transitioning to any state.
9	Quiesce	The operating system shall be transitioning to standby or hibernate mode.

7.4.4 Representing requested states supported

The CIM_OperatingSystemCapabilities.RequestedStatesSupported property may contain zero or more of the following values: 3 (Disabled), 9 (Quiesce), or 11 (Reset).

7.4.5 Representing available requested states

The CIM_OperatingSystem.AvailableRequestedStates property may contain zero or more of the following values: 3 (Disabled), 9 (Quiesce), or 11 (Reset).

7.4.6 Representing version information

The CIM_OperatingSystem.Version property's string value shall uniquely identify the version of operating system that is represented by the instance of CIM_OperatingSystem.

8 Methods

This clause details the requirements for supporting intrinsic operations for the CIM elements defined by this profile.

No additional constraints on extrinsic methods are defined beyond those specified in DSP1080.

8.1 Profile conventions for operations

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

The default list of operations is as follows:

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

8.2 CIM_OperatingSystem

All operations are supported as for CIM_EnabledLogicalElement in DSP1080.

8.3 CIM_OperatingSystemCapabilities

All operations are supported as for CIM_EnabledLogicalElementCapabilities in DSP1080.

8.4 CIM_RunningOS

Table 6 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 6, all operations in the default list in 8.1 shall be implemented as defined in DSP0200.

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

Table 6 – Operations: CIM_RunningOS

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

8.5 CIM_InstalledOS

Table 7 lists implementation requirements for operations. If implemented, these operations shall be implemented as defined in DSP0200. In addition, and unless otherwise stated in Table 7, all operations in the default list in 8.1 shall be implemented as defined in DSP0200.

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

272 **Table 7 – Operations: CIM_InstalledOS**

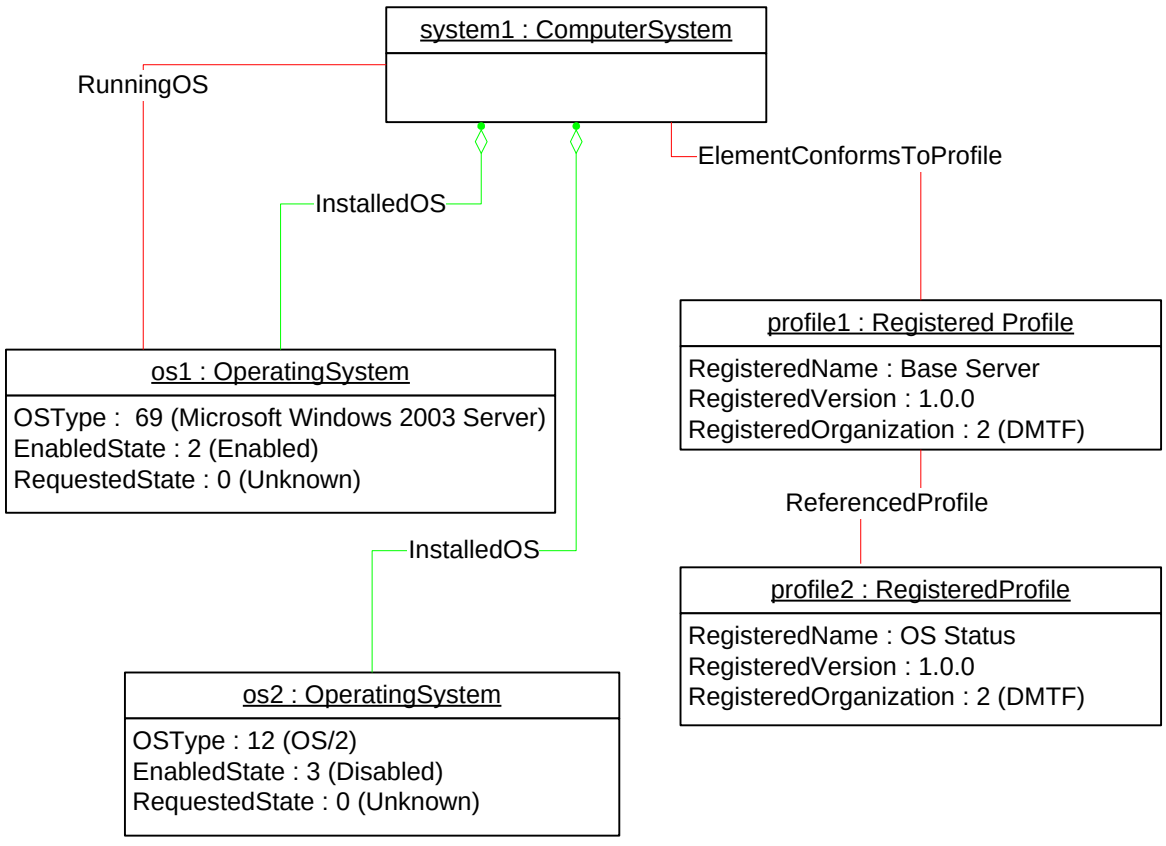
Operation	Requirement	Messages
Associators	Unspecified	None
AssociatorNames	Unspecified	None
References	Unspecified	None
ReferenceNames	Unspecified	None

273 # 9 Use cases

274 All use cases are based on the implementation conformance to the DMTF *OS Status Profile*.

275 ## 9.1 Object diagrams

276 Figure 2 represents a possible instantiation of the *OS Status Profile* classes. In the diagram, the instance
277 of CIM_OperatingSystem is associated with an instance of CIM_ComputerSystem through an instance of
278 CIM_RunningOS and CIM_InstalledOS.



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280 **Figure 2 – OS Status Profile: Object diagram**

9.2 Determining whether state management is supported

For a given instance of CIM_OperatingSystem, a client can determine whether state management is supported as follows:

1) Find the CIM_EnabledLogicalElementCapabilities instance that is associated with the instance.
2) Query the value of the RequestedStatesSupported property.

   If at least one value is specified, state management is supported.

9.3 Determining whether the OS is in the process of starting up

For a given instance of CIM_OperatingSystem, a client can determine whether the represented operating system is in the process of starting up as follows:

1) Query the value of the CIM_OperatingSystem.TransitionToState property.

   If it has the value 2 (Enabled), the operating system is in the process of starting up. Otherwise it is not.

9.4 Determining the version of the OS

For a given instance of CIM_OperatingSystem, a client can determine the version of the operating system as follows:

1) Query the value of the CIM_OperatingSystem.Version property

10 CIM elements

Table 8 shows the list of CIM elements for this profile and details their requirements. The implementation requirements for the classes and properties described in this clause are defined in clause 7 ("Implementation requirements").

Table 8 – CIM elements: OS Status Profile

Element Name	Requirement	Description
Classes		
CIM_OperatingSystem	Mandatory	See 7.2 and 10.1.
CIM_OperatingSystemCapabilities	Optional	See 7.4.4 and 10.2.
CIM_RunningOS	Conditional	See 7.3 and 10.3.
CIM_InstalledOS	Mandatory	See 7.2 and 10.4.
CIM_RegisteredProfile	Mandatory	See 10.5.
Indications		
None defined in this profile		

10.1 CIM_OperatingSystem

The CIM_OperatingSystem class is used to represent an operating system. Table 9 provides information about the properties of the CIM_OperatingSystem class. The constraints specified for CIM_OperatingSystem are in addition to those specified for CIM_EnabledLogicalElement in DSP1080.

Table 9 – Class: CIM_OperatingSystem

Properties	Requirement	Notes
CSCreationClassName	Mandatory	Key
CSName	Mandatory	Key
CreationClassName	Mandatory	Key
Name	Mandatory	Key
OSType	Mandatory	None
OtherTypeDescription	Conditional	This property shall be formatted as a free-form string of variable length (pattern ".*") if OSType has the value 1 (Other) or 59 (Dedicated).
Version	Optional	See 7.4.6.
EnabledState	Mandatory	See 7.4.1.
RequestedState	Mandatory	See 7.4.2.
AvailableRequestedStates	Optional	See 7.4.5.
TransitioningToState	Optional	See 7.4.3.

10.2 CIM_OperatingSystemCapabilities

CIM_OperatingSystemCapabilities represents the capabilities of the operating system. The constraints specified for CIM_OperatingSystemCapabilities are in addition to those specified for CIM_EnabledLogicalElementCapabilities in DSP1080.

Table 10 – CIM_OperatingSystemCapabilities

Properties	Requirement	Notes
InstanceID	Mandatory	**Key**
RequestedStatesSupported	Optional	See 7.4.4.
ElementNameEditSupported	Mandatory	None
MaxElementNameLen	Conditional	None
ElementNameMask	Conditional	None
HostShutdownBehavior	Mandatory	None

10.3 CIM_RunningOS

The CIM_RunningOS class is used to associate the instance of CIM_OperatingSystem with the instance of CIM_ComputerSystem. Table 11 provides information about the properties of the CIM_RunningOS class. CIM_RunningOS is conditional on the CIM_OperatingSystem.EnabledState property having the value 2 (Enabled).

Table 11 – Class: CIM_RunningOS

Properties	Requirement	Notes
Antecedent	Mandatory	**Key**: This property shall be a reference to an instance of CIM_OperatingSystem. Cardinality 0..1
Dependent	Mandatory	**Key**: This property shall be a reference to an instance of CIM_ComputerSystem. Cardinality 0..1

10.4 CIM_InstalledOS

The CIM_InstalledOS class is used to associate the instance of CIM_OperatingSystem with the instance of CIM_ComputerSystem. Table 12 provides information about the properties of the CIM_InstalledOS class.

Table 12 – Class: CIM_InstalledOS

Properties	Requirement	Notes
GroupComponent	Mandatory	**Key**: This property shall be a reference to the CIM_ComputerSystem instance. Cardinality 1..*
PartComponent	Mandatory	**Key**: This property shall be a reference to the CIM_OperatingSystem that is associated to the installed operating system. Cardinality *

10.5 CIM_RegisteredProfile

CIM_RegisteredProfile is defined by DSP1033. The requirements denoted in Table 13 are in addition to those mandated by DSP1033.

Table 13 – Class: CIM_RegisteredProfile

Properties	Requirement	Description
RegisteredName	Mandatory	This property shall have a value of “OS Status”.
RegisteredVersion	Mandatory	This property shall have a value of “1.1.0”.
RegisteredOrganization	Mandatory	This property shall have a value of 2 (DMTF).

ANNEX A
(Informative)

Change log

Version	Date	Description
1.0.0	2009-06-16	
1.1.0	2013-07-25	Updated to include Version property