

IBM System Storage SAN Volume Controller



CIM Agent Developer's Reference

Version 4.2.1

IBM System Storage SAN Volume Controller



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Note:

Before using this information and the product it supports, read the information in **Notices** and **Safety and Environmental Notices**.

This edition applies to the IBM System Storage SAN Volume Controller, release 4.2.1, and to all subsequent releases and modifications until otherwise indicated in new editions. This edition replaces SC26-7904-01.

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About this guide

This publication introduces the Common Information Model (CIM) Agent for the IBM System Storage SAN Volume Controller.

This section describes:

- Content and intended audience of this book
- Typefaces that are used to show emphasis
- Information that is related to this book
- How to order IBM publications
- How to send in your feedback on this book
- Web sites that provide information about the SAN Volume Controller or related products or technologies

Who should use this guide?

This reference book is for application programmers who are developing with the Common Information Model (CIM).

This reference book is for CIM-based application programmers who want to do the following tasks:

- Understand the CIM Agent for the SAN Volume Controller
- Discover and connect to the CIM Agent service
- Retrieve and extract the CIM Agent object classes, attributes, and methods
- Create new object instances for basic storage configuration, LUN masking, and copy services on the SAN Volume Controller.

Summary of changes

This document contains terminology, maintenance, and editorial changes.

Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change. This summary of changes describes new functions that have been added to this release.

Summary of changes for SC26-7904-02 SAN Volume Controller CIM Agent Developer's Reference

The Summary of changes provides a list of new, modified, and changed information since the last version of the guide.

New information

This topic describes the changes to this guide since the previous edition, SC26-7904-01. The following section summarizes the changes that have since been implemented from the previous version.

This version includes the following new information:

- The SAN Volume Controller software version 4.2.1 is now based on the Open Pegasus version 2.5.1 CIMOM. As a result, the architecture of the CIM Agent has changed.

- This edition, SC26-7904-02, only applies if you are running SAN Volume Controller software version 4.2.1 or higher. If you are running software version 4.2.0 or earlier, use the previous edition, SC26-7904-01.

Summary of changes for SC26-7904-01 SAN Volume Controller CIM Agent Developer's Reference

The Summary of changes provides a list of new, modified, and changed information since the last version of the guide.

New information

This topic describes the changes to this guide since the previous edition, SC26-7904-00. The following sections summarize the changes that have since been implemented from the previous version.

This version includes the following new information:

- Added the following new methods:
 - MigrateVDiskExtents()
 - GetDependentMappingNames()

Changed information

This section lists the updates that were made in this document.

- Added and modified properties to the following CIM Agent Core object classes:
 - IBMTSSVC_BackendVolume
 - IBMTSSVC_Cluster
 - IBMTSSVC_FlashCopySynchronizedSet
 - IBMTSSVC_FlashCopyJob
 - IBMTSSVC_HardwareIdCollection
 - IBMTSSVC_StorageHardwareID
 - IBMTSSVC_StorageVolume
- Added and modified properties to the following CIM Agent Service object class:
 - IBMTSSVC_StorageConfigurationService
- Added new parameters to the following CIM Agent Extrinsic methods:
 - AttachReplica()
 - CreateReplica()
 - ModifySynchronization()
 - ModifySynchronizaitonSet()
 -
- The *IBM System Storage SAN Volume Controller Configuration Guide* is now titled *IBM System Storage SAN Volume Controller: Software Installation and Configuration Guide*.
- The *IBM System Storage SAN Volume Controller Installation Guide* is now titled *IBM System Storage SAN Volume Controller: Hardware Installation Guide*.
- The *IBM System Storage Master Console for SAN Volume Controller: Installation and User's Guide* and the *IBM System Storage Master Console for SAN Volume Controller* Information Center are no longer updated and distributed. Instead, all pertinent information from those information units has been incorporated into other SAN Volume Controller publications.

Summary of changes for SC26-7904-00 SAN Volume Controller CIM Agent Developer's Reference

The Summary of changes provides a list of new, modified, and changed information since the last version of the guide.

New information

This topic describes the changes to this guide since the previous edition, SC26-7545-04. The following sections summarize the changes that have since been implemented from the previous version.

This version includes the following new information:

- Added the following new CIM Agent Core object classes:
 - IBMTSSVC_FabricElement
 - IBMTSSVC_StorageVolumeBackendVolumeView
- Added the following new CIM Agent Association object class:
 - IBMTSSVC_ClusterScopeStorageVolumeBackendVolumeView

Changed information

This section lists the updates that were made in this document.

- Added new properties to the following CIM Agent Core object classes:
 - IBMTSSVC_BackendVolume
 - IBMTSSVC_CandidateNode
 - IBMTSSVC_Cluster
 - IBMTSSVC_Node
 - IBMTSSVC_HardwareIdCollection
 - IBMTSSVC_StorageHardwareId
 - IBMTSSVC_StorageVolume
- Added new properties to the following CIM Agent Service object class:
 - IBMTSSVC_StorageConfigurationService
- Added new parameters to the following CIM Agent Extrinsic methods:
 - CreateOrModifyElementFromStoragePool()
 - CreateReplica()
 - RequestDiscovery()
- Modified a property of the following CIM Agent core object class:
 - IBMTSSVC_NodeVPD

Emphasis

Different typefaces are used in this guide to show emphasis.

The following typefaces are used to show emphasis:

Boldface	Text in boldface represents menu items and command names.
<i>Italics</i>	Text in <i>italics</i> is used to emphasize a word. In command syntax, it is used for variables for which you supply actual values, such as a default directory or the name of a cluster.

Monospace	Text in monospace identifies the data or commands that you type, samples of command output, examples of program code or messages from the system, or names of command flags, parameters, arguments, and name-value pairs.
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SAN Volume Controller library and related publications

A list of other publications that are related to this product are provided to you for your reference.

The tables in this section list and describe the following publications:

- The publications that make up the library for the IBM System Storage SAN Volume Controller
- Other IBM publications that relate to the SAN Volume Controller

SAN Volume Controller library

The following table lists and describes the publications that make up the SAN Volume Controller library. Unless otherwise noted, these publications are available in Adobe portable document format (PDF) from the following Web site:

<http://www.ibm.com/storage/support/2145>

Title	Description	Order number
<i>IBM System Storage SAN Volume Controller: CIM Agent Developer's Reference</i>	This reference guide describes the objects and classes in a Common Information Model (CIM) environment.	SC26-7904
<i>IBM System Storage SAN Volume Controller: Command-Line Interface User's Guide</i>	This guide describes the commands that you can use from the SAN Volume Controller command-line interface (CLI).	SC26-7903
<i>IBM System Storage SAN Volume Controller: Software Installation and Configuration Guide</i>	This guide provides guidelines for configuring your SAN Volume Controller.	SC23-6628
<i>IBM System Storage SAN Volume Controller: Host Attachment Guide</i>	This guide provides guidelines for attaching the SAN Volume Controller to your host system.	SC26-7905
<i>IBM System Storage SAN Volume Controller: Hardware Installation Guide</i>	This guide includes the instructions that the IBM service representative uses to install the SAN Volume Controller.	GC27-2132

Title	Description	Order number
<i>IBM System Storage SAN Volume Controller: Planning Guide</i>	This guide introduces the SAN Volume Controller and lists the features you can order. It also provides guidelines for planning the installation and configuration of the SAN Volume Controller.	GA32-0551
<i>IBM System Storage SAN Volume Controller: Service Guide</i>	This guide includes the instructions that the IBM service representative uses to service the SAN Volume Controller.	GC26-7901
<i>IBM Systems Safety Notices</i>	This guide contains translated caution and danger statements. Each caution and danger statement in the SAN Volume Controller documentation has a number that you can use to locate the corresponding statement in your language in the <i>IBM Systems Safety Notices</i> document.	G229-9054

Other IBM publications

The following table lists and describes other IBM publications that contain additional information that is related to the SAN Volume Controller.

You can download IBM eServer xSeries, IBM xSeries, and IBM System x publications from the following Web site:

<http://www-304.ibm.com/jct01004c/systems/support/>

Title	Description	Order number
<i>IBM System Storage Multipath Subsystem Device Driver: User's Guide</i>	This guide describes the IBM System Storage Multipath Subsystem Device Driver Version 1.6 for TotalStorage Products and how to use it with the SAN Volume Controller. This publication is referred to as the <i>IBM System Storage Multipath Subsystem Device Driver: User's Guide</i> .	GC27-2122
<i>IBM TotalStorage DS4300 Fibre Channel Storage Subsystem Installation, User's, and Maintenance Guide</i>	This guide describes how to install and configure the IBM TotalStorage DS4300 Fibre-Channel Storage Subsystem.	GC26-7722

Title	Description	Order number
<i>IBM eServer xSeries 306m (Types 8849 and 8491) Installation Guide</i>	This guide describes how to install the IBM eServer xSeries 306m, which is the hardware delivered for some versions of the hardware master console.	MIGR-61615
<i>IBM xSeries 306m (Types 8849 and 8491) User's Guide</i>	This guide describes how to use the IBM eServer xSeries 306m, which is the hardware delivered for some versions of the hardware master console.	MIGR-61901
<i>IBM xSeries 306m (Types 8849 and 8491) Problem Determination and Service Guide</i>	This guide can help you troubleshoot and resolve problems with the IBM eServer xSeries 306m, which is the hardware delivered for some versions of the hardware master console.	MIGR-62594
<i>IBM eServer xSeries 306 (Type 8836) Installation Guide</i>	This guide describes how to install the IBM eServer xSeries 306, which is the hardware delivered for some versions of the hardware master console.	MIGR-55080
<i>IBM eServer xSeries 306 (Type 8836) User's Guide</i>	This guide describes how to use the IBM eServer xSeries 306, which is the hardware delivered for some versions of the hardware master console.	MIGR-55079
<i>IBM eServer xSeries 306 (Types 1878, 8489 and 8836) Hardware Maintenance Manual and Troubleshooting Guide</i>	This guide can help you troubleshoot problems and maintain the IBM eServer xSeries 306, which is the hardware delivered for some versions of the hardware master console.	MIGR-54820
<i>IBM eServer xSeries 305 (Type 8673) Installation Guide</i>	This guide describes how to install the IBM eServer xSeries 305, which is the hardware delivered for some versions of the hardware master console.	MIGR-44200
<i>IBM eServer xSeries 305 (Type 8673) User's Guide</i>	This guide describes how to use the IBM eServer xSeries 305, which is the hardware delivered for some versions of the hardware master console.	MIGR-44199

Title	Description	Order number
<i>IBM eServer xSeries 305 (Type 8673) Hardware Maintenance Manual and Troubleshooting Guide</i>	This guide can help you troubleshoot problems and maintain the IBM eServer xSeries 305, which is the hardware delivered for some versions of the hardware master console.	MIGR-44094
<i>IBM TotalStorage 3534 Model F08 SAN Fibre Channel Switch User's Guide</i>	This guide introduces the IBM TotalStorage SAN Switch 3534 Model F08.	GC26-7454
<i>IBM System x3250 (Types 4364 and 4365) Installation Guide</i>	This guide describes how to install the IBM System x3250, which is the hardware delivered for some versions of the hardware master console.	MIGR-5069761
<i>IBM System x3250 (Types 4364 and 4365) User's Guide</i>	This guide describes how to use the IBM System x3250, which is the hardware delivered for some versions of the hardware master console.	MIGR-66373
<i>IBM System x3250 (Types 4364 and 4365) Problem Determination and Service Guide</i>	This guide can help you troubleshoot and resolve problems with the IBM System x3250, which is the hardware delivered for some versions of the hardware master console.	MIGR-66374
<i>IBM TotalStorage SAN Switch 2109 Model F16 User's Guide</i>	This guide introduces the IBM TotalStorage SAN Switch 2109 Model F16.	GC26-7439
<i>IBM TotalStorage SAN Switch 2109 Model F32 User's Guide</i>	This guide introduces the IBM TotalStorage SAN Switch 2109 Model F32. It also describes the features of the switch and tells you where to find more information about those features.	GC26-7517
<i>IBM System Storage Productivity Center Introduction and Planning Guide</i>	This guide introduces the IBM System Storage Productivity Center hardware and software.	SC23-8824
<i>IBM System Storage Productivity Center Hardware Installation and Configuration Guide</i>	This guide describes how to install and configure the IBM System Storage Productivity Center hardware.	SC23-8822
<i>IBM System Storage Productivity Center Software Installation and User's Guide</i>	This guide describes how to install and use the IBM System Storage Productivity Center software.	SC23-8823

Some related publications are available from the following SAN Volume Controller support Web site:

Related Web sites

The following Web sites provide information about the SAN Volume Controller or related products or technologies.

Type of information	Web site
SAN Volume Controller support	http://www.ibm.com/storage/support/2145
Technical support for IBM storage products	http://www.ibm.com/storage/support/

How to order IBM publications

The IBM publications center is a worldwide central repository for IBM product publications and marketing material.

The IBM publications center offers customized search functions to help you find the publications that you need. Some publications are available for you to view or download free of charge. You can also order publications. The publications center displays prices in your local currency. You can access the IBM publications center through the following Web site:

<http://www.ibm.com/shop/publications/order/>

How to send your comments

Your feedback is important to help us provide the highest quality information. If you have any comments about this book or any other documentation, you can submit them in one of the following ways:

- e-mail

Submit your comments electronically to the following e-mail address:

starpubs@us.ibm.com

Be sure to include the name and order number of the book and, if applicable, the specific location of the text you are commenting on, such as a page number or table number.

- Mail

Fill out the Readers' Comments form (RCF) at the back of this book. If the RCF has been removed, you can address your comments to:

International Business Machines Corporation
RCF Processing Department
Department 61C
9032 South Rita Road
Tucson, Arizona 85775-4401
U.S.A.

Chapter 1. Introduction

This chapter introduces the Common Information Model (CIM) Agent for the SAN Volume Controller.

It provides overviews of the following components:

- Storage Management Initiative Specification (SMI-S)
- CIM
- CIM-related concepts
- CIM Agent
- SAN Volume Controller
- CIM Agent for the SAN Volume Controller

This chapter also presents functional views of the CIM Agent object models.

Storage Management Initiative Specification

The Storage Management Initiative Specification (SMI-S) is a design specification of the Storage Management Initiative (SMI) that is launched by the Storage Networking Industry Association (SNIA).

The SMI-S specifies a secure and reliable interface that allows storage management systems to identify, classify, monitor, and control physical and logical resources in a storage area network (SAN). The interface integrates the various devices to be managed in a SAN and the tools used to manage them.

SMI-S is based on a number of existing technologies or industry standards that include the following:

Common Information Model (CIM)

An object model for data storage and management that is developed by the Distributed Management Task Force (DMTF). CIM makes it possible to organize devices and components of devices in an object-oriented pattern.

Web-Based Enterprise Management (WBEM)

A tiered enterprise management architecture that is also developed by the DMTF. This architecture provides the management design framework that consists of devices, device providers, the object manager, and the messaging protocol for the communication between client applications and the object manager. In the case of the CIM, the object manager is the CIMOM and the messaging protocol is the CIM over HTTP technology. The CIM over HTTP approach specifies that the CIM data is encoded in XML and sent in specific messages between the client applications and the CIMOM over the TCP/IP network in a SAN.

Service Location Protocol (SLP)

A directory service that the client application uses to locate the CIMOM.

Intended to be an industry standard, SMI-S extends the generic capabilities of the CIM, the WBEM, and the SLP to implement storage networking interoperability. For example, the WBEM provides provisions for security, resource-locking management, event notification, and service discovery.

CIM agent

The Common Information Model (CIM) agent is a set of standards that is developed by the Distributed Management Task Force (DMTF).

The CIM provides an open approach to the design and implementation of storage systems, applications, databases, networks, and devices.

The CIM specifications provide the language and the methodology for describing management data. For example, CIM Schema 2.7 for Managing Storage Arrays specifies how to enable the management environment for data management in a common way. The CIM defines common object classes, associations, and methods. Member vendors can use those objects and extend them to specify how data can be processed and organized in a specific managed environment.

CIM agent concepts

There are several concepts that describe the Common Information Model (CIM) agent. You must familiarize yourself with these concepts to understand the object models.

The CIM agent specifications use the following concepts and terminology to describe the object models:

Association

A class with two references that define a relationship between two referenced objects.

Class The definition of an object within a specific hierarchy. An object class can have properties and methods and serve as the target of an association.

Indication

An object representation of an event.

Instance

An individual object that is the member of a class. In object-oriented programming, an object that is created by instantiating a class.

Method

A way to implement a function on a class.

Namespace

The scope within which a CIM schema applies.

Object path

An object that consists of a namespace path and a model path. The namespace path provides access to the CIM implementation that the CIM agent manages, and the model path provides navigation within the implementation.

Property

An attribute that is used to characterize instances of a class.

Qualifier

A value that provides additional information about a class, association, indication, method, method parameter, instance, property, or reference.

Reference

A pointer to another instance that defines the role and scope of an object in an association.

Schema

A group of object classes defined for and applicable to a single namespace. Within the CIM agent, the supported schemas are the ones that are loaded through the managed object format (MOF) compiler.

CIM agent components

With a Common Information Model (CIM) agent, application programmers can use common building blocks rather than proprietary software or device-specific programming interfaces to manage CIM-compliant devices. Standardization of the way that applications manage storage provides easier storage management.

Components

A CIM agent involves the following components:

agent code

An open-systems standard that interprets CIM requests and responses as they transfer between the client application and the device.

CIM object manager (CIMOM)

The common conceptual framework for data management that receives, validates, and authenticates the CIM requests from the client application. It then directs the requests to the appropriate component or device provider. The SAN Volume Controller software version 4.2.1 is based on the Open Pegasus version 2.5.1 CIMOM.

client application

A storage management program that initiates CIM requests to the CIM agent for the device.

device

The storage server that processes and hosts the client application requests.

device provider

A device-specific handler that serves as a plugin for the CIM. That is, the CIMOM uses the handler to interface with the device.

Service Location Protocol (SLP)

A directory service that the client application calls to locate the CIMOM.

CIM agent at work

Figure 1 on page 4 shows the way a typical CIM agent works. The client application locates the CIMOM by calling an SLP directory service. When the CIMOM is first invoked, it registers itself to the SLP Service agent and supplies its location, IP address, port number, and the type of service that it provides. A string describing the CIM agents access point is registered.

Note: The standard secure port is 5989.

The following output provides an example of the registered string:

```
service:wbem:https://<CIM Agent IP>:<port number>
```

The SLP provides the following attributes:

```
template-type=wbem
template-version=1.0
template-description=This template describes the attributes used for
advertising WBEM servers.
```

```

template-url-syntax=https://9.47.24.91:5989
service-location-tcp=https://9.47.24.91:5989
service-hi-name=IBM System Storage SAN Volume Controller CIMOM
service-hi-description=IBM SVC CIM Agent Version 4.2.1.xxx
service-id=IBMTSSVC:9.47.24.91
ProtocolVersion=1.2
CommunicationMechanism=cim-xml
FunctionalProfilesSupported=Basic Read, Basic Write, Instance Manipulation,
Association, Traversal, Query Execution, Qualifier Declaration, Indications
AuthenticationMechanismSupported=Basic
Namespace=/root/ibm
InteropSchemaNamespace=/root/ibm
MultipleOperationsSupported=false
RegisteredProfilesSupported=SNIA:Storage Virtualizer,SNIA:Storage Virtualizer:
Access Points,SNIA:Storage Virtualizer:Block Services,SNIA:Storage Virtualizer:
Cascading,SNIA:Storage Virtualizer:Copy Services,SNIA:Storage Virtualizer:
FC Initiator Ports,SNIA:Storage Virtualizer:FC Target Ports,SNIA:Storage
Virtualizer:Health,SNIA:Storage Virtualizer:Masking and Mapping,SNIA:Storage
Virtualizer:Multiple Computer System,SNIA:Storage Virtualizer:Physical Package,
SNIA:Storage Virtualizer:Software,SNIA:Server,SNIA:Server:Profile Registration,
SNIA:Server:Indication,SNIA:SMI-S

```

With this information, the client application starts to directly communicate with the CIMOM.

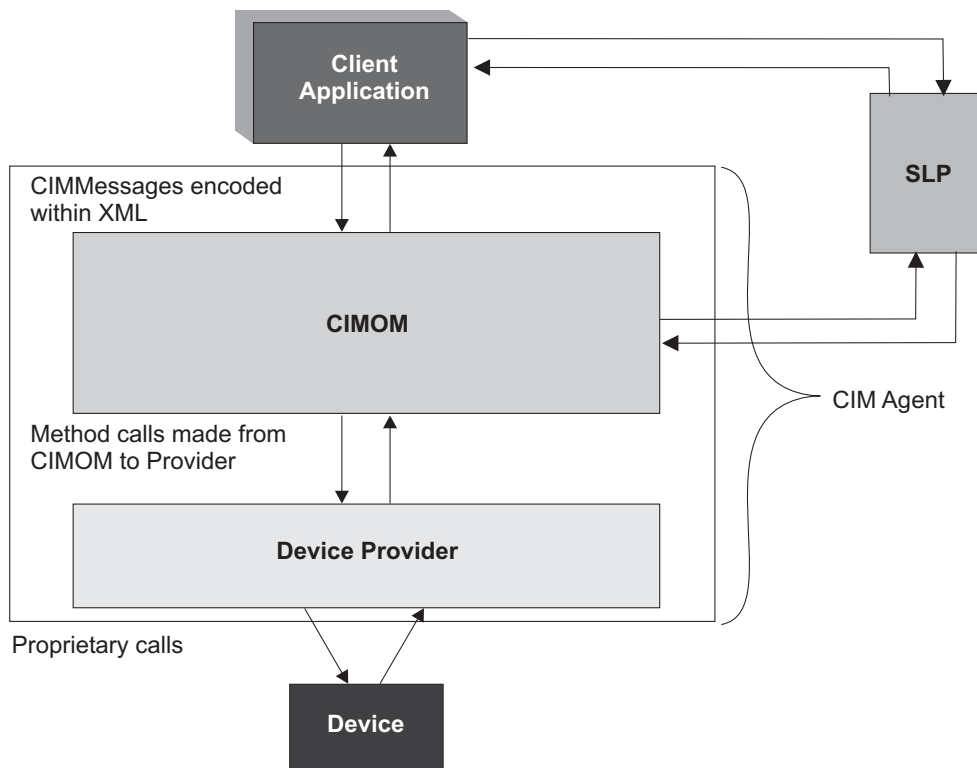


Figure 1. A typical CIM agent at work

The client application then sends CIM requests to the CIMOM. As requests arrive, the CIMOM validates and authenticates each request. It then directs the requests to the appropriate functional component of the CIMOM or to a device provider. To satisfy client application requests, the provider makes calls to a device-unique programming interface on behalf of the CIMOM.

The management application can obtain an instance of the RemoteServiceAccessPoint from the CIMOM. This instance allows the management application to access the Web User Interface.

SAN Volume Controller overview

The SAN Volume Controller combines hardware and software into a comprehensive, modular appliance that uses symmetric virtualization.

Symmetric virtualization is achieved by creating a pool of managed disks (MDisks) from the attached storage subsystems. Those storage systems are then mapped to a set of virtual disks (VDisks) for use by attached host systems. System administrators can view and access a common pool of storage on the SAN. This lets the administrators use storage resources more efficiently and provides a common base for advanced functions.

A SAN is a high-speed fibre-channel network that connects host systems and storage devices. It allows a host system to be connected to a storage device across the network. The connections are made through units such as routers, gateways, hubs, and switches. The area of the network that contains these units is known as the *fabric* of the network.

The SAN Volume Controller is analogous to a logical volume manager on a SAN. The SAN Volume Controller performs the following functions for the SAN storage that it controls:

- Creates a single pool of storage
- Provides logical unit virtualization
- Manages logical volumes
- Provides the following advanced functions for the SAN:
 - Large scalable cache
 - Copy Services
 - FlashCopy® (point-in-time copy)
 - Metro Mirror (synchronous copy)
 - Global Mirror (asynchronous copy)
 - Data migration
 - Space management
 - Mapping that is based on desired performance characteristics
 - Metering of service quality

Each SAN Volume Controller node is a rack-mounted unit that you can install in a standard Electrical Industries Alliance (EIA) 19-inch rack. The nodes are always installed in pairs, with one-to-four pairs of nodes constituting a *cluster*. Each pair of nodes is known as an *I/O group*.

All I/O operations that are managed by the nodes in an I/O group are cached on both nodes. Each virtual volume is defined to an I/O group. I/O groups take the storage that is presented to the SAN by the storage subsystems as MDisks and translates the storage into logical disks, known as VDIs, that are used by applications on the hosts. Each node must reside in only one I/O group and provide access to the VDIs in that I/O group.

There are four models of SAN Volume Controller nodes:

- SAN Volume Controller 2145-8G4
- SAN Volume Controller 2145-8F4
- SAN Volume Controller 2145-8F2
- SAN Volume Controller 2145-4F2

CIM agent for the SAN Volume Controller

The Common Information Model (CIM) agent for the SAN Volume Controller serves as a configuration interface for the SAN Volume Controller.

The CIM agent consists of the following main components:

- CIM object manager (CIMOM)
- Service Location Protocol (SLP) agent
- SAN Volume Controller provider

The SAN Volume Controller Console is configured to locate the CIMOM through its IP address. When the CIMOM is started, it registers itself with the SLP directory service by supplying its IP address, port number, and service type information. With the location information secured, the SAN Volume Controller Console begins to communicate directly with the CIMOM and the SAN Volume Controller provider. The CIMOM makes requests to the provider and the provider uses the functions that are provided by the SAN Volume Controller to fulfill these requests.

Validating openssl certificates

In order to successfully log onto the master console, you must ensure that you have a valid certificate. During the installation, the installer creates a certificate that is valid for 365 days.

When signing onto the master console, you might receive a message similar to the following:

```
CMMUI8304E The Administrative server is unable to find a valid certificate in the file.
```

This message is displayed when a certificate expires. The Administrative server uses certificates to create a secure connection with the CIM agent. Because the Administrative server cannot find a valid certificate for the CIM agent in the file, no authentication can occur.

To resolve the problem, you must verify that the certificate was created correctly. If you have any problems, contact your IBM service representative.

Perform the following steps to regenerate a certificate:

1. From a command prompt window, go to the C:\Program Files\IBM\svconconsole\cimom directory.
2. Issue the command `mkcertificate.bat ssl`. This creates an `ssl.cert` file in the certificate directory.
3. Stop the CIM Agent server.
4. Issue the command `cimconfig -s sslKeyFilePath=C:\Program Files\IBM\svconconsole\cimom\certificate\ssl.key -p`.
5. Issue the command `cimconfig -s sslCertificateFilePath=C:\Program Files\IBM\svconconsole\cimom\certificate\ssl.cert -p`.

6. Copy the files to the following sub directories:

Note: Each directory begins with C:\Program Files\IBM\svconconsole\console\embeddedWAS...

```
C:\...\config\cells\DefaultNode\applications\  
ICAConsole.ear\deployments\ICAConsole\ICAConsole.war\  
WEB-INF
```

```
C:\...\config\cells\DefaultNode\applications\  
SVCConsole.ear\deployments\SVCConsole\SVCConsole.war\  
WEB-INF
```

```
C:\...\config\installedApps\DefaultNode\  
ICAConsole.ear\ICAConsole.war\WEB-INF
```

```
C:\...\config\installedApps\DefaultNode\  
SVCConsole.ear\SVCConsole.war\WEB-INF
```

7. Stop and then restart the following applications. The following services are located in **Start ► Settings ► Control Panel ► Administrative Tools ► Component Services**.

- IBM® CIM Object Manager
- IBM WebSphere® Application Server V6 - SVC

To stop and then restart the services, right-click on the application and select **Stop**, then **Start**.

Note: If the stop command times-out in the IBM WebSphere application, you can restart the master console because this restarts the application, as well.

8. Ensure that both applications are running again. Launch the SAN Volume Controller Console and logon.

Functional diagrams of the Common Information Model Agent

The functional diagrams of the Common Information Model (CIM) Agent object show specific functionality that the CIM Agent provides, including storage configuration service, Copy Services, LUN masking, and security, and they illustrate the architecture of the CIM Agent for the SAN Volume Controller.

The following topics provide functional diagrams of the Common Information Model (CIM) Agent object model.

Physical package

The physical package of the Common Information Model (CIM) Agent for the SAN Volume Controller consists of three basic classes.

Figure 2 on page 8 shows the basic classes (building blocks) for the model.

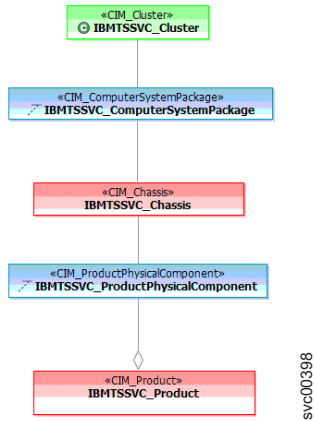


Figure 2. High-level overview of the physical package of the CIM Agent for the SAN Volume Controller.

Server profile

The server profile of the Common Information Model (CIM) Agent for the SAN Volume Controller consists of several basic classes.

Figure 3 shows the basic classes (building blocks) for the model.

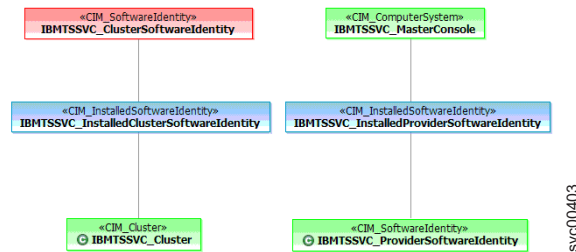


Figure 3. High-level overview of the server profile of the CIM Agent for the SAN Volume Controller.

Access point subprofile

The access point subprofile of the Common Information Model (CIM) Agent for the SAN Volume Controller consists of several basic classes.

Figure 4 shows the basic classes (building blocks) for the model.

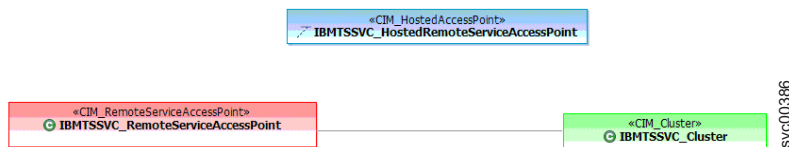


Figure 4. High-level overview of the access point subprofile of the CIM Agent for the SAN Volume Controller.

Cluster subprofile

There are several classes and associations that provide the function of a clustering service.

Figure 5 shows the classes and associations that provide the function of a clustering service.

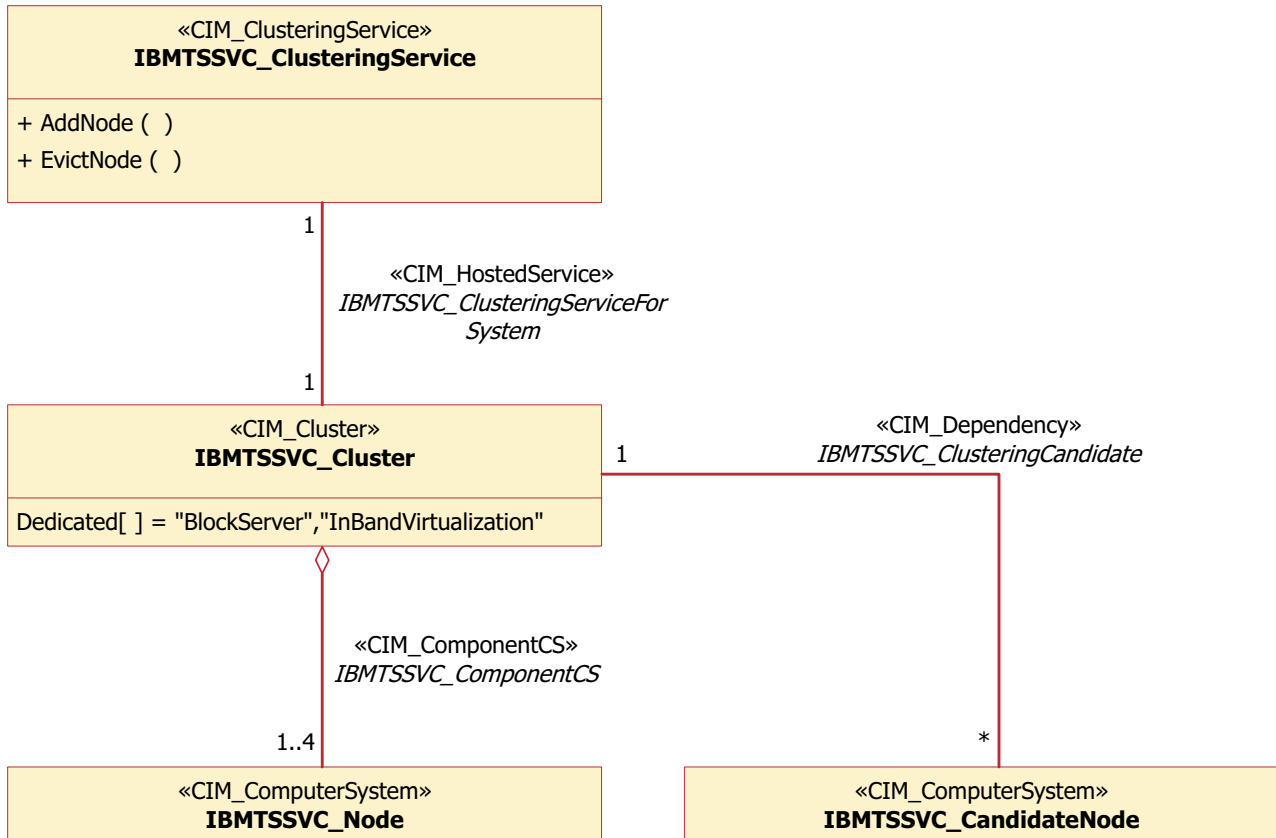
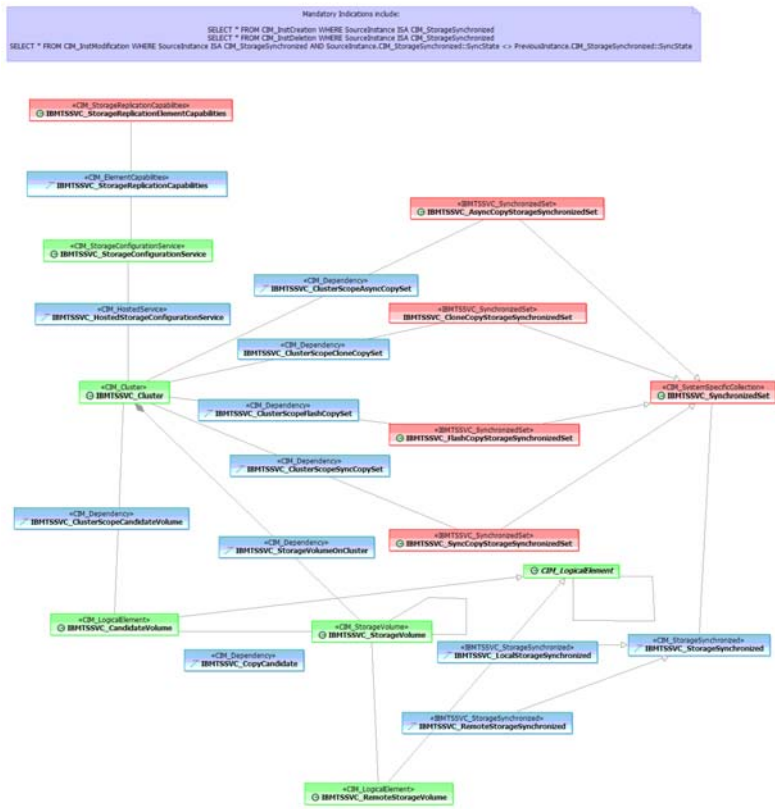


Figure 5. Class diagram of Clustering instance

Copy Services

The `IBMTSSVC_StorageConfigurationService` class provides the methods to create copy relationships.

Figure 6 on page 10 shows the object classes that provide FlashCopy, Metro Mirror, and Global Mirror Copy Services.



svc00389

Figure 6. Class diagram of Copy Services instances

Masking and mapping profile

The masking and mapping profile provides an interface to create, modify, delete, and mask hosts.

Figure 7 on page 11 shows the classes and associations for the masking and mapping profile.

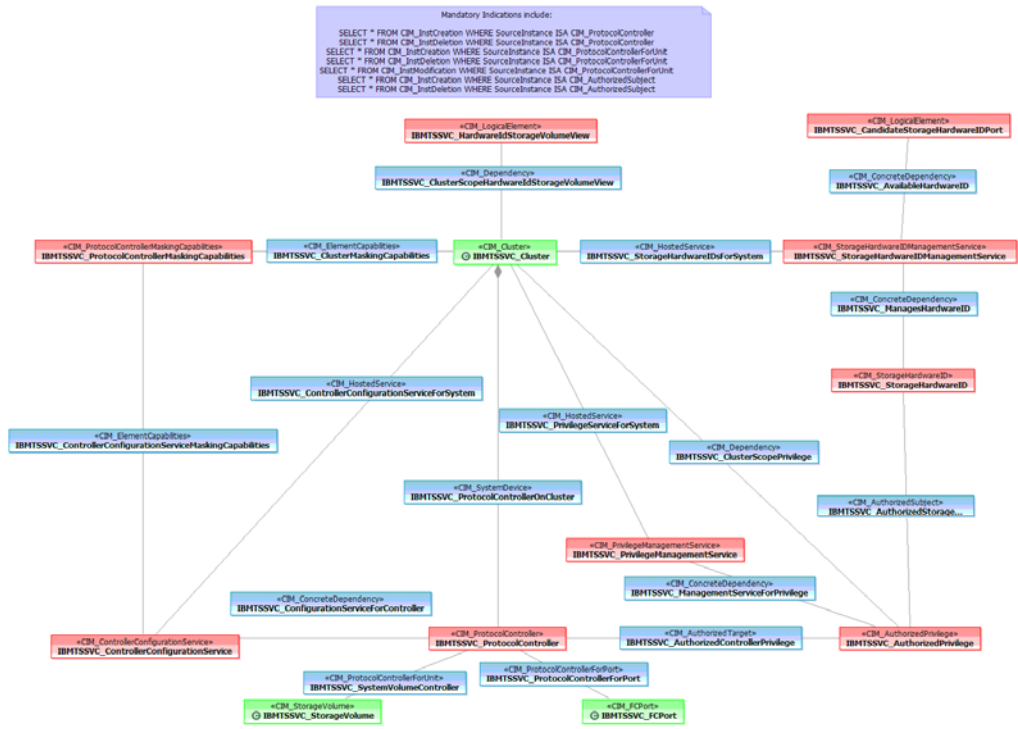


Figure 7. Class diagram of masking and mapping instances

Device configuration profile

The device configuration profile and utilities allow you to configure SAN Volume Controller clusters that are under management. You can use the CIM interface or the command-line tools to add or delete the SAN Volume Controller clusters that are managed by this instance of the CIM Agent.

Figure 8 on page 12 shows the classes and associations for the device configuration profile.



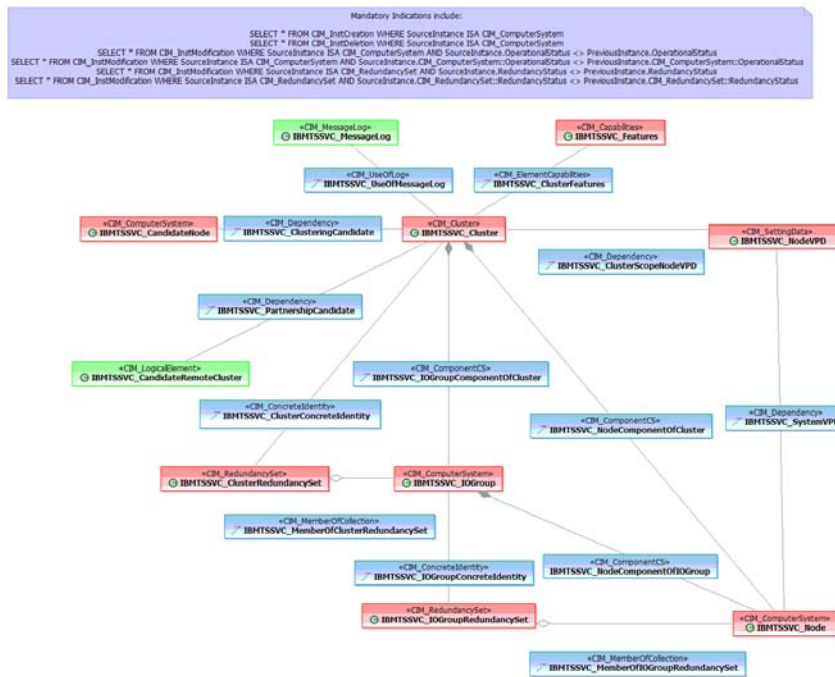
svc00392

Figure 8. Class diagram of device configuration instances

Multiple computer system profile

The multiple computer system profile utilizes multiple systems to present a virtual computer system.

Figure 9 shows the classes and associations for the multiple computer system profile.



svc00397

Figure 9. Class diagram of multiple computer system instances

Job control profile

The job control profile contains classes that allow you to monitor asynchronous commands that format, migrate, or run copy operations on a device.

Figure 10 shows the classes and associations for the job control profile.

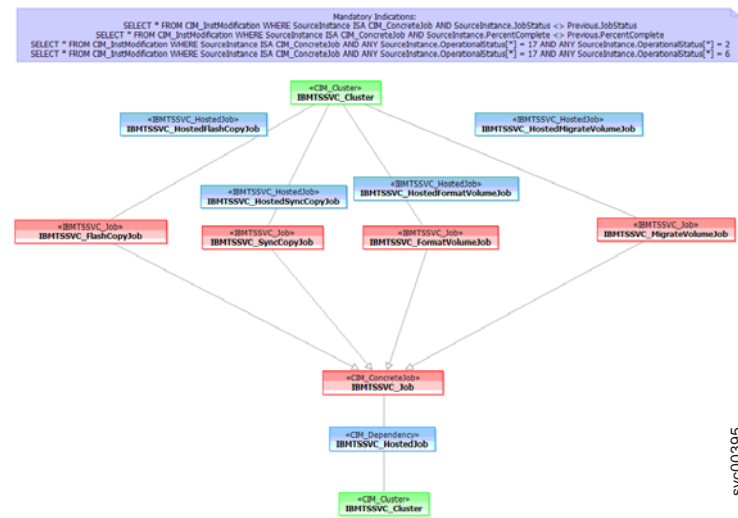


Figure 10. Class diagram of job control instances

Software profile

The software profile allows the CIM Agent to model the software for the SAN Volume Controller cluster and for the CIM Agent.

Figure 11 shows the classes and associations for the software profile.

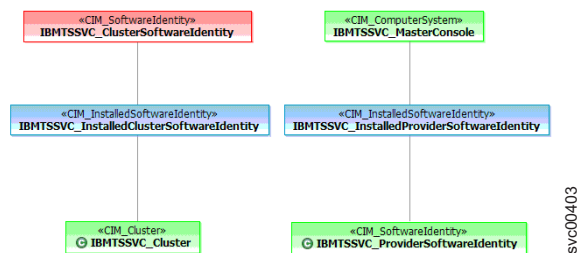


Figure 11. Class diagram of software instances

FC port profile

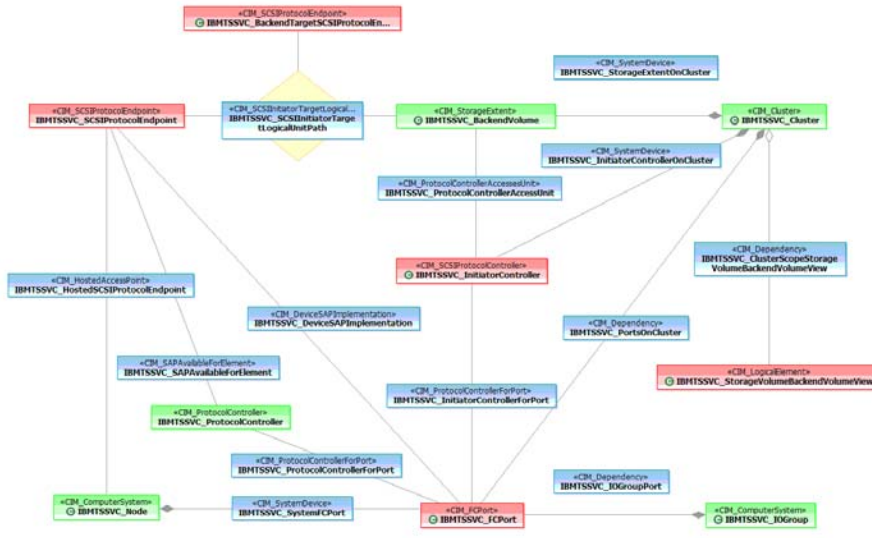
The FC port profile models the fibre-channel connection relationship between the SAN Volume Controller and the backend storage that the SAN Volume Controller virtualizes.

Figure 12 on page 14 shows the classes and associations for the FC port profile.

```

Mandatory Indications
SELECT * FROM CIM_InstCreation WHERE SourceInstance ISA CIM_StoragePool
SELECT * FROM CIM_InstDeletion WHERE SourceInstance ISA CIM_StoragePool
SELECT * FROM CIM_InstCreation WHERE SourceInstance ISA CIM_StorageVolume
SELECT * FROM CIM_InstDeletion WHERE SourceInstance ISA CIM_StorageVolume
SELECT * FROM CIM_InstModification WHERE SourceInstance ISA CIM_StorageVolume AND SourceInstance.OperationalStatus <> PreviousInstance.OperationalStatus
SELECT * FROM CIM_InstModification WHERE SourceInstance ISA CIM_StorageVolume AND SourceInstance.CIM_StorageVolume.OperationalStatus <> PreviousInstance.CIM_StorageVolume.OperationalStatus

```



svc00394

Figure 12. Class diagram of FC port instances

Block services profile

You can use several object classes to manipulate storage pools.

The block services profile allocates backend storage volumes into storage pools and then creates storage volumes.

Figure 13 on page 15 provides a high-level overview of the object classes that you can use for pool manipulation of the CIM Agent for the SAN Volume Controller.

```

Mandatory Indicators
SELECT * FROM CIM_InstCreation WHERE SourceInstance ISA CIM_StoragePool
SELECT * FROM CIM_InstDeletion WHERE SourceInstance ISA CIM_StoragePool
SELECT * FROM CIM_InstCreation WHERE SourceInstance ISA CIM_StorageVolume
SELECT * FROM CIM_InstDeletion WHERE SourceInstance ISA CIM_StorageVolume
SELECT * FROM CIM_InstModification WHERE SourceInstance ISA CIM_StorageVolume AND SourceInstance.OperationalStatus <=> PreviousInstance.OperationalStatus
SELECT * FROM CIM_InstModification WHERE SourceInstance ISA CIM_StorageVolume AND SourceInstance.CIM_StorageVolume.OperationalStatus <=> PreviousInstance.CIM_StorageVolume.OperationalStatus

```

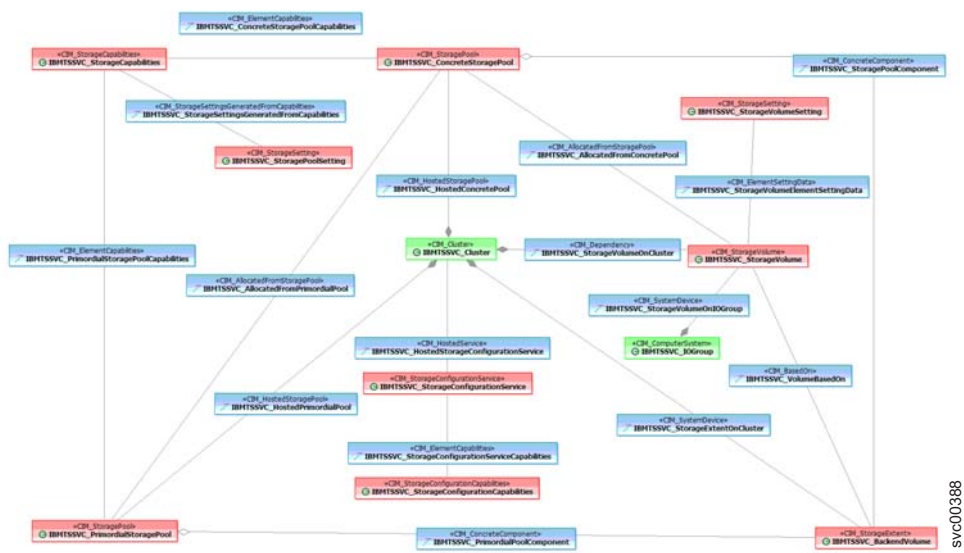


Figure 13. High-level overview of block services of the CIM Agent for the SAN Volume Controller.

Chapter 2. Performing storage configuration

The following sections describe how to use the Common Information Model (CIM) Agent object class instances to complete basic storage configuration tasks.

The following basic storage configuration tasks are discussed:

- Adding a node to a cluster
- Creating or modifying a storage pool
- Creating or modifying a storage volume

Storage configuration

Storage configuration is the mapping of the back-end storage to the storage pools and the allocation of volumes from the pools.

In the Common Information Model (CIM) Agent for the SAN Volume Controller, storage configuration involves three layers of objects: back-end, middle and front-end. The objects in the *back-end* layer contain the back-end controllers and volumes, those in the *middle* layer contain the storage pools, and those in the *front-end* layer contain the storage volumes that are exposed to the hosts.

Performing basic storage configuration

The IBMTSSVC_StorageConfigurationService class provides the CreateOrModifyStoragePool() and CreateOrModifyElementFromStoragePool() methods for performing basic storage configuration.

You can use the CreateOrModifyStoragePool() method to create an IBMTSSVC_StoragePool and add or remove an IBMTSSVC_BackendVolume. You can use the CreateOrModifyElementFromStoragePool() method to allocate, expand, or shrink an IBMTSSVC_StorageVolume from an IBMTSSVC_StoragePool.

You must complete the initial setup of the SAN Volume Controller. That means, you have already created and added clusters to the Common Information Model Object Manager (CIMOM) configuration file of the CIM Agent, and as a result, the Common Information Model (CIM) Agent has discovered all the back-end volumes that are required for the storage configuration.

Perform the following tasks to complete basic storage configuration:

1. Add a node to the cluster.
2. Create a storage pool.
3. Modify the storage pool.
4. Create a storage volume.
5. Modify a storage volume.

Adding a candidate node to a cluster

You can add an IBMTSSVC_CandidateNode to an existing IBMTSSVC_Cluster.

Perform the following steps to add an IBMTSSVC_CandidateNode to an existing IBMTSSVC_Cluster:

1. Obtain the reference (CIMObjectPath) of the IBMTSSVC_Cluster to which you want to add an IBMTSSVC_CandidateNode.
2. Obtain the Reference for the IBMTSSVC_CandidateNode instance.
3. Locate the IBMTSSVC_ClusteringService instance that is associated with the IBMTSSVC_Cluster by traversing the IBMTSSVC_ClusteringServiceForSystem association.
4. Invoke the IBMTSSVC_ClusteringService.AddNode() method. The AddNode method has the parameter CandidateNode Ref, and the IOGroup Ref to which you want to add the Node. Every node must be in an IOGroup and each IOGroup can only contain two nodes.

Creating a new storage pool

The IBMTSSVC_StorageConfigurationService class provides the methods for creating a new IBMTSSVC_StoragePool.

Perform the following steps to create a new IBMTSSVC_StoragePool instance:

1. Obtain the reference (CIMObjectPath) of an IBMTSSVC_StorageConfigurationService instance that is associated with the IBMTSSVC_Cluster in which you will create the new storage pool by traversing the IBMTSSVC_HostedStorageConfigurationService association.
2. Invoke the IBMTSSVC_StorageConfigurationService.CreateOrModifyStoragePool method while you specify the Extent[] parameter with a list of IBMTSSVC_BackendVolume instances.

The Extent[] parameter is a string array that contains the representation of the CIMObjectPath to an IBMTSSVC_BackendVolume.

You can also just specify the size and the CIM Agent performs a best fit Heuristic to match it. You can specify the Name of the pool using the ElementName Parameter and the Block Size using the BlockSize parameter.

Modifying a storage pool

You can modify an IBMTSSVC_ConcreteStoragePool instance by changing the pool name and adding or removing an IBMTSSVC_BackendVolume instance from the pool.

Perform the following steps to modify an IBMTSSVC_ConcreteStoragePool instance:

1. Select the IBMTSSVC_ConcreteStoragePool instance that you want to modify from an IBMTSSVC_Cluster.
2. Identify the IBMTSSVC_StorageSettingPool instance that contains the parameter settings of the IBMTSSVC_ConcreteStoragePool Setting instance. You can do this by calling the IBMTSSVC_StorageCapabilities.CreateSetting() method or by enumerating the IBMTSSVC_StoragePoolSetting that is associated through IBMTSSVC_StorageSettingsGeneratedFromCapabilities to the IBMTSSVC_StorageCapabilities that is associated to the IBMTSSVC_ConcreteStoragePool that is being modified.
3. Invoke the IBMTSSVC_ConcreteStoragePool .ModifyInstance() method to change the name of the selected IBMTSSVC_ConcreteStoragePool instance.
4. If necessary, you can further modify the IBMTSSVC_ConcreteStoragePool by adding or removing an IBMTSSVC_BackendVolume instance to the pool.

Creating a new storage volume

In the Common Information Model (CIM) Agent for the SAN Volume Controller, the `IBMTSSVC_StorageConfigurationService` class provides all the methods that are required for creating, modifying, and deleting an `IBMTSSVC_StorageVolume` instance.

Perform the following steps to create a new `IBMTSSVC_StorageVolume` instance:

1. Obtain the reference (CIMObjectPath) of the `IBMTSSVC_StorageConfigurationService` instance that is associated with the `IBMTSSVC_Cluster` to which you will assign the new volume.
2. Invoke the `IBMTSSVC_StorageConfigurationService.CreateOrModifyElementFromStoragePool()` method to create the new `IBMTSSVC_StorageVolume` with the following parameter specifications:
 - The Virtualization Type is set using the `VirtualizationType` parameter (0,1,2 for striped, sequential or image).
 - A Format flag can be used to specify that the volume is formatted on creation or expansion.
 - You can specify the `BackendVolumes` to place the extents for the volume using the `BackendVolume REF` parameter.
 - The `PreferredNode` parameter is used to set the preferred node for the volume.
 - The `UnitDeviceID` parameter can be used to set the Volume's Unit Device ID on clusters that run software level 4.1.0 or higher.
 - The `ElementName` parameter can be used to set the Volumes Name at creation.
 - a. Set `ElementType` to 2.
 - b. Set `Size` to the desired volume size in bytes.
 - c. Obtain the reference (CIMObjectPath) of the `IBMTSSVC_ConcreteStoragePool` instance from which you will allocate an `IBMTSSVC_StorageVolume`.
 - d. Set `InPool` to the reference (obtained in the previous step) of the pool from which the volume will be allocated.

Chapter 3. Performing Copy Services

This chapter describes how you can use the Common Information Model Agent object class instances to establish new Copy Services relationships.

Copy Services

FlashCopy, Global Mirror, and Metro Mirror are Copy Services that are provided by the SAN Volume Controller.

These Copy Services are available to all supported hosts that are connected to the SAN Volume Controller.

The FlashCopy service enables you to make an instant, point-in-time copy of a source IBMTSSVC_StorageVolume instance to a target IBMTSSVC_StorageVolume instance. The synchronous copy service (Metro Mirror) provides a consistent copy of the source IBMTSSVC_StorageVolume on the target IBMTSSVC_StorageVolume. Data is written to the target volume synchronously after it is written to the source volume, both of which can belong to the same IBMTSSVC_Cluster instance or different IBMTSSVC_Cluster instances. The asynchronous copy service (Global Mirror) provides a copy of the source IBMTSSVC_StorageVolume on the target IBMTSSVC_StorageVolume. Data is written to the target volume asynchronously after it is written to the source volume, both of which can belong to the same IBMTSSVC_Cluster instance or different IBMTSSVC_Cluster instances.

Creating a new FlashCopy relationship between storage volumes

The IBMTSSVC_StorageConfigurationService class provides the methods for establishing a FlashCopy relationship between two IBMTSSVC_StorageVolume instances that are the same size and belong to the same IBMTSSVC_Cluster instance.

Perform the following steps to create a FlashCopy relationship between two IBMTSSVC_StorageVolume instances:

1. Select an IBMTSSVC_StorageVolume instance as the source volume for the desired FlashCopy relationship.
2. Select a valid IBMTSSVC_StorageVolume as a target.
Make sure that the source IBMTSSVC_StorageVolume and target IBMTSSVC_StorageVolume instances belong to the same IBMTSSVC_Cluster instance.
3. Retrieve the IBMTSSVC_StorageConfigurationService instance that is associated with the IBMTSSVC_Cluster instance to which the selected IBMTSSVC_StorageVolume instances belong.
4. Invoke the IBMTSSVC_StorageConfigurationService.AttachReplica() method with the following parameter specifications:
 - a. Set SourceElement to the reference (CIMObjectPath) of the source IBMTSSVC_StorageVolume.
 - b. Set TargetElement to the reference (CIMObjectPath) of the target IBMTSSVC_StorageVolume.
 - c. Optionally set ElementName to the name of the synchronization.

- d. Optionally set BackgroundCopyRate to the desired priority of the background copy rate in percent (0 - 100%).
- e. Optionally specify Set to add the newly created FlashCopySynchronization to the set. If you specify a null value, the newly created FlashCopySynchronization will not be a member of a synchronized set.
- f. Optionally set CopyType to 5. This sets AutoDelete to true, which automatically deletes the FlashCopy mapping after the background copy is complete.
- g. If you do not want to automatically delete FlashCopy mappings, Set CopyType to 4.

The source IBMTSSVC_StorageVolume and target IBMTSSVC_StorageVolume instances are now connected through the IBMTSSVC_LocalStorageSynchronized association.

Creating a FlashCopy relationship for a synchronized set

The IBMTSSVC_StorageConfigurationService class provides the methods for establishing a FlashCopy relationship between two IBMTSSVC_StorageVolume instances and then adding it to an IBMTSSVC_FlashCopySynchronizedSet instance.

Perform the following steps to create a FlashCopy relationship between two IBMTSSVC_StorageVolume instances and add it to an IBMTSSVC_FlashCopySynchronizedSet instance:

1. Select an IBMTSSVC_StorageVolume instance as the source volume for the desired FlashCopy relationship.
2. Select a valid IBMTSSVC_StorageVolume as a target. Valid volumes can be determined using IBMTSSVC_CandidateVolume.

Make sure that the source IBMTSSVC_StorageVolume and target IBMTSSVC_StorageVolume instances belong to the same IBMTSSVC_Cluster instance.

3. Retrieve the IBMTSSVC_StorageConfigurationService instance that is associated with the IBMTSSVC_Cluster instance to which the selected IBMTSSVC_StorageVolume instances belong.
4. Invoke the IBMTSSVC_StorageConfigurationService.AttachReplica() method with the following parameter specifications:
 - a. Set SourceElement to the reference (CIMObjectPath) of the source IBMTSSVC_StorageVolume.
 - b. Set TargetElement to the reference (CIMObjectPath) of the target IBMTSSVC_StorageVolume.
 - c. Optionally set ElementName to the name of the synchronization.
 - d. Optionally set BackgroundCopyRate to the desired priority of the background copy rate in percent (0 - 100%).
 - e. Optionally specify Set to add the newly created FlashCopySynchronization to the set. If you specify a null value, the newly created FlashCopySynchronization will not be a member of a synchronized set.
 - f. Optionally set CopyType to 5. This sets AutoDelete to true, which automatically deletes the FlashCopy mapping after the background copy is complete.
 - g. If you do not want to automatically delete FlashCopy mappings, Set CopyType to 4.

5. Create an `IBMTSSVC_FlashCopySynchronizedSet` instance by invoking the `IBMTSSVC_StorageConfigurationService.CreateSynchronizedSet()` method with the following parameter specifications:
 - a. Set `CopyType` to 4 (flash).
 - b. Optionally set `ElementName` to the name of the newly created `IBMTSSVC_FlashCopySynchronizedSet` instance.
 6. Add the `IBMTSSVC_FlashCopyStorageSynchronized` instance to the `IBMTSSVC_FlashCopySynchronizedSet` instance by invoking the `IBMTSSVC_StorageConfigurationService.ModifySynchronizedSet()` method with the `Operation` parameter set to 0 (add). If the FlashCopy Added to the Set is `CopyType` 5, the Set becomes `CopyType` 5, and any other FlashCopy mappings that are added to the Set must have `CopyType` 5 or the add fails. Similarly, if a Set contains a FlashCopy of `CopyType` 4, all other FlashCopy mappings in the set must be of `CopyType` 4 or the Modify fails.
- The synchronization must belong to the same cluster as the hosting service.

Creating a synchronous copy relationship between volumes in the same cluster

The `IBMTSSVC_StorageConfigurationService` class provides the methods for creating a synchronous copy relationship between a source `IBMTSSVC_StorageVolume` and a target `IBMTSSVC_StorageVolume`.

Perform the following steps to create the synchronous copy relationship:

1. Select an `IBMTSSVC_StorageVolume` instance as the source volume for the desired synchronous copy relationship.
2. Select an `IBMTSSVC_StorageVolume` instance as the target volume.
3. Obtain the reference (`CIMObjectPath`) of the `IBMTSSVC_StorageConfigurationService` instance that is associated with the `IBMTSSVC_Cluster` instance to which the selected volumes belong.
4. Invoke the `IBMTSSVC_StorageConfigurationService.AttachReplica()` method with the following parameter specifications:
 - a. Set `SourceElement` to the reference (`CIMObjectPath`) of the source `IBMTSSVC_StorageVolume` instance.
 - b. Set `TargetElement` to the reference (`CIMObjectPath`) of the target `IBMTSSVC_StorageVolume`.
 - c. Optionally set `ElementName` to the name of the synchronization.
 - d. Set `CopyType` to 3 for Synchronous and 2 for Asynchronous.

The source `IBMTSSVC_StorageVolume` instance and the target `IBMTSSVC_StorageVolume` are now connected through the `RemoteStorageSynchronized` association.

Creating a synchronous copy relationship between volumes in different clusters

The `IBMTSSVC_StorageConfigurationService` class provides the methods for creating a synchronous copy relationship between a source `IBMTSSVC_StorageVolume` instance and a target `IBMTSSVC_RemoteStorageVolume` instance belonging to different `IBMTSSVC_Cluster` instances.

Perform the following steps to create a synchronous copy relationship between two volumes with the source located in a local cluster and the target located in a remote cluster:

1. Identify an `IBMTSSVC_Cluster` instance as the source cluster for the desired synchronous copy relationship.
2. Obtain the reference (`CIMObjectPath`) of the `IBMTSSVC_StorageConfigurationService` instance that is associated with the source cluster.
3. Identify the `IBMTSSVC_RemoteCluster` on which you want the synchronous copy to reside by traversing the `IBMTSSVC_ClusterScopeRemoteCluster` association.
4. Invoke the `IBMTSSVC_StorageConfigurationService.CreateRemoteClusterPartnership()` method with the following parameter specifications:
 - a. Set `RemoteCluster` to the reference (`CIMObjectPath`) of the `IBMTSSVC_RemoteCluster` instance.
 - b. Optionally set `Bandwidth` to the desired bandwidth in megabytes (MB).
Make sure to issue the method from both the source and candidate clusters to establish a fully configured partnership; otherwise, the synchronous copy relationship cannot be established.
5. Select an `IBMTSSVC_StorageVolume` as the source volume from the source `IBMTSSVC_Cluster`.
6. Select an `IBMTSSVC_RemoteVolume` as the target volume from the `IBMTSSVC_RemoteCluster`. (`IBMTSSVC_StorageVolume` instances on the remote cluster are seen on the local cluster as `IBMTSSVC_RemoteVolume` instance). To determine a candidate volume, use the `IBMTSSVC_CopyCandidate` association from the Source Volume.
7. Invoke the `IBMTSSVC_StorageConfigurationService.AttachReplica()` method with the following parameter specifications:
 - a. Set `SourceElement` to the reference (`CIMObjectPath`) of the source `IBMTSSVC_StorageVolume` instance.
 - b. Set `TargetElement` to the reference (`CIMObjectPath`) of the target `IBMTSSVC_RemoteVolume`.
 - c. Optionally set `ElementName` to the name of the synchronization.
 - d. Set `CopyType` to 3.

The source `IBMTSSVC_StorageVolume` instance and the target `IBMTSSVC_StorageVolume` or `IBMTSSVC_RemoteVolume` instance are now connected through the `IBMTSSVC_SyncCopyStorageSynchronizedSet` association.

Chapter 4. Network considerations

This chapter describes the two methods ICAT uses to publish its services. The CIM Agent service can be published through service location protocol (SLP) based discovery. The user interface connection information is published by an instance of the RemoteServiceAccessPoint that the CIM Agent provides.

SLP based discovery

The CIMOM automatically registers its IP address with the SLP; however, you can manually modify the registration.

In an environment with multiple network adapters, the SLP Service Agent might register the CIM Agent with the IP of a network adapter in a different subnet than the management application. As a result, the management application cannot discover the CIM Agent.

The example below illustrates why this occurs:

- The management application runs in subnet A.
- The CIM Agent machine has adapters for subnet A and subnet B.
- Using SLP based discovery, the CIM Agent is registered for subnet B.
- When the management application runs discovery, it detects the CIM Agent SLP registration with the IP of subnet B.
- The management application's connection attempt to the CIM Agent fails because the IP of subnet B cannot be reached from subnet A.

To correct this issue, you can manually register the IP with the SLP. To manually register the IP with the SLP, you must set an attribute within the **provider.configuration** file.

Perform the following steps to set the attribute:

1. Stop the CIM Agent service.
2. Go to the CIM Agent installation directory. For example, C:\Program Files\IBM\svconconsole\cimom\config
3. Open the provider.configuration file.
4. Find the attribute: preferredslpregip=Off.
If this attribute is not set, the CIM Agent automatically detects the primary network card.
5. Set preferredslpregip=<Network Adapter's IP Address>.
This changes the IP address to the correct network adapter and allows the management application to discover the CIM Agent. Ensure that you do not add any spaces to this line.
6. Restart the CIM Agent service.

RemoteServiceAccessPoint instance

In an environment with multiple network cards, it might be necessary to manually set the connection data of the RemoteServiceAccessPoint (RSAP) instance.

The `IBMTSSVC_RemoteServiceAccessPoint` class hosts the information necessary for connection to the Web user interface. Management applications can obtain an instance of the RSAP from the CIMOM to launch the user interface through the Web.

You can manually set the connection data of the RSAP. This is helpful in an environment with multiple network cards.

Perform the following steps to set the connection data:

1. Obtain the `IBMSVC_Cluster` instance.
2. Modify the `ConsoleIP` and `ConsolePort` properties through the `Modify` instance on the `Cluster` with a property list that contains the `Properties` that have changed.

The CIM Agent automatically updates the RSAP.

Chapter 5. CIM agent classes and methods

The CIM agent classes are the building blocks of the Common Information Model (CIM) agent and utilize functions such as storage configuration, Copy Services, and logical unit number (LUN) masking.

AccessPoints Class IBMTSSVC_HostedRemoteServiceAccessPoint

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	CIM_ManagedElement		Antecedent represents the independent object in this association.
Dependent	CIM_ManagedElement		Dependent represents the object that is dependent on the Antecedent.

Method Summary

Not applicable.

Method Detail

Not applicable.

AccessPoints Class IBMTSSVC_RemoteServiceAccessPoint

RemoteServiceAccessPoint describes access and addressing information for a remote connection that is known to a local network element.

Description

This information is scoped and contained by the local network element.

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_HostedRemoteServiceAccessPoint

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	CreationClassName indicates the name of the class or the subclass used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string		The Name property uniquely identifies the ServiceAccessPoint and provides an indication of the functionality that is managed. This functionality is described in more detail in the Description property of the object.
<i>SystemCreationClassName</i>	string	Max Length 256	The CreationClassName of the scoping System.
<i>SystemName</i>	string	Max Length 256	The Name of the scoping System.
AccessInfo	string		Access or addressing information or a combination of this information for a remote connection. This information can be a host name, network address, or similar information.

Id	Type	Range	Description
InfoFormat	uint16	Other 1 Host Name 2 IPv4 Address 3 IPv6 Address 4 IPX Address DECnet Address 6 SNA Address 7 Autonomous System Number 8 MPLS Label 9 IPv4 Subnet Address 10 IPv6 Subnet Address 11 IPv4 Address Range 12 IPv6 Address Range 13 Dial String 100 Ethernet Address 101 Toke Ring Address 102 ATM Address 103 Frame Relay Address 104 URL 200 FDQN 201 User FQDN 202 DER ASN1 DN 203 DER ASN1 GN 204 KEY ID 205 DMTF Reserved .. Vendor Reserved 32768..65535	An enumerated integer that describes the format and interpretation of the AccessInfo property.
OtherInfoFormat Description	string		Describes the format when the property InfoFormat is set to 1 (Other).
ConsoleIP	string		The IP address of the management console.
ConsolePort	string		
ElementName	string		

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_RemoteServiceAccessPoint
AccessInfo, InfoFormat, OtherInfoFormatDescription

Method Summary

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Method Detail

Not applicable.

Authorization Class IBMTSSVC_User

The IBMTSSVC_User class defines the authentication and authorization capabilities for users.

Description

There is always an instance of the IBMTSSVC_User class that uses the name superuser and has the role of administrator. Only the IBMTSSVC_Users instance that has the name superuser can create, modify, and delete other IBMTSSVC_Users instances. All IBMTSSVC_User instances can change the password that is defined for the instance. For role based security, use the IBMTSSVC_User instance instead of the PG_User instance.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
name	string		
role	uint16	Administrator 0 Service 1 CopyOperator 2 Monitor 3	Clients must have the proper authorization to run extrinsic methods and modify write properties. The role assigned to an IBMTSSVC_User must be compatible with the role that is required by the operation.

Method Summary

The following methods are available for this class:

Name	Description
delete	Deletes the IBMTSSVC_User instance.
make	Creates a new IBMTSSVC_User instance.
modifyPassword	Modifies the password of the IBMTSSVC_User instance.
modifyRole	Modifies the role of the IBMTSSVC_User instance.

Method Detail

delete

Description

Deletes the IBMTSSVC_User instance.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
none			
Out			
none			
Return codes			
none			

make

Description

Creates a new IBMTSSVC_User instance. Both the name and the password parameters are required. The default role is monitor.

Parameters

The following parameters are available for this method:

modifyPassword

Description

Modifies the password of the IBMTSSVC_User instance.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
oldPassword	string		
newPassword	string		
Out			
none			
Return codes			
none			

modifyRole

Description

Modifies the role of the IBMTSSVC_User instance.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
role	uint16		
Out			
none			
Return codes			
none			

BlockServices Class IBMTSSVC_BackendVolume

A backend volume is a SCSI LUN that is exposed on the fabric by a storage controller (typically a RAID array) to the SAN Volume Controller.

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_BackendControllerForVolume
- IBMTSSVC_LogicalIdentity
- IBMTSSVC_PrimordialPoolComponent
- IBMTSSVC_ProtocolControllerAccessUnit
- IBMTSSVC_SCSIInitiatorTargetLogicalUnitPath
- IBMTSSVC_StorageConfigurationService
- IBMTSSVC_StorageExtentOnCluster
- IBMTSSVC_StoragePoolComponent
- IBMTSSVC_VolumeBasedOn

Properties

The following properties are available for this class:

Property	Type	Qualifier	Description
CreationClassName	string	Max Length 256	The name of the class or subclass that is used to create an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
DeviceID	string	Max Length 64	The ID of the backend volume. A numerical value which is unique for the BackendVolume class.
<i>SystemCreationClass Name</i>	string	Max Length 256	The name that is used for the CreationClassName property of the scoping system.
<i>SystemName</i>	string	Max Length 256	The system name of the scoping system.
Access	uint16	Unknown 0 Readable 1 Writeable 2 Read/Write Supported 3 Write Once 4	The access levels that specifies if the media is readable.

Property	Type	Qualifier	Description
AdditionalAvailability	uint16	Other 1 Unknown 2 Running/Full Power 3 Warning 4 In Test 5 Not Applicable 6 Power Off 6 Offline 8 Off Duty 9 Degraded 10 Not Installed 11 Install Error 12 Power Save - Unknown 13 Power Save - Low Power Mode 14 Power Save - Standby 15 Power Cycle 16 Power Save - Warning 17 Paused 18 Not Ready 19 Not Configured 20 Quiesced 21	The availability and status of the device in addition to what is specified in the Availability property. The Availability property denotes the primary status and availability of the device. In cases where this is not sufficient to denote the complete status of the device, the AdditionalAvailability property provides further information.
BlockSize	uint64		The size (in bytes) of the blocks that form this storage extent. If the block size is variable, the maximum block size must be specified. If the block size is unknown or if a block concept is not valid, enter a 1.
ConsumableBlocks	uint64		The maximum number of blocks that are available for consumption when layering StorageExtents using the BasedOn association. This property only has meaning when this StorageExtent is an Antecedent reference in a BasedOn relationship.
DataOrganization	uint16	Other 0 Unknown 1 Fixed Block 2 Variable Block 3 Count Key Data 4	The type of data organization that is used.
DataRedundancy	uint16		The number of complete copies of data that is currently maintained.
DeltaReservation	uint8		The current value for Delta reservation. This is a percentage that specifies the amount of space that you want to reserve in a replica to save changes in the cache.
Description	string		Provides a textual description of the object.

Property	Type	Qualifier	Description
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	Indicates the enabled and disabled states of an element. It can also indicate the transitions between these requested states. For example, shutting down (4) and starting (10) are transient states between enabled and disabled. The Enabled (2) state indicates that the element is or might be issuing commands. The element can process any commands that are already in the cue, and queues any new requests. The Disabled (3) state indicates that the element cannot issue any commands and drops any new requests. The Shutting Down (4) state indicates that the element is in the process of transitioning to a Disabled state. The Not Applicable (5) state indicates that the element does not support being enabled or disabled. The Enabled but Offline (6) state indicates that the element might be completing commands. In this state, the element drops any new requests. The Test (7) state indicates that the element is in a test state. The Deferred (8) state indicates that the element might be completing commands and queues any new requests. The Quiesce (9) state indicates that the element is enabled but in a restricted mode. The behavior of the element is similar to the Enabled state, but it only processes a restricted set of commands. All other requests are queued. The Starting (10) state indicates that the element is in the process of going to an Enabled state. New requests are queued.
ErrorMethodology	string		A free-form string that describes the type of error detection and correction that is supported by this Storage Extent.

Property	Type	Qualifier	Description
ExtentStatus	uint16	Other 0 Unknown 1 None/Not Applicable 2 Broken 3 Data Lost 4 Dynamic Reconfig 5 Exposed 6 Fractionally Exposed 7 Partially Exposed 8 Protection Disabled 9 Reaying 10 Rebuild 11 Recalculate 12 Spare in Use 13 Verify in Progress 14 In-Band Access Granted 15 Imported 16 Exported 17 DMTF Reserved 18..32767 Vendor Reserved 32768..65535	Records status information in addition to what is captured in the Availability and StatusInfo properties, inherited from ManagedSystem Element.
IdentifyingDescriptions	string		An array of free-form strings that provide explanations and details behind the entries in the OtherIdentifyingInfo array. Each entry of this array is related to an entry in OtherIdentifyingInfo array that is located in the same index.
IsBasedOnUnderlying Redundancy	boolean		Indicates if the underlying storage extent(s) participate in a StorageRedundancyGroup.
Name	string	Max Length 1024	The unique label by which the object is known.
NoSinglePointOfFailure	boolean		Indicates whether the no-single-point-of-failure feature exists.
NumberOfBlocks	uint64		The maximum number of blocks, of size BlockSize, that are available for consumption when layering StorageExtents using the BasedOn association. This property only has meaning when this StorageExtent is an Antecedent reference in a BasedOn relationship.

Property	Type	Qualifier	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved ... Vendor Reserved 0x8000..	The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.
OtherEnabledState	string		The element's enabled or disabled state when EnabledStatus is set to Other (1). The state is null when EnabledStatus is set to a value other than 1.
OtherIdentifyingInfo	string	Max Length 256	Captures data that can be used to identify a LogicalDevice.

Property	Type	Qualifier	Description
PackageRedundancy	uint16		The number of physical packages that can currently fail without data loss. For example, in the storage domain, this might be disk spindles.
Primordial	boolean		Indicates that the containing System does not have the ability to create or delete this operational element. This is important because StorageExtents are assembled into higher-level abstractions using the BasedOn association. Although the higher-level abstractions can be created and deleted, the most basic hardware-based storage entities cannot. They are physically realized as part of the System or are actually managed by some other System and imported as if they were physically realized. In other words, a primordial StorageExtent exists but is not created by its System and conversely a non-primordial StorageExtent is created in the context of its System. For StorageVolumes, this property is generally false. One use of this property is to enable algorithms that aggregate StorageExtent.ConsumableSpace across all, StorageExtents but that also want to distinguish the space that underlies Primordial StoragePools. Since implementations are not required to surface all component StorageExtents of a StoragePool, this information is not accessible in any other way.
Purpose	string		A free-form string the describes the media or its use.

Property	Type	Qualifier	Description
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 12 DMTF Reserved ... Vendor Reserved 32768..65535	An integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by the EnabledState property. This property is provided to compare the last requested and current enabled or disabled states. When the EnabledState property is set to 5 ("Not Applicable"), the RequestedState property has no meaning. By default, the RequestedState of the element is 5 ("No Change"). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration. There are two new values in RequestedState that build on the EnabledState property states. These states are Reboot (10) and Reset (11). The Reboot state refers to moving from a Shut Down state to an Enabled state. Reset indicates that the element is first Disabled and then Enabled. The Shut Down state requests an orderly transition to the Disabled state and can involve removing power, to completely erase any existing states. The Disabled state requests an immediate disabling of the element, such that it cannot run or accept any commands or process requests. This property is set as the result of a method invocation (such as Start or StopService on the CIM_Service class), or can be overridden and defined as writeable in a subclass. The method approach is considered superior to a writeable property because it allows an explicit invocation of the operation and the return of a result code. A particular instance of the EnabledLogicalElement property might not support the RequestedStateChange property. If this occurs, the value Not Applicable (12) is used.
SequentialAccess	boolean		Indicates if the storage is sequentially accessed by a MediaAccessDevice object. A TapePartition object is an example of a sequentially accessed StorageExtent. Storage volumes, disk partitions, and logical disks represent randomly accessed extents.

Property	Type	Qualifier	Description
StatusDescriptions	string		Describes the various OperationalStatus array values. For example, if the OperationalStatus property is in the Stopping state, this property can contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in the OperationalStatus property.
UniqueID	string		The SCSI VPD information for this volume.
ActiveWWPN	string		The name of the volume's active WWPN.
Capacity	uint64		The total capacity of the BackendVolume.
Caption	string	Max Length 64	A short textual description of the object.
ControllerName	string		The name of the volume's back-end controller.
ElementName	string	Max Length 15	The BackendVolume's user-friendly name.
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value that indicates an administrator's default or startup configuration for the Enabled State of an element. By default, the element is set to the Enabled (2) state.
MaxPathCount	uint32		The maximum fibre-channel path count to the BackendVolume.
Mode	uint32	Unmanaged 0 Router restricted 1 Managed 2 Image 3 Router config 6 Remote Copy 7	The mode of the BackendVolume.
NativeStatus	uint16	Offline 0 Online 1 Degraded 2 Excluded 3	The native operational state for the BackendVolume.
PathCount	uint32		The current fibre-channel path count to the BackendVolume.
PoolID	string		The ID of the associated storage pool.
Poolname	string		The name of the associated storage pool.
PreferredWWPN	string		The name of the volume's preferred WWPN.
QuorumIndex	uint8		The quorum index of the BackendVolume. Valid indices are 0, 1, 2. An index of 3 indicates that this volume is not used as a quorum disk.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement

EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_LogicalDevice

AdditionalAvailability, Availability, ErrorCleared, ErrorDescription, IdentifyingDescriptions, LastErrorCode, MaxQuiesceTime, OtherIdentifyingInfo, PowerManagementCapabilities, PowerManagementSupported, PowerOnHours, StatusInfo, TotalPowerOnHours

Inherited from class CIM_StorageExtent

Access, BlockSize, ConsumableBlocks, DataOrganization, DataRedundancy, DeltaReservation, ErrorMethodology, ExtentStatus, IsBasedOnUnderlyingRedundancy, NoSinglePointOfFailure, NumberOfBlocks, PackageRedundancy, Primordial, Purpose, SequentialAccess

Method Summary

The following method is available for this class:

Name	Description
GetFreeExtents	This method can be used to retrieve how much free extents are available on this BackendVolume.

Inherited from class CIM_EnabledLogicalElement

RequestStateChange

Inherited from class CIM_LogicalDevice

EnableDevice, OnlineDevice, QuiesceDevice, Reset, RestoreProperties, SaveProperties, SetPowerState

Method Detail

GetFreeExtents

Description

This method can be used to retrieve how much free extents are available on this BackendVolume.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
FreeExtents	uint64		The free extents that are available.
Out			
FreeExtents	uint64		The free extents that are available.
Return Codes			
None			

BlockServices Class IBMTSSVC_StoragePoolSetting

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_StorageSettingsGeneratedFromCapabilities

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
Caption	string	Max Length 64	A short textual description (one-line string) of the object.

Id	Type	Range	Description
ChangeableType	uint16	Fixed Not Changeable 0 Changeable - Transient 1 Changeable - Persistent 2	An enumeration that indicates the type of setting. The Fixed - Not Changeable settings are primordial. These setting are defined at the implementor of the class. Changeable - Transient is the type of setting that is produced by the CreateSetting method. You can subsequently request that the implementation persist the generated and potentially modified setting indefinitely. Only the Changeable - Transient setting is converted to a Changeable-Persistent setting.
DataRedundancyGoal	uint16		Describes the desired number of complete copies of data to be maintained. For example, RAID 5 where 1 copy is maintained and RAID 1 where 2 or more copies are maintained. Possible values are 1 to n. The bounds for redundancy are defined using the DataRedundancyMax and DataRedundancyMin properties.
DataRedundancyMax	uint16		Describes the maximum number of complete copies of data to be maintained. For example, RAID 5 where 1 copy is maintained and RAID 1 where 2 or more copies are maintained. Possible values are 1 to n. The desired redundancy is specified using DataRedundancyGoal, while the minimum is defined by DataRedundancyMin.
DataRedundancyMin	uint16		Describes the minimum number of complete copies of data to be maintained. For example, RAID 5 where 1 copy is maintained and RAID 1 where 2 or more copies are maintained. Possible values are 1 to n. The desired redundancy is specified using DataRedundancyGoal property, while the maximum is defined by DataRedundancyMax property.

Id	Type	Range	Description
DeltaReservationGoal	uint8		A number between 1 (1%) and a 100 (100%) that specifies the desired amount of space that you want to reserve in a replica for caching changes. For a complete copy, this value is 100 (100%). The bounds for the reservation are defined using the DeltaReservationMax and DeltaReservationMin properties.
DeltaReservationMax	uint8		A number between 1 (1%) and a 100 (100%) that specifies the maximum amount of space that you want to reserve in a replica for caching changes. For a complete copy, this value is 100 (100%). The desired reservation is specified using DeltaReservationGoal property, while the minimum is defined by DeltaReservationMin property.
DeltaReservationMin	uint8		DeltaReservationMin is a number between 1 (1%) and a 100 (100%) which specifies the minimum amount of space that should be reserved in a replica for caching changes. For a complete copy this would be 100%. The desired reservation is specified using DeltaReservationGoal property, while the maximum is defined by DeltaReservationMax property.
ElementName	string		The user friendly name for this instance of SettingData. In addition, the user friendly name can be used as an index property for a search of query. The Name does not have to be unique within a namespace.
IntendedUsage	uint16		Indicates that a storage element is created for a specialized use.
NoSinglePointOfFailure	boolean		Indicates the desired value for No Single Point of Failure. If set to false, there is a single point of failure. If set to true, there is no single point of failure.

Id	Type	Range	Description
PackageRedundancyGoal	uint16		Describes the desired number of redundant packages to be used. For example, in the storage domain, package redundancy describes how many disk spindles can fail without data loss including one spare. For example, RAID5 with a spare disk has a PackageRedundancy of 2. Possible values are 0 to n. The bounds for redundancy are defined using the PackageRedundancyMax and PackageRedundancyMin properties.
PackageRedundancy Max	uint16		Describes the maximum number of redundant packages to be used. For example, in the storage domain, package redundancy describes how many disk spindles can fail without data loss including one spare. For example, RAID5 with a spare disk has a PackageRedundancy of 2. Possible values are 0 to n. The desired redundancy is specified using the PackageRedundancyGoal property, while the minimum is defined by the PackageRedundancyMin property.
PackageRedundancy Min	uint16		Describes the minimum number of redundant packages to be used. For example, in the storage domain, package redundancy describes how many disk spindles can fail without data loss including one spare. For example, RAID5 with a spare disk has a PackageRedundancy of 2. Possible values are 0 to n. The desired redundancy is specified using the PackageRedundancyGoal property, while the maximum is defined by the PackageRedundancyMax property.
PersistentReplica	boolean		If set to true, the replica continues during a power down or reset.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_SettingData

ElementName

Inherited from class CIM_StorageSetting

ChangeableType, DataRedundancyGoal, DataRedundancyMax, DataRedundancyMin, DeltaReservationGoal, DeltaReservationMax, DeltaReservationMin, ExtentStripeLength, ExtentStripeLengthMax, ExtentStripeLengthMin, NoSinglePointOfFailure, PackageRedundancyGoal, PackageRedundancyMax, PackageRedundancyMin, ParityLayout, UserDataStripeDepth, UserDataStripeDepthMax, UserDataStripeDepthMin

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_StoragePoolComponent**Description****Subclasses**

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Key			
GroupComponent	IBMTSSVC_ConcreteStoragePool		
PartComponent	IBMTSSVC_BackendVolume		

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_VolumeBasedOn

Associates StorageVolumes with the BackendVolumes that the data resides on.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Backend Volume	Min 1 Max1	The BackendVolume that contains data from the Dependent property.
Dependent	IBMTSSVC_Storage Volume		The StorageVolume.
ExtentCount	uint64		The number of extents that are allocated on the BackendVolume for the StorageVolume.

Inherited from class CIM_BasedOn

EndingAddress, OrderIndex, StartingAddress

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_HostedConcretePool

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Cluster	Min 1 Max 1	
PartComponent	IBMTSSVC_ConcreteStorage Pool	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_AllocatedFromConcretePool

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_ConcreteStorage Pool	Min 1 Max 1	
Dependent	IBMTSSVC_StorageVolume	Min 1 Max 1	

Inherited from class CIM_AllocatedFromStoragePool

SpaceConsumed

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_AllocatedFromPrimordialPool

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

Id	Type	Range	Description
Antecedent	IBMTSSVC_PrimordialStoragePool	Min 1 Max 1	
Dependent	IBMTSSVC_ConcreteStoragePool	Min 1 Max 1	

Inherited from class CIM_AllocatedFromStoragePool
SpaceConsumed

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_HostedStorageConfigurationService

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	CIM_ManagedElement		Antecedent represents the independent object in this association.
Dependent	CIM_ManagedElement		Dependent represents the object that is dependent on the Antecedent.

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_PrimordialStoragePoolCapabilities

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Capabilities	IBMTSSVC_Storage Capabilities	Min 1 Max 1	
ManagedElement	IBMTSSVC_Primordial StoragePool	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_PrimordialPoolComponent

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_PrimordialStorage Pool		
PartComponent	IBMTSSVC_BackendVolume		

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_StorageVolumeElementSettingData

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
ManagedElement	IBMTSSVC_StorageVolume	Min 1 Max 1	
SettingData	IBMTSSVC_StorageVolume Setting		
IsCurrent	uint16	Unknown 0 Is Current 1 Is Not Current 2	An enumerated integer that indicates that the referenced setting is currently being used in the operation of the element or that this information is unknown.
IsDefault	uint16	Unknown 0 Is Default 1 Is Not Default 2	An enumerated integer that indicates that the referenced setting is a default setting for the element or that this information is unknown.

Inherited from class CIM_ElementSettingData
IsCurrent, IsDefault

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_StorageVolumeOnCluster

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_StorageVolume	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_StorageVolumeOnIOGroup

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_IOGroup	Min 1 Max 1	The assigned I/O Group.
PartComponent	IBMTSSVC_StorageVolume		The Storage Volume.

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_StorageVolumeSetting

StorageSetting is roughly equivalent to a Service Level Agreement (SLA). This class defines the characteristics, qualities of service and goals when used in a CreateOrModifyElementFromStoragePool or CreateOrModifyStoragePool method in the StorageConfigurationService.

Description

This class specifies a series of properties with maximum and minimum values that define the (inclusive) bounds that the object must maintain. The setting is associated to a StorageVolume, using ElementSetting.

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_StorageVolumeElementSettingData

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the Namespace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's Namespace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
Caption	string	Max Length 64	A short textual description (one-line string) of the object.

Id	Type	Range	Description
ChangeableType	uint16	Fixed-NotChangeable 0 Changeable - Transient 1 Changeable - Persistent 2	An enumeration that indicates the type of setting. Fixed-NotChangeable settings are primordial. These setting are defined at the implementor of the class. The Changeable - Transient setting is produced by the CreateSetting method. A client can subsequently request that the implementation persist the generated and potentially modified setting indefinitely. Only a Changeable - Transient setting can be converted to a Changeable-Persistent setting.
Description	string		Provides a textual description of the object.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
DataRedundancyGoal	uint16		Describes the desired number of complete copies of data to be maintained. For example, RAID 5 where 1 copy is maintained and RAID 1 where 2 or more copies are maintained. Possible values are 1 to n. The bounds for redundancy are defined using the DataRedundancyMax and DataRedundancyMin properties.

Id	Type	Range	Description
DataRedundancyMax	uint16		Describes the maximum number of complete copies of data to be maintained. For example, RAID 5 where 1 copy is maintained and RAID 1 where 2 or more copies are maintained. Possible values are 1 to n. The desired redundancy is specified using DataRedundancyGoal, while the minimum is defined by DataRedundancyMin.
DataRedundancyMin	uint16		Describes the minimum number of complete copies of data to be maintained. For example, RAID 5 where 1 copy is maintained and RAID 1 where 2 or more copies are maintained. Possible values are 1 to n. The desired redundancy is specified using DataRedundancyGoal property, while the maximum is defined by DataRedundancyMax property.
DeltaReservationGoal	uint8		A number between 1 (1%) and a 100 (100%) that specifies the desired amount of space that you want to reserve in a replica for caching changes. For a complete copy, this value is 100 (100%). The bounds for the reservation are defined using the DeltaReservationMax and DeltaReservationMin properties.
DeltaReservationMax	uint8		A number between 1 (1%) and a 100 (100%) that specifies the maximum amount of space that you want to reserve in a replica for caching changes. For a complete copy, this value is 100 (100%). The desired reservation is specified using DeltaReservationGoal property, while the minimum is defined by DeltaReservationMin property.

Id	Type	Range	Description
DeltaReservationMin	uint8		DeltaReservationMin is a number between 1 (1%) and a 100 (100%) which specifies the minimum amount of space that should be reserved in a replica for caching changes. For a complete copy this would be 100%. The desired reservation is specified using DeltaReservationGoal property, while the maximum is defined by DeltaReservationMax property.
IntendedUsage	uint16	Not specialized 2 Special pool for delta replica elements 3 Component extent for delta replica pool 4 Remote mirror target element 5 Local mirror target element 6 Full size snapshot element 7 Delta snapshot element 8 Remote replication buffer element	Indicates that a storage element is created for a specialized use.
NoSinglePointOfFailure	boolean		Indicates the desired value for No Single Point of Failure. If set to false, there is a single point of failure. If set to true, there is no single point of failure.
PackageRedundancyGoal	uint16		Describes the desired number of redundant packages to be used. For example, in the storage domain, package redundancy describes how many disk spindles can fail without data loss including one spare. For example, RAID5 with a spare disk has a PackageRedundancy of 2. Possible values are 0 to n. The bounds for redundancy are defined using the PackageRedundancyMax and PackageRedundancyMin properties.

Id	Type	Range	Description
PackageRedundancyMax	uint16		Describes the maximum number of redundant packages to be used. For example, in the storage domain, package redundancy describes how many disk spindles can fail without data loss including one spare. For example, RAID5 with a spare disk has a PackageRedundancy of 2. Possible values are 0 to n. The desired redundancy is specified using the PackageRedundancyGoal property, while the minimum is defined by the PackageRedundancyMin property.
PackageRedundancyMin	uint16		Describes the minimum number of redundant packages to be used. For example, in the storage domain, package redundancy describes how many disk spindles can fail without data loss including one spare. For example, RAID5 with a spare disk has a PackageRedundancy of 2. Possible values are 0 to n. The desired redundancy is specified using the PackageRedundancyGoal property, while the maximum is defined by the PackageRedundancyMax property.
PersistentReplica	boolean		If set to true, the replication persists during the power off or reset.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_SettingData
ElementName

Inherited from class CIM_StorageSetting
ChangeableType, DataRedundancyGoal, DataRedundancyMax, DataRedundancyMin, DeltaReservationGoal, DeltaReservationMax, DeltaReservationMin, ExtentStripeLength, ExtentStripeLengthMax, ExtentStripeLengthMin, NoSinglePointOfFailure, PackageRedundancyGoal, PackageRedundancyMax, PackageRedundancyMin, ParityLayout, UserDataStripeDepth, UserDataStripeDepthMax, UserDataStripeDepthMin

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_StorageVolume

Description

A device that is presented by the Cluster that can be mapped as a SCSI LUN to host systems on the SAN. A Volume is formed by allocating a set of Extents from a Pool.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_AllocatedFromConcretePool

IBMTSSVC_CopyCandidate

IBMTSSVC_LocalStorageSynchronized

IBMTSSVC_RemoteStorageSynchronized

IBMTSSVC_StorageConfigurationService

IBMTSSVC_StorageVolumeElementSettingData

IBMTSSVC_StorageVolumeOnCluster

IBMTSSVC_StorageVolumeOnIOGroup

IBMTSSVC_SystemVolumeController

IBMTSSVC_VolumeBasedOn

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	The name of the class or the subclass used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.

Id	Type	Range	Description
DeviceID	string	Max Length 64	The ID of the StorageVolume. A numerical value which is unique for instances of the StorageVolume class only.
<i>SystemCreationClassName</i>	string	Max Length 256	The CreationClassName for the scoping system.
<i>SystemName</i>	string	Max Length 256	The IP address of the scoping cluster.
Access	uint16	Unknown 0 Readable 1 Writeable 2 Read/Write Supported 3 Write Once 4	Describes if the media is readable (value=1), writeable (value=2), or both (value=3).
BlockSize	uint64		Size in bytes of the blocks which form this StorageExtent. If variable block size, then the maximum block size in bytes should be specified. If the block size is unknown or if a block concept is not valid (for example, for AggregateExtents, Memory or LogicalDisks), enter a 1.
ConsumableBlocks	uint64		The maximum number of blocks, of size BlockSize, which are available for consumption when layering StorageExtents using the BasedOn association. This property only has meaning when this StorageExtent is an Antecedent reference in a BasedOn relationship. For example, a StorageExtent can be composed of 120 blocks. However, the Extent can use 20 blocks for redundancy data. If another StorageExtent is BasedOn this Extent, only 100 blocks are available. This information (100 blocks is available for consumption) is indicated in the ConsumableBlocks property.
DataOrganization	uint16	Other 0 Unknown 1 Fixed Block 2 Variable Block 3 Count Key Data 4	Type of data organization used.
DataRedundancy	uint16		Number of complete copies of data currently maintained.
DeltaReservation	uint8		Current value for Delta reservation. This is a percentage that specifies the amount of space that you want to reserve in a replica for caching changes.
Description	string		Provides a textual description of the object.

Id	Type	Range	Description
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	An integer enumeration that indicates the enabled and disabled states of an element. This property can also indicate the transitions between these requested states. For example, the values shutting down (4) and starting (10) are transient states between enabled and disabled.
ExtentStatus	uint16	Other 0 Unknown 1 None/Not Applicable 2 Broken 3 Data Lost 4 Dynamic Reconfig 5 Exposed 6 Fractionally Exposed 7 Partially Exposed 8 Protection Disabled 9 Reaching 10 Rebuild 11 Recalculate 12 Spare in Use 13 Verify In Progress 14 DMTF Reserved 15..32767 Vendor Reserved 32768..65535	StorageExtents have additional status information beyond that captured in the OperationalStatus and other properties, inherited from ManagedSystemElement. This additional information is captured in the VolumeStatus property.
FlashCopyMapCount	uint16		The number of FlashCopy Mappings that contain this volume.
IdentifyingDescriptions	string		An array of free-form strings that provide explanations and details behind the entries in the OtherIdentifyingInfo array. Note, each entry of this array is related to the entry in OtherIdentifyingInfo that is located at the same index.
IsBasedOnUnderlyingRedundancy	boolean		True indicates that the underlying StorageExtent(s) participate in a StorageRedundancyGroup.
Name	string		A unique identifier for the Volume. The Page 83 NAA6 type 3 id.

Id	Type	Range	Description
NameFormat	uint16	Unknown 0 Other 1 VPD83NAA6 2 VPD83NAA5 3 VPD83Type2 4 VPD83Type1 5 VPD83Type0 6 SNVM 7 NodeWWN 8 NAA 9 EUI64 10 T10VID 11	This property originally touched on two concepts that are now separated into this property and NameNamespace. Values 2,3,4,5,6, and 8 are retained for backwards compatibility but are deprecated in lieu of the corresponding values in CIM_StorageVolume.NameNamespace. Format of the Name property.
NoSinglePointOfFailure	boolean		Indicates if a single point of failure exists.
NumberOfBlocks	uint64		Total number of logically contiguous blocks, of size Block Size, which form this Extent. The total size of the Extent can be calculated by multiplying BlockSize by NumberOfBlocks. If the BlockSize is 1, this property is the total size of the Extent.
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	The status of the volume.
OtherEnabledState	string		A string that describes the enabled or disabled state of the element when the EnabledState property is set to 1 ("Other"). This property must be set to null when EnabledState is any value other than 1.

Id	Type	Range	Description
OtherIdentifyingInfo	string	Max Length 256	OtherIdentifyingInfo captures additional data, beyond DeviceID information, that could be used to identify a LogicalDevice. One example would be to hold the Operating System's user friendly name for the Device in this property.
OtherNameFormat	string		A string describing the format of the Name property when NameFormat includes the value 1,"Other".
PackageRedundancy	uint16		How many physical packages can currently fail without data loss. For example, in the storage domain, this might be disk spindles.
Primordial	boolean		If true,"Primordial"indicates that the containing System does not have the ability to create or delete this operational element. This is important because StorageExtents are assembled into higher-level abstractions using the BasedOn association. Although the higher-level abstractions can be created and deleted, the most basic, (i.e. primordial), hardware-based storage entities cannot. They are physically realized as part of the System, or are actually managed by some other System and imported as if they were physically realized. In other words, a Primordial StorageExtent exists in, but is not created by its System and conversely a non-Primordial StorageExtent is created in the context of its System. For StorageVolumes, this property will generally be false. One use of this property is to enable algorithms that aggregate StorageExtent.ConsumableSpace across all, StorageExtents but that also want to distinguish the space that underlies Primordial StoragePools. Since implementations are not required to surface all Component StorageExtents of a StoragePool, this information is not accessible in any other way.
Purpose	string		A free form string describing the media and/or its use.

Id	Type	Range	Description
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 12 DMTF Reserved .. Vendor Reserved 32768..65535	An integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. When EnabledState is set to Not Applicable (5), this property has no meaning. By default, the RequestedState of the element is No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration. There are two new values in RequestedState that build on the states of EnabledState. These are the Reboot (10) and Reset (11) states. The Reboot state refers to moving from the Shut Down state to an Enabled state. Reset indicates that the element is first Disabled and then Enabled. A Shut Down requests an orderly transition to the Disabled state, and might involve removing power to completely erase any existing state. The Disabled state requests an immediate disabling of the element. The element does not accept any commands or process any requests. This property is set as the result of a method invocation (such as Start or StopService on CIM_Service), or can be overridden and defined as WRITEable in a subclass. The method approach is considered superior to a WRITEable property because it allows an explicit invocation of the operation and the return of a result code. A particular instance of EnabledLogicalElement might not support RequestedStateChange. If this occurs, the value Not Applicable (12) is used.
SequentialAccess	boolean		Boolean set to TRUE if the Storage is sequentially accessed by a MediaAccessDevice. A TapePartition is an example of a sequentially accessed StorageExtent. StorageVolumes, Disk Partitions and LogicalDisks represent randomly accessed Extents.
StatusDescriptions	string		Strings describing the various OperationalStatus array values. For example, if "Stopping" is the value assigned to OperationalStatus, then this property may contain an explanation as to why an object is being stopped. Note that entries in this array are correlated with those at the same array index in OperationalStatus.
AccessGranted	boolean		This property provides a quick interface for finding Devices with no AuthorizationSubject association to an AccessControlInformation instance; either directly, or via a Controller. True indicates that the Device has granted access to some consumer. False indicates that no access has been granted.
BackendVolumeID	string		The id of the underlying BackendVolume. Only valid if Type="Image"
BackendVolumeName	string		The name of the underlying BackendVolume. Only valid if Type="Image"
CacheMode	uint16	None 0 ReadWrite 1	The volume's cache mode.

Id	Type	Range	Description
CacheState	uint16	{Empty 0 Not empty 1 Corrupt} 2	The volume's cache state.
Caption	string	Max Length 64	A short textual description (one- line string) of the object.
Controlled	boolean		This property provides a quick interface for finding Devices with no ControlledBy associations to Controllers. True indicates that the Device is connected to one or more Ports (via Controllers). False indicates that the Device exists but is not connected to a port.
ElementName	string	Max Length 15	The volume's user-friendly name.
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value indicating an administrator's default or startup configuration for the Enabled State of an element. By default, the element is Enabled (2).
FCID	string		The FlashCopy id of the volume.
FCName	string		The FlashCopy name of the volume.
GroupID	string		The id of the scoping RedundancyGroup.
GroupName	string		The name of the scoping RedundancyGroup.
IsFormatted	boolean		Indicates if the SAN Volume Controller has formatted the volume.
NativeStatus	uint16	Offline 0 Online 1 Degraded 2 Formatting 3	The volume's native operational status.
PoolID	string		The id of the hosting storage pool.
PoolName	string		The name of the pool from which this volume was allocated.
PreferredNode	string		The id of the preferred node.
SCID	string		The remote copy id of the volume.
SCName	string		The remote copy name of the volume.
Type	uint32	Sequential 0 Striped 1 Router 2 Image 3	The type of the volume.
UniqueID	string		The unique id of the volume.
UnitDeviceID	uint16		The volume's Unit Device Identifier as defined by OpenVMS.

Id	Type	Range	Description
Caption	string	Max Length 64	The Caption property is a short textual description (one- line string) of the object.
ElementName	string	Max Length 15	The volume's user-friendly name.
Throttle	uint64		The maximum bandwidth of the volume.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_LogicalDevice
AdditionalAvailability, Availability, ErrorCleared, ErrorDescription, IdentifyingDescriptions, LastErrorCode, MaxQuiesceTime, OtherIdentifyingInfo, PowerManagementCapabilities, PowerManagementSupported, PowerOnHours, StatusInfo, TotalPowerOnHours

Inherited from class CIM_StorageExtent
Access, BlockSize, ConsumableBlocks, DataOrganization, DataRedundancy, DeltaReservation, ErrorMethodology, ExtentStatus, IsBasedOnUnderlyingRedundancy, NoSinglePointOfFailure, NumberOfBlocks, PackageRedundancy, Primordial, Purpose, SequentialAccess

Inherited from class CIM_StorageVolume
Name, NameFormat, NameNamespace, OtherNameFormat, OtherNameNamespace

Method Summary

Name	Description
Reset	Requests a reset of the LogicalDevice.

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_LogicalDevice
EnableDevice, OnlineDevice, QuiesceDevice, Reset, RestoreProperties, SaveProperties, SetPowerState

Method Detail

Reset

Description

Requests a reset of the LogicalDevice. The return value should be 0 if the request was successfully executed, 1 if the request is not supported and some other value if an error occurred. In a subclass, the set of possible return codes could be specified, using a ValueMap qualifier on the method. The strings to which the ValueMap contents are 'translated' may also be specified in the subclass as a Values array qualifier.

Parameters

Id	Type	Range	Description
In			
	<i>none</i>		
Out			
	<i>none</i>		
Return Codes			
	<i>none</i>		

BlockServices Class IBMTSSVC_StorageConfigurationService

The IBMTSSVC_StorageConfigurationService class provides extrinsic methods for basic storage configuration tasks.

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_HostedStorageConfigurationService
- IBMTSSVC_StorageConfigurationServiceCapabilities
- IBMTSSVC_StorageReplicationCapabilities

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.

Id	Type	Range	Description
Name	string		Uniquely identifies the Service and provides an indication of the functionality that is managed. This functionality is described in more detail in the Description property of the object.
SystemCreationClass Name	string	Max Length 256	The CreationClassName of the scoping System.
SystemName	string	Max Length 256	The Name of the scoping System.
Description	string		Provides a textual description of the object.
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value that indicates the default or startup configuration for the Enabled State of an element. The default value is Enabled.
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	An integer enumeration that indicates the enabled and disabled states of an element. This property can also indicate the transitions between these requested states. For example, the values shutting down (4) and starting (10) are transient states between enabled and disabled.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	<p>The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.</p>

Id	Type	Range	Description
OtherEnabledState	string		A string that describes the enabled or disabled state of the element when the EnabledState property is set to Other (1). This property must be set to null when EnabledState is any value other than 1.
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 12 DMTF Reserved .. Vendor Reserved 32768..65535	An integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. If EnabledState is set to Not Applicable (5), this property is not used. By default, the RequestedState of the element is set to No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration.
Started	boolean		If set to true, the Service is started. If set to false, the Service is stopped.
StatusDescriptions	string		Strings that describe the various OperationalStatus array values. For example, if the value Stopping is assigned to OperationalStatus, this property might contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.

Inherited from class CIM_ManagedElement
--

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
--

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement

EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault
--

Inherited from class CIM_Service

Started, StartMode, PrimaryOwnerContact, PrimaryOwnerName

Method Summary

Name	Description
AttachReplica	Creates (or starts a job to create) a StorageSynchronized relationship between two existing storage objects.
AttachReplicas	Creates (or starts a job to create) multiple StorageSynchronized relationships between two existing storage objects.
CreateOrModifyElementFrom StoragePool	Creates or modifies a StorageVolume.
CreateOrModifyStoragePool	Creates or modifies a storage pool.
CreateReplica	Starts a job to create a new StorageVolume that is a replica of the source StorageVolume.
CreateSynchronizedSet	Creates a SynchronizedSet.
DeleteStoragePool	Deletes a StoragePool.
DeleteSynchronizedSet	Deletes a SynchronizedSet.
GetDependentCascadingNames	Returns the names of the dependent cascading mappings for the given volume.
GetDependentMappingNames	Returns the names of the dependent mappings for the given FCMap.
IncludeBackendVolume	Adds a BackendVolume that has been expelled by the cluster.
MigrateVDiskExtents	Migrates VDisk extents from one MDisk to another MDisk.
MigrateVolume	Migrates a StorageVolume from one StoragePool to another.
MigrateVolumeToImageMode	Migrates a StorageVolume to an image mode that is mapped with a BackendVolume.
ModifySynchronization	Modifies a synchronization according to the passed in operation.
ModifySynchronizedSet	Manipulates SynchronizedSets.
RequestDiscovery	Instructs the cluster to scan the fibre-channel network to discover new BackendVolumes.
ReturnToStoragePool	Deletes a StorageVolume.
SetIOGroup	Assigns a StorageVolume to another IOGroup.
SetQuorum	Sets a BackendVolume as a quorum disk.
SetThrottle	Sets the I/O governing rates for the VDisk.

Inherited from class CIM_EnabledLogicalElement

RequestStateChange

Inherited from class CIM_Service

StartService, StopService

Inherited from class CIM_StorageConfigurationService

AttachReplica, CreateOrModifyElementFromElements, CreateOrModifyElementFromStoragePool, CreateOrModifyStoragePool, CreateReplica, DeleteStoragePool, ModifySynchronization, ReturnToStoragePool

Method Detail

AttachReplica

Description

Creates (or starts a job to create) a StorageSynchronized relationship between two existing storage objects. If you use the CopyType input parameter, this function can be used to create an ongoing association between the source and the replica. If 0 is returned, the function completed successfully and no ConcreteJob instance is created. If 0x1000 is returned, a ConcreteJob is started. If 1 is returned, the method is not supported. All other values indicate an error condition has occurred.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Synchronized	boolean		If the copy type is set to Sync, indicates that the data on the source and target is already identical.
BackgroundCopyRate	uint16		If the copy type is set to UnSyncAssoc, indicates the background copy. The default background copy rate is 50.
Set	IBMTSSVC_Synchronized Set		Specifies the set for which you want to add a synchronization. This is an optional parameter.
ElementName	string		The name of the StorageSynchronized association that you want to create.
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Incremental	boolean		If the copy type is UnSyncAssoc or UnSyncUnAssoc, indicates that the relationship is incremental.
GrainSize	uint16		If the copy type is UnSyncAssoc or UnSynUnAssoc, indicates the size of the copy grain.
CleanRate	uint16		If the copy type is UnSyncAssoc or UnSynUnAssoc, indicates the clean rate for the VDisks.
IOGroupID	string		If the copy type is UnSyncAssoc or UnSynUnAssoc, indicates the ID or name of the I/O group.
SourceElement	CIM_ManagedElement		The source volume.

Id	Type	Range	Description
TargetElement	CIM_ManagedElement		The target volume.
CopyType	uint16		Describes the type of Synchronized relationship that you want to create. The following values are possible: <ul style="list-style-type: none"> • Async: Creates and maintains an asynchronous copy of the source. • Sync: Creates and maintains a synchronized copy of the source. • UnSyncAssoc: Creates an unsynchronized copy and maintains an association to the source. • UnSyncUnAssoc: Creates an unassociated copy of the source element.
Out			
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Return codes			
none			

AttachReplicas

Description

Creates (or starts a job to create) multiple StorageSynchronized relationships between two existing storage objects. If you use the CopyType input parameter, this function can be used to create an ongoing association between the source and the replica. If 0 is returned, the function completed successfully and no ConcreteJob instance is created. If 0x1000 is returned, a ConcreteJob is started, and a reference is returned in the Job output parameter. If 1 is returned, the method is not supported. All other values indicate some type of error condition has occurred.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Synchronized	boolean		If the copy type is set to Sync, indicates that the data on the source and target is already identical.
BackgroundCopyRate	uint16		If the copy type is set to UnSyncAssoc, indicates the background copy. The default background copy rate is 50.
Set	IBMTSSVC_Synchronized Set		Specifies the set for which you want to add a synchronization. This is an optional parameter.

Id	Type	Range	Description
ElementName	string		The name of the StorageSynchronized association that you want to create.
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Incremental	boolean		If the copy type is UnSyncAssoc or UnSyncUnAssoc, indicates that the relationship is incremental.
GrainSize	uint16		If the copy type is UnSyncAssoc or UnSynUnAssoc, indicates the size of the copy grain.
CleanRate	uint16		If the copy type is UnSyncAssoc or UnSynUnAssoc, indicates the clean rate for the VDisks.
IOGroupID	string		If the copy type is UnSyncAssoc or UnSynUnAssoc, indicates the ID or name of the I/O group.
SourceElement	CIM_ManagedElement		The source volume.
TargetElement	CIM_ManagedElement		The target volume.
CopyType	uint16		Describes the type of Synchronized relationship that you want to create. The following values are possible: <ul style="list-style-type: none"> • Async: Creates and maintains an asynchronous copy of the source. • Sync: Creates and maintains a synchronized copy of the source. • UnSyncAssoc: Creates an unsynchronized copy and maintains an association to the source. • UnSyncUnAssoc: Creates an unassociated copy of the source element.
Out			
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Return codes			
none			

CreateOrModifyElementFromStoragePool

Description

Creates or modifies a StorageVolume.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			

Id	Type	Range	Description
VirtualizationType	uint8		Sets the virtualization type of the new StorageVolume. The default value is striped. A value of striped copies the data of a volume across all BackendVolumes in the Pool. A value of image or sequential stores the data on a single BackendVolume. The value of image also maps a StorageVolume to a BackendVolume without touching the data that is already present on the BackendVolume.
IOGroup	IBMTSSVC_IOGroup		Optionally specifies the IOGroup that you want to use to assign the StorageVolume assigned.
PreferredNode	IBMTSSVC_Node		Optionally specifies the preferred Node for StorageVolume access.
Format	boolean		If set to true, the volume is formatted when it is created or expanded.
BackendVolumes	IBMTSSVC_Backend Volume		Optionally specifies the BackendVolumes that you want to use to store the data for the StorageVolume.
CacheMode	uint16		The cache mode for the volume. The following values are possible: <ul style="list-style-type: none"> • None 0 • Read Write 1
UnitDeviceID	uint16		The Unit Device ID for the volume that is defined by OpenVMS.
ElementName	string		A relevant name for the element that is being created. If set to NULL, a system supplied default name can be used. The value is stored in the ElementName property for the created element. If it is not set to NULL, a new name is supplied when an existing element is modified.
ElementType	uint16		The type of element to create or modify. You can only create or modify StorageVolume 2 elements.
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Goal	CIM_StorageSetting		If submitted, the value Goal must be the default setting.
Size	uint64		The desired (new) size of the StorageVolume.
InPool	IBMTSSVC_Concrete StoragePool		The StoragePool from which the new StorageVolume is allocated. Mutually exclusive with TheElement parameter.
TheElement	IBMTSSVC_StorageVolume		Contains the StorageVolume to be modified. If TheElement is set to NULL, a new StorageVolume is created. Mutually exclusive with the InPool parameter.
Out			

Id	Type	Range	Description
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Size	uint64		The desired (new) size of the StorageVolume
TheElement	IBMTSSVC_StorageVolume		Contains the StorageVolume to be modified. If TheElement is set to NULL, a new StorageVolume is created. Mutually exclusive with the InPool parameter.
Return codes			
none			

CreateOrModifyStoragePool

Description

Creates or modifies a storage pool.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Force	boolean		If set to true, the removal of BackendVolumes from the Pool is forced. This parameter is ignored during the creation or expansion of a Pool.
BlockSize	uint16		The block size of the new StoragePool. SAN Volume Controller clusters manage the capacity in chunks of this size. For example, a block size of 128 MB means that all volumes from that Pool occupy a space that is a multiple of 128 MB. A 150 MB volume occupies 256 MB of raw Pool capacity.
ElementName	string		A relevant name for the element that is being created. If set to NULL, a system supplied default name can be used. The value is stored in the ElementName property for the created element. If it is not set to NULL, a new name is supplied when an existing element is modified.
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Goal	CIM_StorageSetting		If submitted, the value Goal must be the default setting.
Size	uint64		Specifies the desired pool size in bytes.
InPools	string		The Primordial StoragePools that are used to create or expand the (new) StoragePool. Mutually exclusive with InExtents[].

Id	Type	Range	Description
InExtents	string		The BackendVolumes to add to or remove from the StoragePool. Mutually exclusive with InPools.
Pool	IBMTSSVC_Concrete StoragePool		If set to NULL, a new StoragePool is created. Otherwise, BackendVolumes are added to or removed from the StoragePool.
Out			
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Size	uint64		Specifies the size that is achieved.
Pool	IBMTSSVC_Concrete StoragePool		If set to NULL, a new StoragePool is created. Otherwise, BackendVolumes are added to or removed from the StoragePool.
Return codes			
none			

CreateReplica

Description

Starts a job to create a new StorageVolume that is a replica of the source StorageVolume.

Restriction: This method is not supported.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
ElementName	string		A relevant name for the element that is being created. If set to NULL, a system supplied default name can be used. The value is stored in the ElementName property for the created element. If it is not set to NULL, a new name is supplied when an existing element is modified.
VolumeName	string		A relevant name for the target volume that is being created. If set to NULL, a system supplied default name can be used. The value is stored in the ElementName property for the created volume.
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Incremental	boolean		If the copy type is UnSyncAssoc or UnSyncUnAssoc, indicates that the relationship is incremental.
GrainSize	uint16		If the copy type is UnSyncAssoc or UnSynUnAssoc, indicates the size of the copy grain.

Id	Type	Range	Description
CleanRate	uint16		If the copy type is UnSyncAssoc or UnSynUnAssoc, indicates the clean rate for the VDIs.
IOGroupID	string		If the copy type is UnSyncAssoc or UnSynUnAssoc, indicates the ID or name of the I/O group.
SourceElement	CIM_LogicalElement		The source storage object, which can be a StorageVolume or storage object.
TargetElement	CIM_LogicalElement		Reference to the created target storage element.
TargetSettingGoal	CIM_StorageSetting		The definition for the StorageSetting to be maintained by the target storage object.
TargetPool	CIM_StoragePool		The underlying storage for the target element. Drawn from TargetPool if specified, otherwise the allocation is implementation specific.
CacheMode	uint16		The cache mode for the volume. The following values are possible: <ul style="list-style-type: none"> • None 0 • Read Write 1
UnitDeviceID	uint16		The new volume's Unit Device Identifier as defined by OpenVMS. Ignored for SVC Clusters running pre v4.1.0 Firmware
CopyType	uint16		Describes the type of Synchronized relationship that you want to create. The following values are possible: <ul style="list-style-type: none"> • Async: Creates and maintains an asynchronous copy of the source. • Sync: Creates and maintains a synchronized copy of the source. • UnSyncAssoc: Creates an unsynchronized copy and maintains an association to the source. • UnSyncUnAssoc: Creates an unassociated copy of the source element.
VirtualizationType	uint8		Sets the virtualization type of the new StorageVolume. The default value is striped. A value of striped copies the data of a volume across all BackendVolumes in the Pool. A value of image or sequential stores the data on a single BackendVolume. The value of image also maps a StorageVolume to a BackendVolume without touching the data that is already present on the BackendVolume.
IOGroup	IBMTSSVC_IOGroup		Optionally specifies the IOGroup to which the StorageVolume is assigned.
PreferredNode	IBMTSSVC_Node		Optionally specifies the preferred Node for StorageVolume access.
Format	boolean		If set to true, the volume is formatted when it is created or expanded.
Size	uint64		Specifies the desired pool size in bytes.
BackendVolumes	IBMTSSVC_Backend Volume		Optionally specifies the BackendVolumes that store the data for the StorageVolume.

Id	Type	Range	Description
Goal	CIM_StorageSetting		If submitted, the value Goal must be the default setting.
InPool	IBMTSSVC_ConcreteStoragePool		The StoragePool from which the new StorageVolume is allocated. Mutually exclusive with TheElement parameter.
TheElement	IBMTSSVC_StorageVolume		Contains the StorageVolume to be modified. If set to NULL, a new StorageVolume is created. Mutually exclusive with the InPool parameter.
Synchronized	boolean		If the copy type is set to Sync, indicates that the data on the source and target is already identical.
BackgroundCopyRate	uint16		If the copy type is set to UnSyncAssoc, indicates the background copy. The default background copy rate is 50.
Set	IBMTSSVC_SynchronizedSet		Specifies the set for which you want to add a synchronization. This is an optional parameter.
Out			
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
TargetElement	CIM_LogicalElement		Reference to the created target storage element.
Size	uint64		Specifies the size achieved.
TheElement	IBMTSSVC_StorageVolume		Contains the StorageVolume to be modified. If set to NULL, a new StorageVolume is created. Mutually exclusive with the InPool parameter.
Return codes			
none			

CreateSynchronizedSet

Description

Method to create a SynchronizedSet. Some devices may not support SynchronizedSets. In order to find out if SynchronizedSets are supported call GetSupportedSetTypes.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
CopyType	uint16		Provide one of the valid copy types. If the copytype is for a remote set, the set is empty when it is created and returns the value 0x8000.
ElementName	string		The ElementName property of the SynchronizedSet that you want to create. See SynchronizedSet.ElementName.

Id	Type	Range	Description
RemoteCluster	IBMTSSVC_RemoteCluster		Optionally specifies a RemoteCluster if this Set is supposed to aggregate StorageSynchronized between Volumes of two SAN Volume Controller clusters.
Set	IBMTSSVC_Synchronized Set		The SynchronizedSet that was created.
Out			
Set	IBMTSSVC_Synchronized Set		The SynchronizedSet that was created.
Return codes			
none			

DeleteStoragePool

Description

Deletes a StoragePool. The method fails if the StoragePool has any StorageVolumes or BackendVolume assigned.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Force	boolean		If true the deletion is forced.
Job	CIM_ConcreteJob		The Job is always NULL.
Pool	IBMTSSVC_Concrete StoragePool		The StoragePool to delete.
Out			
Job	CIM_ConcreteJob		The Job is always NULL.
Return codes			
none			

DeleteSynchronizedSet

Description

Method to delete a SynchronizedSet. If the set contains StorageSynchronized associations they have to be removed from this set before this method is called by calling: ModifySynchronizedSet('Remove').

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Set	IBMTSSVC_SynchronizedSet		The set that you want to delete.
Force	boolean		If set to true, the deletion is forced.

Id	Type	Range	Description
Out			
none			
Return codes			
none			

GetDependentCascadingNames

Description

Returns the names of the dependent cascading mappings for the given volume.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Volume	IBMTSSVC_Storage Volume		Retrieves the dependent cascading mappings for this StorageVolume.
CascadingNames	string		The names of the dependent cascading mappings are returned in this array.
Out			
CascadingNames	string		The names of the dependent cascading mappings are returned in this array.
Return codes			
none			

GetDependentMappingNames

Description

Returns the names of the dependent mappings for the FCMap.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
Mapping	IBMTSSVC_LocalStorage Synchronized		Get the dependent mappings for this FCMap.
Dependentnames	string		The names of the dependent mappings are returned in this array.
Dependentnames	string		The names of the dependent mappings are returned in this array.
none			

IncludeBackendVolume

Description

This method is used to add a BackendVolume that has been expelled by the cluster.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Volume	IBMTSSVC_BackendVolume		The BackendVolume that you want to include.
Out			
none			
Return codes			
none			

MigrateVDiskExtents

Description

Migrates VDisk extents from one MDisk to another MDisk.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
TheVDisk	IBMTSSVC_StorageVolume		The extents that are allocated by this VDisk are migrated.
SourceMDisk	IBMTSSVC_BackendVolume		The extents that are to be migrated OFF of this MDisk.
TargetMDisk	IBMTSSVC_BackendVolume		The extents that are to be migrated ONTO this MDisk.
NumberOfExtents	uint32		The number of extents to be migrated.
NumberOfThreads	uint32		Optionally specifies the number of threads to use for the migration. The valid range is from 1 to 4 and the default is 4 threads.
Job	IBMTSSVC_Job		Returns the ref of the asynchronous IBMTSSVC_MigrateVolumeJob that you initiated with this command.
Out			
Job	IBMTSSVC_Job		Returns the ref of the asynchronous IBMTSSVC_MigrateVolumeJob that you initiated with this command.
Return codes			
none			

MigrateVolume

Description

Migrates a StorageVolume from one StoragePool to another.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
NumberOfThreads	uint8		The number of threads to use for the migration process.
TargetPool	IBMTSSVC_ConcreteStoragePool		The StoragePool to receive the data.
Volume	IBMTSSVC_StorageVolume		The StorageVolume that you want to migrate.
Job	IBMTSSVC_Job		The job instance that you want to use to monitor the migration process.
Out			
Job	IBMTSSVC_Job		The job instance that is used to monitor the migration process.
Return codes			
none			

MigrateVolumeToImageMode

Description

Migrates a StorageVolume to an image mode that maps a BackendVolume.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
NumberOfThreads	uint8		The number of threads to use for the migration process.
TargetPool	IBMTSSVC_ConcreteStoragePool		The StoragePool the target volume will become member of.
TargetVolume	IBMTSSVC_BackendVolume		The BackendVolume that receives the data.
Volume	IBMTSSVC_StorageVolume		The StorageVolume to migrate.
Job	IBMTSSVC_Job		The job instance that you want to use to monitor the migration process.
Out			
Job	IBMTSSVC_Job		The job instance that can be used to monitor the migration process.
Return codes			
none			

ModifySynchronization

Description

Modifies a synchronization according to the operation that was passed in. If 0 is returned, the function completed successfully and no ConcreteJob instance is created. If 0x1000 is returned, a ConcreteJob is started. A reference to this Job is returned in the Job output parameter. The SAN Volume Controller cluster does not allow modification of StorageSynchronized instances that are part of a ConsistencySet. In this case, the error code 6 is returned.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Direction	boolean		If set to true, the master (SyncedSystemElement) becomes the source. If set to false, the auxiliary (SyncedElement) becomes the source. Applies only on switch of the synchronized copy.
AllowAccess	boolean		If set to true, the target is accessible for I/O operations. Only applies on a fracture of synchronized copies.
Clean	boolean		If set to true, the target is assumed to be clean (initialized with zeros), so no initialize is done before a resynchronization of a synchronized copy.
Force	boolean		If set to true, the operation is forced. Applies only to detach and resynchronize operations. For resynchronize operations, the force flag causes a prepare to occur prior to the Resynchronization.
Operation	uint16		Describes the type of modification to be made to the replica.
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Synchronization	CIM_Storage Synchronized		The reference to the StorageSynchronized association that describes the storage source relationship.
Out			
Job	CIM_ConcreteJob		Provides a reference to the job. If the task is complete, the value might be null.
Return codes			
none			

ModifySynchronizedSet

Description

Manipulates SynchronizedSets.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Operation	uint16		Describes the type of modification to be made to the replica.
Job	IBMTSSVC_Job		Provides a reference to the job. If the task is complete, the value might be null.
SynchronizedSet	IBMTSSVC_SynchronizedSet		The reference to the SynchronizedSet that describes the set to be modified.
Synchronization	IBMTSSVC_Storage Synchronized		The storage object that is being added or removed.
Force	boolean		Forces the modification. If set to true during a RESYNC attempt, the set is first prepared and then resynchronized.
Clean	boolean		If set to true, the target is assumed to be clean (initialized with zeros), so no initialize is performed before a resync of a sync copy.
Direction	boolean		If set to true, the master (SyncedSystemElement) becomes the source. If set to false, the auxiliary (SyncedElement) becomes the source. Applies only on a switch of sync copy.
AllowAccess	boolean		If set to true, the target is accessible for I/O operations. Only applies on a fracture of sync copies.
Out			
Job	IBMTSSVC_Job		Provides a reference to the job. If the task is complete, the value might be null.
Return codes			
none			

RequestDiscovery

Description

Instructs the cluster to scan the fibre-channel network to discover new BackendVolumes.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			

Id	Type	Range	Description
WaitTimeout	uint32		Controls the amount of time that the method waits for the discovery to complete. If WaitForResults is set to true and WaitTimeout is greater than 0, the method waits the specified amount of seconds for the discovery to complete. If the discovery does not complete in this amount of time, the Discovery Timeout value is returned and the output parameters might not contain valid information.
WaitForResults	boolean		Controls how this method waits for the discovery to complete. If the flag is set to true, the method does not return until the discovery process has completed. If set to false, this method returns immediately and the output parameters might not contain valid information. If you do not specify this parameter, the method does not return until the discovery process has completed.
DiscoveredElementNames	string		The names of the discovered BackendVolumes.
DiscoveredElementCount	uint32		The number of BackendVolumes that are discovered.
DiscoveredElements	string		The COPs of the discovered BackendVolumes.
Out			
DiscoveredElementNames	string		The names of the discovered BackendVolumes.
DiscoveredElementCount	uint32		The number of BackendVolumes that are discovered.
DiscoveredElements	string		The COPs of the discovered BackendVolumes.
Return codes			
none			

ReturnToStoragePool

Description

Deletes a StorageVolume. The StorageVolume must not have any access granted to hosts, otherwise the method fails.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Force	boolean		If set to true, the deletion is forced.
Job	CIM_ConcreteJob		The Job is always NULL.
TheElement	IBMTSSVC_Storage Volume		The StorageVolume to delete.
Out			
Job	CIM_ConcreteJob		The Job is always NULL.
Return codes			
none			

SetIOGroup

Description

Assigns a StorageVolume to another IOGroup. A StorageVolume which is a member of a copy relationship cannot be moved to another I/O group even with the use of the force flag.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Force	boolean		Required to be true when intended to move a Volume to or from the recovery I/O group.
Group	IBMTSSVC_IOGroup		The IOGroup for which you want to assign the StorageVolume.
Volume	IBMTSSVC_Storage Volume		The StorageVolume that you want move.
Node	IBMTSSVC_Node		Optionally sets the preferred Node of the storage volume in the changed IOGroup.
Out			
none			
Return codes			
none			

SetQuorum

Description

Sets a BackendVolume as quorum disk.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
QuorumID	uint8		The quorum ID.
Volume	IBMTSSVC_Backend Volume		The BackendVolume to become a quorum.
Out			
none			
Return codes			
none			

SetThrottle

Description

Sets the I/O governing rates for the VDisk. The rate limits the amount of I/O operations that the VDisk accepts . The default units are IO/S, but can be set to Mbps.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
MBps	boolean		Optionally sets the units of the action to Mbps from I/O per second.
ThrottleRate	uint64		The throttling rate.
Volume	IBMTSSVC_Storage Volume		The StorageVolume that you want to change.
Out			
none			
Return codes			
none			

BlockServices Class

IBMTSSVC_StorageConfigurationServiceCapabilities

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Capabilities	IBMTSSVC_StorageConfiguration Capabilities	Min 1 Max 1	
ManagedElement	IBMTSSVC_StorageConfiguration Service	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_StorageConfigurationCapabilities

A subclass of Capabilities that defines the Capabilities of a StorageConfigurationService.

Description

An instance of StorageConfigurationCapabilities is associated with a StorageConfigurationService using ElementCapabilities.

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_StorageConfigurationServiceCapabilities

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
Caption	string	Max Length 64	A short textual description (one-line string) of the object.
Description	string		Provides a textual description of the object.

Id	Type	Range	Description
ElementName	string		<p>A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.</p>
InitialReplicationState	uint16	Initialized 2 Prepared 3 Synchronized 4 DMTF Reserved .. Vendor Specific 0x8000..0xFFFF	<p>Specifies which initial ReplicationState is supported by a particular provider. The following values are possible:</p> <ul style="list-style-type: none"> • Initialized: The replication relationship is known and unsynchronized, but time required to synchronize might be long. • Prepared: The replication relationship is known and unsynchronized and the time required to synchronize is short. • Synchronized: The replicas are synchronized. • Idle: An UnSyncAssoc replica is ready to manage.
SupportedAsynchronousActions	uint16	Storage Pool Creation 2 Storage Pool Deletion 3 Storage Pool Modification 4 Storage Element Creation 5 Storage Element Return Storage Element Modification 7 Replica Creation 8 Replica Modification 9 Replica Attachment 10	<p>An enumeration that indicates the operations that are run as asynchronous jobs. If an operation is included in both the SupportedAsynchronousActions and SupportedSynchronousActions properties, the underlying implementation indicates that a job might not be created.</p>

Id	Type	Range	Description
SupportedCopyTypes	uint16	Async 2 Sync 3 UnSyncAssoc 4 UnSyncUnAssoc 5 DMTF Reserved .. Vendor Specific 0x8000..0xFFFF	Describes the replication capabilities that are supported by the associated StorageConfigurationServices.
SupportedStorageElement Features	uint16	StorageExtent Creation 2 StorageVolume Creation 3 StorageExtentModification 4 StorageVolume Modification 5 Single InPool 6 Multiple InPools 7 DMTF Reserved .. Vendor Specific 0x8000..0xFFFF	An enumeration that indicates the features that are supported by the StorageElement methods.
SupportedStorageElement Types	uint16	StorageVolume 2 StorageExtent 3 DMTF Reserved .. Vendor Specific 0x8000..0xFFFF	An enumeration that indicates the type of storage elements that are supported by the associated StorageConfigurationService.
SupportedStoragePoolFeatures	uint16	InExtents 2 Single InPool 3 Multiple InPools 4 DMTF Reserved .. Vendor Specific 0x8000..0xFFFF	An enumeration that indicates features that are supported by the StoragePool methods.
SupportedSynchronous Actions	uint16	Storage Pool Creation 2 Storage Pool Deletion 3 Storage Pool Modification 4 Storage Element Creation 5 Storage Element Return 6 Storage Element Modification 7 Replica Creation 8 Replica Modification 9 Replica Attachment 10	An enumeration that indicates the operations that are run without the creation of a job. If an operation is included in both the SupportedSynchronousActions and SupportedAsynchronousActions properties, the underlying instrumentation indicates that a job might not be created.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_Capabilities
ElementName

Inherited from class CIM_StorageConfigurationCapabilities
InitialReplicationState, SupportedAsynchronousActions, SupportedCopyTypes, SupportedStorageElementFeatures, SupportedStorageElementTypes, SupportedStoragePoolFeatures, SupportedSynchronousActions

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_StorageCapabilities

A subclass of Capabilities that defines the Capabilities of a StorageService or StoragePool.

Description

You can use ElementCapabilities to associate an instance of StorageCapabilities with either a StorageConfigurationService or StoragePool.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_ConcreteStoragePoolCapabilities
- IBMTSSVC_PrimordialStoragePoolCapabilities
- IBMTSSVC_StorageSettingsGeneratedFromCapabilities

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
Caption	string	Max Length 64	A short textual description (one-line string) of the object.
DataRedundancyDefault	uint16		DataRedundancyDefault describes the default number of complete copies of data that can be maintained. Examples would be RAID 5 where 1 copy is maintained and RAID 1 where 2 or more copies are maintained. Possible values are 1 to n. The bounds for the redundancy (max and min) are defined by DataRedundancyMax and DataRedundancyMin.
DataRedundancyMax	uint16		Describes the maximum number of complete copies of data to be maintained. For example, RAID 5 where 1 copy is maintained and RAID 1 where 2 or more copies are maintained. Possible values are 1 to n. The desired redundancy is specified using DataRedundancyGoal, while the minimum is defined by DataRedundancyMin.

Id	Type	Range	Description
DataRedundancyMin	uint16		Describes the minimum number of complete copies of data to be maintained. For example, RAID 5 where 1 copy is maintained and RAID 1 where 2 or more copies are maintained. Possible values are 1 to n. The desired redundancy is specified using DataRedundancyGoal property, while the maximum is defined by DataRedundancyMax property.
DeltaReservationGoal	uint8		A number between 1 (1%) and a 100 (100%) that specifies the desired amount of space that you want to reserve in a replica for caching changes. For a complete copy, this value is 100 (100%). The bounds for the reservation are defined using the DeltaReservationMax and DeltaReservationMin properties.
Description	string		Provides a textual description of the object.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
ElementType	uint16	Unknown 0 Reserved 1 Any Type 2 StorageVolume 3 StorageExtent 4 StoragePool 5 StorageConfigurationService 6	An enumeration that indicates the type of element to which this StorageCapabilities applies.
NoSinglePointOfFailure	boolean		If set to true, the associated element supports the no single point of failure option. If set to false, the associated element does not support the no single point of failure option.
NoSinglePointOfFailureDefault	boolean		Indicates the default value for the NoSinglePointOfFailure property.

Id	Type	Range	Description
PackageRedundancyDefault	uint16		Describes the default number of redundant packages that you want to use. For example, in the storage domain, package redundancy describes how many disk spindles can fail without data loss. Possible values are 0 to n. The bounds for redundancy are specified using the PackageRedundancyMax and PackageRedundancyMin properties.
PackageRedundancyMax	uint16		Describes the maximum number of redundant packages to be used. For example, in the storage domain, package redundancy describes how many disk spindles can fail without data loss including one spare. For example, RAID5 with a spare disk has a PackageRedundancy of 2. Possible values are 0 to n. The desired redundancy is specified using the PackageRedundancyGoal property, while the minimum is defined by the PackageRedundancyMin property.
PackageRedundancyMin	uint16		Describes the minimum number of redundant packages to be used. For example, in the storage domain, package redundancy describes how many disk spindles can fail without data loss including one spare. For example, RAID5 with a spare disk has a PackageRedundancy of 2. Possible values are 0 to n. The desired redundancy is specified using the PackageRedundancyGoal property, while the maximum is defined by the PackageRedundancyMax property.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_Capabilities
ElementName

Inherited from class CIM_StorageCapabilities
DataRedundancyDefault, DataRedundancyMax, DataRedundancyMin, DeltaReservationDefault, DeltaReservationMax, DeltaReservationMin, ElementType, ExtentStripeLengthDefault, NoSinglePointOfFailure, NoSinglePointOfFailureDefault, PackageRedundancyDefault, PackageRedundancyMax, PackageRedundancyMin, ParityLayoutDefault, UserDataStripeDepthDefault

Method Summary

The following method is available for this class.

Name	Description
CreateSetting	Creates and populates a StorageSetting instance from a StorageCapability instance.

Inherited from class CIM_StorageCapabilities
CreateSetting, GetSupportedParityLayouts

Method Detail

CreateSetting

Description

Creates and populates a StorageSetting instance from a StorageCapability instance. This removes the need to populate default settings and other settings in the context of each StorageCapabilities. If the underlying instrumentation supports the StorageSettingWithHints subclass, an instance of that class is created instead.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
SettingType	uint16		If Default is passed for the CreateDefault parameter, the Max, Goal, and Min setting attributes are set to the Default values of the parent StorageCapabilities when the instance is created. If set to Goal, the new StorageSetting attributes are set to the related attributes of the parent StorageCapabilities. This method might be deprecated in lieu of intrinsics after the limitations in the CIM Operations are addressed. For the SAN Volume Controller cluster, the same StorageSetting is returned for both the Default and Goal settings.
NewSetting	CIM_StorageSetting		Reference to the created StorageSetting instance.
Out			
NewSetting	CIM_StorageSetting		Reference to the created StorageSetting instance.
Return codes			
none			

BlockServices Class IBMTSSVC_PrimalStoragePool

The primordial StoragePool represents the total amount of storage on the device that corresponds to the sum of all managed disks on the cluster.

Description

A pool of Storage that is managed within the scope of a particular System. StoragePools can consist of component StoragePools or StorageExtents. StorageExtents that belong to the StoragePool have a component relationship to the StoragePool. StorageExtents, and StoragePools that are elements of a pool have their available space aggregated into the pool. Both StoragePools and StorageVolumes can be created from StoragePools. This is indicated by the AllocatedFromStoragePool association. StoragePool is scoped to a system by the HostedStoragePool association.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_AllocatedFromPrimordialPool

IBMTSSVC_HostedPrimordialPool

IBMTSSVC_PrimordialPoolComponent

IBMTSSVC_PrimordialPoolForController

IBMTSSVC_PrimordialStoragePoolCapabilities

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
Caption	string	Max Length 15	A short textual description (one-line string) of the object.
Description	string		Provides a textual description of the object.
Name	string	Max Length 1024	The globally unique ID for the storage pool, in the format of IBMTSSVC:<Cluster IP Address>.
PoolID	string	Max Length 256	A unique name in the context of the System that identifies this pool. For the SAN Volume Controller cluster, this is the IP address of the cluster.
Primordial	boolean		<p>If set to true, the containing System does not have the ability to create or delete this operational element. This is important because higher-level StoragePools might be assembled using the Component or AllocatedFromStoragePool associations. Although the higher-level abstractions can be created and deleted, the most basic hardware-based StoragePools cannot. They are physically realized as part of the System or are actually managed by some other System and imported as if they were physically realized. For the SAN Volume Controller primordial StoragePool, this value is always set to true.</p>

Id	Type	Range	Description
RemainingManaged Space	uint64		The remaining amount of raw storage (in bytes) from the TotalManagedSpace of this StoragePool. This property is maintained to provide efficient access to this information. However, it is possible to compute RemainingManagedSpace as the TotalManagedSpace minus the sum of SpaceConsumed from all of the AllocatedFromStoragePool references from this StoragePool. SpaceConsumed determines the amount of raw storage consumed by a particular allocated element. For SAN Volume Controller, this is equal to the sum of the capacities of all the managed disks that are not already part of a managed disk pool.
TotalManaged Space	uint64		The total amount of raw storage (in bytes) that is managed by this StoragePool. This includes all of the bytes consumed to create the storage surfaced by this StoragePool and all of the overhead bytes that are not reflected in the size of the logical storage allocated from this StoragePool. TotalManagedSpace reflects all storage that is known through Component associations to underlying StorageExtents or through AllocatedFromStoragePool associations to underlying StoragePools. However, the underlying storage might not be surfaced by the instrumentation. For the SAN Volume Controller, this value represents the sum of the raw capacities of all known managed disks.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_StoragePool
PoolID, Primordial, RemainingManagedSpace, TotalManagedSpace

Method Summary

The following methods are available for this class:

Name	Description
GetSupportedSizeRange	For pools that support a range of sizes for volume or pool creation, this method can be used to retrieve the supported range.

Name	Description
GetSupportedSizes	For pools that support discrete sizes for volume or pool creation, this method can be used to retrieve a list of supported sizes.

Inherited from class CIM_StoragePool
GetAvailableExtents, GetSupportedSizeRange, GetSupportedSizes

Method Detail

Not applicable.

GetSupportedSizeRange

Description

For pools that support a range of sizes for volume or pool creation, this method can be used to retrieve the supported range. Different pool implementations can support either or both the GetSupportedSizes and GetSupportedSizeRanges methods at different times, depending on the pool configuration. The advertised sizes can change after the call as a result of requests from the user. If the pool currently only supports discrete sizes, the return value is set to 1. For the primordial pools, use the GetSupportedSizes method instead.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
ElementType	uint16		The type of element for which supported size ranges are reported.
Goal	CIM_StorageSetting		The StorageSetting for which supported size ranges are reported.
MinimumVolumeSize	uint64		The minimum size for a volume or pool in bytes.
MaximumVolumeSize	uint64		The maximum size for a volume or pool in bytes.
VolumeSizeDivisor	uint64		A volume or pool size must be a multiple of this value and specified in bytes.
Out			
MinimumVolumeSize	uint64		The minimum size for a volume or pool in bytes.
MaximumVolumeSize	uint64		The maximum size for a volume or pool in bytes.
VolumeSizeDivisor	uint64		A volume or pool size must be a multiple of this value and specified in bytes.
Return Codes			
<i>none</i>			

GetSupportedSizes

Description

For pools that support discrete sizes for volume or pool creation, this method can be used to retrieve a list of supported sizes. Different pool implementations can support either or both the `GetSupportedSizes` and `GetSupportedSizeRanges` methods at different times, depending on the pool configuration. The advertised sizes can change after the call as a result of requests from other clients. If the pool currently only supports a range of sizes, the return value is set to 1. Because only pools can be allocated from the primordial storage pool, an `Invalid Argument` state is returned if the `ElementType` is anything other than `StoragePool`.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
ElementType	uint16		The type of element for which supported sizes are reported.
Goal	CIM_StorageSetting		The StorageSetting for which supported sizes are reported.
Sizes	uint64		List of supported sizes for a volume or pool creation or modification.
Out			
Sizes	uint64		List of supported sizes for a volume or pool creation or modification.
Return Codes			
<i>none</i>			

BlockServices Class IBMTSSVC_ConcreteStoragePoolCapabilities

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Capabilities	IBMTSSVC_StorageCapabilities	Min 1 Max 1	
ManagedElement	IBMTSSVC_ConcreteStoragePool	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_HostedPrimordialPool

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Cluster	Min 1 Max 1	
PartComponent	IBMTSSVC_PrimordialStorage Pool	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

BlockServices Class IBMTSSVC_StorageSettingsGeneratedFromCapabilities

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_StorageCapabilities	Min 1 Max 1	
Dependent	IBMTSSVC_StoragePoolSetting	Min 1 Max 1	

Inherited from class CIM_SettingAssociatedToCapabilities
DefaultSetting

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_BackendController

The BackendControllers class controls the BackendVolumes that are required to form StoragePools in the SAN Volume Controller cluster.

Description

This class is the cascading representation of the backend storage system device.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_BackendControllerForVolume

IBMTSSVC_ConnectedBackendController

IBMTSSVC_PrimordialPoolForController

IBMTSSVC_RemoteBackendSystemDevice

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	CreationClassName indicates the name of the class or the subclass used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
DeviceID	string		An address or other identifying information uniquely naming the Backend Controller
Name	string		The inherited Name serves as the key of a System instance in an enterprise environment.
Description	string		Provides a textual description of the object.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	EnabledState is an integer enumeration that indicates the enabled and disabled states of an element. It can also indicate the transitions between these requested states. For example, shutting down (value=4) and starting (value=10) are transient states between enabled and disabled. The following text briefly summarizes the various enabled and disabled states: Enabled (2) indicates that the element is or could be executing commands, will process any queued commands, and queues new requests. Disabled (3) indicates that the element will not execute commands and will drop any new requests. Shutting Down (4) indicates that the element is in the process of going to a Disabled state. Not Applicable (5) indicates the element does not support being enabled or disabled. Enabled but Offline (6) indicates that the element might be completing commands, and will drop any new requests. Test (7) indicates that the element is in a test state. Deferred (8) indicates that the element might be completing commands, but will queue any new requests. Quiesce (9) indicates that the element is enabled but in a restricted mode. The behavior of the element is similar to the Enabled state, but it processes only a restricted set of commands. All other requests are queued. Starting (10) indicates that the element is in the process of going to an Enabled state. New requests are queued.

Id	Type	Range	Description
IdentifyingDescriptions	string		An array of free-form strings that provides explanations and details behind the entries in the OtherIdentifying Info array. Each entry of this array is related to the entry in OtherIdentifyingInfo that is located at the same index.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	<p>Indicates the current state of the element. Various health and operational states are defined. Many of the states are self-explanatory. However, a few are not and are described in more detail. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has knowledge of this element, but has never been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element is known to exist and has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop and the Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. This state can occur when a network service or endpoint cannot function because there are lower layer networking problems. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK or report an error. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations, to address implementation requirements for an array property, and to provide a migration path from today's environment to the future environment. Because of the widespread use of the existing Status property in management applications, the providers instrumentation must provide both the Status and OperationalStatus properties.</p>
OtherEnabledState	string		<p>A string that describes the enabled or disabled state of the element when the EnabledState property is set to Other (1). This property must be set to null when EnabledState is any value other than 1.</p>

Id	Type	Range	Description
OtherIdentifyingInfo	string	Max Length 256	OtherIdentifyingInfo captures additional data, beyond System Name information, that could be used to identify a ComputerSystem. One example would be to hold the Fibre Channel World-Wide Name (WWN) of a node. If only the Fibre Channel name is available and is unique (able to be used as the System key), this property is NULL and the WWN becomes the System key, its data placed in the Name property.
ProductIdHigh	string		The higher part of the controller's product id.
ProductIdLow	string		The lower part of the controller's product id.
ProductRevision	string		The controller's product revision.
ProductSerial Number	string		The controller's product serial number.
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 1 DMTF Reserved .. Vendor Reserved 32768..65535	RequestedState is an integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. Note that when EnabledState is set to 5 ("Not Applicable"), this property has no meaning. By default, the RequestedState of the element is No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration. There are two new values in RequestedState that build on the status of the EnabledState property. These are the Reboot (10) and Reset (11) states. The Reboot state refers to moving from the Shut Down state to the Enabled state. Reset indicates that the element is first Disabled and then Enabled. Shut Down requests an orderly transition to the Disabled state, and might involve removing power to completely erase any existing state. The Disabled state requests an immediate disabling of the element, such that it does not run or accept any commands or processing requests. This property is set as the result of a method invocation (such as Start or StopService on CIM_Service), or can be overridden and defined as writeable in a subclass. The method approach is considered superior to a writeable property because it allows an explicit invocation of the operation and the return of a result code. An instance of EnabledLogicalElement might not support RequestedStateChange. If this occurs, the value Not Applicable (12) is used.

Id	Type	Range	Description
StatusDescriptions	string		Strings describing the various OperationalStatus array values. For example, if Stopping is the value assigned to OperationalStatus, this property can contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.
VendorID	string		The ID of the controllers vendor
VolumeLink Count	uint32		The number of links to BackendVolumes
VolumeMaxLink Count	uint32		The maximum number of links to BackendVolumes
WWNN	string		The controller's WWNN
Wwpn	string		The controller's WWPNS
WwpnMaxPath Count	uint64		The maximum path count to the corresponding WWPN
WwpnPathCount	uint64		The path count to the corresponding WWPN
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value that indicates an administrator's default or startup configuration for the Enabled State of an element. By default, the element is Enabled (2).

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_System
NameFormat, PrimaryOwnerContact, PrimaryOwnerName, Roles

Inherited from class CIM_ComputerSystem
Dedicated, IdentifyingDescriptions, NameFormat, OtherDedicatedDescriptions, OtherIdentifyingInfo, PowerManagementCapabilities, ResetCapability

Method Summary

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_ComputerSystem
SetPowerState

Method Detail

Not applicable.

Cascade Class IBMTSSVC_CandidateVolume

Description

A candidate volume for Metro Mirror or Global Mirror Copy Service features.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_ClusterScopeCandidateVolume

IBMTSSVC_CopyCandidate

IBMTSSVC_RemoteSystemCandidateVolume

Properties

The following properties are available for this class:

Id	Type	Range	Description
AuxiliaryClusterID	string		The ID of this volume's cluster.
Name	string	Max Length 1024	Defines the label by which the object is known. When subclassed, the Name property can be overridden to be a Key property.
SourceVolumeID	string		N/A
SystemName	string		The IP address of the scoping cluster.
Caption	string	Max Length 64	A short textual description (one- line string) of the object.
Description	string		Provides a textual description of the object.

Id	Type	Range	Description
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. It is often subclassed to be a Key. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive 5 Error 6 Non Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	Not applicable
StatusDescriptions	string		Strings that describe the various OperationalStatus array values. For example, if Stopping is the value assigned to OperationalStatus, this property can contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in the OperationalStatus property.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
--

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_ClusterScopeCandidateVolume

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster		The Cluster.
Dependent	IBMTSSVC_CandidateVolume		The candidate volume.

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_MemberOfAllocatedResources

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Collection	CIM_Collection		The Collection that aggregates members.
Member	CIM_ManagedElement		The aggregated member of the Collection.

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascading Class IBMTSSVC_RemoteAllocatedResources

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_CascadingAllocationService
- IBMTSSVC_HostedAllocatedResources
- IBMTSSVC_MemberOfAllocatedResources

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
ElementType	uint16	Unknown 0 Reserved 1 Any Type 2 StorageVolume 3 StorageExtent 4 StoragePool 5 ComputerSystem 6 LogicalDisk 7 FileShare 8	An enumeration that indicates the type of element that is collected by this AllocatedResources collection.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class SNIA_AllocatedResources
ElementType

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_RemoteCluster

Description

A remote cluster for which a Metro Mirror or Global Mirror partnership has been established (at least one-way).

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_RemotePartnership
- IBMTSSVC_RemoteSystemCandidateVolume
- IBMTSSVC_RemoteSystemVolume
- IBMTSSVC_StorageConfigurationService

Properties

The following properties are available for this class:

Id	Type	Range	Description
Name	string	Max Length 256	The label by which the object is known.
SystemName	string	Max Length 256	The IP address of the local cluster.
Caption	string	Max Length 64	The Caption property is a short textual description (one- line string) of the object.
Description	string		The Description property provides a textual description of the object.

Id	Type	Range	Description
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. Note that the Name property of ManagedSystemElement is also defined as a user-friendly name. But, it is often subclassed to be a Key. It is not reasonable that the same property can convey both identity and a user-friendly name, without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
IP	string		The IP address of the remote cluster.
PartnershipStatus	string		The status of the remote cluster partnership.
ServiceIP	string		The service IP address of the remote cluster.
PartnershipBandwidth	string		The bandwidth that is used for this partnership

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_BackendStorageVolume

A StorageVolume is an Extent that is presented to the Operating System, to a File System, or to another entity.

Description

StorageVolumes do not participate in StorageRedundancy Groups. This is a cascaded class that represents the Storage Volume on the Backend Storage.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_LogicalIdentity

- IBMTSSVC_RemoteBackendSystemDevice

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
DeviceID	string	Max Length 64	An address or other identifying information to uniquely name the LogicalDevice.
SystemCreationClass Name	string	Max Length 256	The CreationClassName of the scoping System.
SystemName	string	Max Length 256	The Name of the scoping System.
Name	string		A unique identifier for the Volume. VPD Page 83 Data of the MDisk (UID).
NameFormat	uint16	Unknown 0 Other 1 VPD83NAA6 2 VPD83NAA5 3 VPD83Type2 4 VPD83Type1 5 VPD83Type0 6 SNVM 7 Node WWN 8 NAA 9 EUI64 10 T10VID 11	This property originally touched on two concepts that are now separated into this property and NameNamespace. The values 2,3,4,5,6, and 8 are retained for backwards compatibility but are deprecated in lieu of the corresponding values in CIM_StorageVolume.NameNamespace. SNVM is three strings that represent the vendor name, product name within the vendor namespace, and the serial number within the model namespace. Strings are delimited with a +. Spaces can be included and are significant. The serial number is the text representation of the serial number in hexadecimal upper case. Vendor and Model represent the vendor and model ID from SCSI Inquiry data, the vendor field must be 8 characters wide and the product field must be 16 characters wide. For example, ACME +SUPER DISK +124437458'8 = Node WWN (for single LUN/controller) (NodeWWN)(DEPRECATED)9 = NAA as a generic format.
NameNamespace	uint16	Unknown 0 Other 1 VPD83Type3 2 VPD83Type 2 3 VPDType1 4 VPD80 5 Node WWN 6 SNVM 7	The preferred source for volume names is SCSI VPD Page 83 responses. Page 83 returns a list of identifiers for various device elements. The metadata for each identifier includes an Association field. Identifiers with an association of zero (0) apply to volumes. Page 83 supports several namespaces that are specified in the Type field in the identifier metadata.
OtherNameFormat	string		A string that describes the format of the Name property when NameFormat includes a value of Other 1.
OtherName Namespace	string		A string that describes the namespace of the Name property when NameNamespace includes a value of Other 1.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_LogicalDevice
AdditionalAvailability, Availability, ErrorCleared, ErrorDescription, IdentifyingDescriptions, LastErrorCode, MaxQuiesceTime, OtherIdentifyingInfo, PowerManagementCapabilities, PowerManagementSupported, PowerOnHours, StatusInfo, TotalPowerOnHours

Inherited from class CIM_StorageExtent
Access, BlockSize, ConsumableBlocks, DataOrganization, DataRedundancy, DeltaReservation, ErrorMethodology, ExtentStatus, IsBasedOnUnderlyingRedundancy, NoSinglePointOfFailure, NumberOfBlocks, PackageRedundancy, Primordial, Purpose, SequentialAccess

Inherited from class CIM_StorageVolume
Name, NameFormat, NameNamespace, OtherNameFormat, OtherNameNamespace

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_LogicalDevice
EnableDevice, OnlineDevice, QuiesceDevice, Reset, RestoreProperties, SaveProperties, SetPowerState

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascading Class IBMTSSVC_CascadingAllocationService

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string	Max Length 256	Uniquely identifies the Service and provides an indication of the functionality that is managed. This functionality is described in more detail in the Description property of the object.
SystemCreationClassName	string	Max Length 256	The CreationClassName of the scoping System.
SystemName	string	Max Length 256	The Name of the scoping System.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement

EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_Service

Started, StartMode, PrimaryOwnerContact, PrimaryOwnerName

Method Summary

Name	Description
Allocate	Starts a job to allocate remote resources (from the RemoteResources collection) to the AllocatedResources collection.
Deallocate	Starts a job to remove remote resources (from the AllocatedResources collection) and return them to the RemoteResources collection.

Inherited from class CIM_EnabledLogicalElement

RequestStateChange

Inherited from class CIM_Service

StartService, StopService

Method Detail

Allocate

Description

Starts a job to allocate remote resources (from the RemoteResources collection) to the AllocatedResources collection. For the SAN Volume Controller cluster, the Element Type must be 3 or 6. Volumes cannot be individually added. For example, inCollection has no meaning and InElements can only contain a single entry, which is the name of the remote cluster that you want to use to create a partnership. When you create a partnership, all the VDisks on that remote system can have copy relationships.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
ElementType	uint16		An enumeration that indicates the type of element that is being allocated. This type value must match the type of the instances.
Job	CIM_ConcreteJob		Reference to the job.
Collection	IBMTSSVC_RemoteAllocatedResources		The reference to the AllocatedResource collection to which Elements are being added. The SAN Volume Controller does not use this parameter.
InElements	string		An array of strings that contain representations of references to CIM_ManagedElement instances, that are being allocated to the AllocatedResources Collection. Only a single entry is valid. The entry must be the name or ID of the remote cluster.
Bandwidth	uint16		The bandwidth of the connection to the remote cluster in Mbps.
Out			
none			
Return codes			
none			

Deallocate

Description

Starts a job to remove remote resources (from the AllocatedResources collection) and return them to the RemoteResources collection. The SAN Volume Controller cluster requires a single entry in InElements that represents the name of the current

remote cluster in the partnership that is to be removed.

Parameters

Id	Type	Range	Description
In			
ElementType	uint16		An enumeration that indicates the type of element that is being allocated. This type value must match the type of the instances.
Job	CIM_ConcreteJob		Reference to the job.
Collection	IBMTSSVC_RemoteAllocatedResources		The reference to the AllocatedResource collection to which Elements are being added. The SAN Volume Controller does not use this parameter.
InElements	string		An array of strings that contain representations of references to CIM_ManagedElement instances, that are being allocated to the AllocatedResources Collection. Only a single entry is valid. The entry must be the name or ID of the remote cluster.
Out			
none			
Return codes			
none			

Cascade Class IBMTSSVC_CascadingElementCapabilities

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Capabilities	CIM_Capabilities		The Capabilities object that is associated with the element.
ManagedElement	CIM_ManagedElement	Min 1 Max 1	The managed element.

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_CascadingHostedService

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	CIM_ManagedElement		Antecedent represents the independent object in this association.
Dependent	CIM_ManagedElement		Dependent represents the object that is dependent on the Antecedent.

Method Summary

Not applicable.

Cascade Class IBMTSSVC_RemoteSystemVolume

Associates the remote cluster with the potential synchronized copy that the auxiliary volumes provide.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_RemoteCluster	Min 1 Max 1	The remote cluster.

Id	Type	Range	Description
PartComponent	IBMTSSVC_RemoteStorage Volume		The provided potential sync copy auxiliary volume.

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_RemoteSystemCandidateVolume

This class is the aggregation between a RemoteCluster and the Candidate Volumes.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Remote Cluster	Min 1 Max 1	The aggregating cluster.
PartComponent	IBMTSSVC_Candidate Volume		The Candidate Volume.

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_RemoteStorageVolume

This class represents a remote volume in a synchronous copy relationship.

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_MemberOfAllocatedResources

IBMTSSVC_RemoteStorageSynchronized

IBMTSSVC_RemoteSystemVolume

Properties

The following properties are available for this class:

Id	Type	Range	Description
ClusterID	string		The ID of the volume for the remote cluster.
ClusterName	string		The IP of the volume for the remote cluster.
Name	string		The ID of the remote volume.
SystemName	string		The IP:ID of the scoping cluster (the one it is on).
Caption	string	Max Length 64	The Caption property is a short textual description (one- line string) of the object.
Description	string		The Description property provides a textual description of the object.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	<p>The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.</p>
StatusDescriptions	string		<p>Strings that describe the various OperationalStatus array values. For example, if the value Stopping is assigned to OperationalStatus, this property might contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.</p>

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_RemotePartnership

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Remote Cluster		
Dependent	IBMTSSVC_Cluster	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_RemoteBackendSystemDevice

This class is the cascading implementation of the association between the remote representation of the storage volumes and the remote system device.

Description

LogicalDevices can be aggregated by a System. This relationship is made explicit by the SystemDevice association.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Backend Controller	Min 1 Max 1	The parent system in the Association.
PartComponent	IBMTSSVC_BackendStorage Volume		The LogicalDevice that is a component of a System.

Method Summary

Not applicable.

Method Detail

Not applicable.

Cascade Class IBMTSSVC_HostedAllocatedResources

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

Id	Type	Range	Description
Antecedent	CIM_ManagedElement		Antecedent represents the independent object in this association.
Dependent	CIM_ManagedElement		Dependent represents the object that is dependent on the Antecedent.

Method Summary

Not applicable.

Method Detail

Not applicable.

Certificate Class IBMTSSVC_Certificate

The SslCertificate manages the listing, creation and deletion of the certificates that are used by Pegasus for SSL communication.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Name	string	Max Length 256	Uniquely identifies the certificate.
Certificate	string		A string representation of the certificate in PEM format.
certPath	string		The path to the certificate file.
Expires	datetime		The date and time when the credential expires and is not appropriate to use for authentication or authorization. Use a value of all 9s if this information is not applicable. This property does not define how the expiration is set. You can set a specific date and time or you can set an interval that is calculated from the Issued property.
Issued	datetime		The date and time when the credential was issued. Use a value of all 0s if this information is not applicable.
keyPath	string		The path to the key file.
Type	string		The type of certificate.
Validity	uint32		The validity of the certificate.

Method Summary

Name	Description
CreateCert	Creates a new SSL certificate.
RemoveCert	Deletes an existing SSL certificate.

Method Detail

CreateCert

Description

Creates a new SSL certificate.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			

Id	Type	Range	Description
name	string		
Out			
<i>none</i>			
Return Codes			
<i>none</i>			

RemoveCert

Description

Deletes an existing SSL certificate.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
name	string		
Out			
<i>none</i>			
Return Codes			
<i>none</i>			

CopyServices Class IBMTSSVC_ClusterScopeAsyncCopySet

Defines the Cluster scope of the asynchronous copy instance.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster		The Cluster.
Dependent	IBMTSSVC_AsyncCopyStorage SynchronizedSet		The instance.

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_ClusterScopeCloneCopySet

Defines the Cluster scope of this Clone Copy instance.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	CIM_ManagedElement		Antecedent represents the independent object in this association.
Dependent	CIM_ManagedElement		Dependent represents the object that is dependent on the Antecedent.

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_ClusterScopeFlashCopySet

Defines the Cluster scope of this FlashCopy instance.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster		The Cluster.
Dependent	IBMTSSVC_FlashCopyStorage SynchronizedSet		The instance.

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_ClusterScopeSyncCopySet

Defines the Cluster scope of this Synchronized Copy instance.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster		The Cluster.
Dependent	IBMTSSVC_SyncCopyStorage SynchronizedSet		The Instance.

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_CloneCopyStorageSynchronizedSet

This class is used for the FlashCopy Consistency Groups when AutoDelete is set to On.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_ClusterScopeCloneCopySet

Properties

The following properties are available for this class:

Id	Type	Range	Description
CopyType	uint16		Describes the Replication Policy. The following values are possible: <ul style="list-style-type: none">• Async: create and maintain an asynchronous copy of the source.• Sync: create and maintain a synchronized copy of the source.• UnSyncAssoc: create an unsynchronized copy and maintain an association to the source.
InstanceID	string		Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.
AuxiliaryID	string		The ID of the auxiliary cluster.
AuxiliaryName	string		The name of the auxiliary cluster.

Id	Type	Range	Description
Availability	uint32	Online 0 Primary Offline 1 Secondary Offline 2 IO Channel Offline 3	The availability of the set.
Connected	boolean		The status of the connection.
Description	string		Provides a textual description of the object.
ElementCount	uint32		The number of SyncCopyStorageSynchronized in this set.
FreezeTime	string		
MasterID	string		The ID of the master cluster.
MasterName	string		The name of the master cluster.
NativeState	uint16	Idling 0 Idling disconnected 1 Consistent synchronized 2 Consistent disconnected 3 Consistent stopped 4 Inconsistent copying 5 Inconsistent disconnected 6 Inconsistent stopped 7 Empty 8	The native state for the set.
Primary	uint32	Master 0 Auxiliary 1 Unknown 2	Shows which side is currently the primary in the relationship. The primary volumes are accessible for I/O operations by the clients.
Status	uint32	Prepared 4 ReSynclnProgress 5 Synchronized 6 Broken 12 Fractured 13 Empty 0x1000 Fractured Idle 0x8101	The status of the SynchronizedSet.
SyncMaintained	boolean		Indicates if synchronization is maintained.
Caption	string	Max Length 15	A short textual description (one-line string) of the object.

Id	Type	Range	Description
ElementName	string	Max Length 15	A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class IBMTSSVC_SynchronizedSet
ElementName

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_AsyncCopyStorageSynchronizedSet

This class maps to the Global Mirror Consistency Group.

Description

A synchronized set aggregates multiple StorageSynchronized instances in order to ensure consistent copying.

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_ClusterScopeAsyncCopySet

Properties

The following properties are available for this class:

Id	Type	Range	Description
CopyType	uint16	Async 2 Sync 3 UnSync Assoc 4 DMTFReserved .. Vendor Specific 0x8000..	Describes the Replication Policy. The following values are possible: <ul style="list-style-type: none"> • Async: create and maintain an asynchronous copy of the source. • Sync: create and maintain a synchronized copy of the source. • UnSyncAssoc: create an unsynchronized copy and maintain an association to the source.
InstanceID	string		Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.
AuxiliaryID	string		The ID of the auxiliary cluster.
AuxiliaryName	string		The name of the auxiliary cluster.
Availability	uint32	Online 0 Primary Offline 1 Secondary Offline 2 IO Channel Offline 3	The availability of the set.
Connected	boolean		The status of the connection.
Description	string		Provides a textual description of the object.
ElementCount	uint32		The number of SyncCopyStorageSynchronized instances in this set.
FreezeTime	string		
MasterID	string		The ID of the master cluster.
MasterName	string		The name of the master cluster.

Id	Type	Range	Description
NativeState	uint16	Idling 0 Idling disconnected 1 Consistent synchronized 2 Consistent disconnected 3 Consistent Stopped 4 Inconsistent copying 5 Inconsistent disconnected 6 Inconsistent stopped 7 Empty 8	The native state for the set.
Primary	uint32	Master 0 Auxiliary 1 Unknown 2	Shows which side is currently the primary in the relationship. The primary volumes are accessible for I/O operations.
Status	uint32	Prepared 4 ReSynclnProgress 5 Synchronized 6 Broken 12 Fractured 13 Empty 0x1000 Fractured Idle 0x8101	The status of the SynchronizedSet.
SyncMaintained	boolean		Indicates if synchronization is maintained.
Caption	string	Max Length 15	A short textual description (one-line string) of the object.
ElementName	string	Max Length 15	A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.

Inherited from class CIM_ManagedElement
--

Caption, Description, ElementName

Inherited from class IBMTSSVC_SynchronizedSet
--

ElementName

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_RemoteStorageSynchronized

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
SyncedElement	CIM_LogicalElement		The Target of the Relationship.
SystemElement	CIM_LogicalElement		The Source of the Relationship.
BackgroundCopy Priority	uint16		The background copy priority. Values can be 1 to 100. The default is 50.
Connected	boolean		The status of the connection between both volumes.
CopyType	uint16	Async 2 Sync 3 UnSyncAssoc 4 SyncAssoc 5 DMTF Reserved .. Vendor Specific 0x8000..	Describes the Replication Policy.
ElementName	string		The user friendly name of this association.
FreezeTime	string		The time the relationship was stopped.
Name	string		The name which identifies the association.

Id	Type	Range	Description
NativeState	uint16	{Idling 0 Idling disconnected 1 Consistent synchronized 2 Consistent disconnected 3 Consistent stopped 4 Inconsistent copying 5 Inconsistent disconnected 6 Inconsistent stopped} 7	The native state of the relationship.
Primary	uint32	Master 0 Auxiliary 1	Shows which of the Volumes is currently the primary in the relationship. The primary volume is the one that is accessible for I/O operations by the clients.
Progress	uint32		The progress of the copy process, if one is ongoing.
ReplicaType	uint16	Not specified 0 Full Copy 2 Before Delta 3 After Delta 4 Log 5 DMTF Reserved ... Vendor Specific 0x8000..	Provides information on how the Replica is being maintained. Values are: Full Copy: This indicates that a full copy of the source object is (or will be) generated. Before Delta: This indicates that the source object is maintained as a delta data from the replica. After Delta: This indicates that the replica is maintained as delta data from the source object. Log: This indicates that the replica object is being maintained as a log for changes to the source. Not Specified: The method of maintaining the copy is not specified.
Status	uint16	Online 0 Primary Offline 1 Secondary Offline 2 IO Channel Offline 3	The status for the relationship.
SyncedElementClusterID	string		The ID of the cluster for the Synced Element.
SyncedElementCluster Name	string		The name of the cluster for the Synced Element.
SyncedElementID	string		The device ID of the Synced Element.
SyncedElementName	string		The name of the Synced Element.
SynchronizedSet	IBMTSSVC_ SynchronizedSet		

Id	Type	Range	Description
SynchronizedSetID	string		The ID of the SynchronizedSet for which this StorageSynchronized is a member.
SynchronizedSet Name	string		The name of the SynchronizedSet for which this StorageSynchronized is a member.
SyncState	uint16	Initialized 2 PrepareInProgress 3 Prepared 4 ResyncInProgress 5 Synchronized 6 Fracture In Progress 7 QuiesceInProgress 8 Quiesced 9 Restore In Progress 10 Idle 11 Broken 12 Fractured 13 DMTF Reserved .. Vendor Specific 8x8000..	Describes the state of the association with respect to Replication activity.
SystemElementClusterID	string		The ID of the cluster for the System Element.
SystemElementCluster Name	string		The Name of the cluster for the System Element.
SystemElementID	string		The device ID of the System Element.
SystemElementName	string		The name of the System Element.

Inherited from class CIM_Synchronized
SyncMaintained, WhenSynced

Inherited from class CIM_StorageSynchronized
CopyType, ReplicaType, SyncState

Inherited from class IBMTSSVC_StorageSynchronized
CopyType, ElementName, Name, Progress, ReplicaType, SyncedElementID, SyncedElementName, SynchronizedSet, SynchronizedSetID, SynchronizedSetName, SyncState, SystemElementID, SystemElementName

Method Summary

The following methods are available for this class:

Name	Description
SetBackgroundCopyPriority	This method can be used to set BackgroundCopyPriority of a FlashCopyrelationship.
SetElementName	This method can be used to set ElementName of a RemoteCopyrelationship.

Method Detail

SetBackgroundCopyPriority

Description

This method can be used to set BackgroundCopyPriority of a FlashCopyrelationship.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
backgroundCopyPriority	uint16		New background copy rate.
force	boolean		Force the setting.
Out			
none			
Return codes			
none			

SetElementName

Description

This method can be used to set ElementName of a RemoteCopyrelationship.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
elementName	string		New element name.
Out			
none			
Return codes			
none			

CopyServices Class IBMTSSVC_CopyCandidate

Associates CandidateVolumes with StorageVolumes.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Candidate Volume		
Dependent	IBMTSSVC_Storage Volume		The Storage Volume.

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_SynchronizedSet

Description

Subclasses

The following subclasses are used by this class.

- IBMTSSVC_AsyncCopyStorageSynchronizedSet
- IBMTSSVC_CloneCopyStorageSynchronizedSet
- IBMTSSVC_FlashCopyStorageSynchronizedSet
- IBMTSSVC_SyncCopyStorageSynchronizedSet

Referenced By

The following classes reference this class:

- IBMTSSVC_LocalStorageSynchronized
- IBMTSSVC_RemoteStorageSynchronized
- IBMTSSVC_StorageConfigurationService
- IBMTSSVC_StorageSynchronized

Properties

Id	Type	Range	Description
CopyType	uint16	Async 2 Sync 3 UnSyncAssoc 4 DMTF Reserved ..	Describes the Replication Policy. The following values are possible: <ul style="list-style-type: none"> • Async: create and maintain an asynchronous copy of the source. • Sync: create and maintain a synchronized copy of the source. • UnSyncAssoc: create an unsynchronized copy and maintain an association to the source.
InstanceID	string		Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.

Id	Type	Range	Description
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_StorageSynchronized

Description

Subclasses

The following classes are used:

- IBMTSSVC_LocalStorageSynchronized
- IBMTSSVC_RemoteStorageSynchronized

Referenced By

The following class references this class:

IBMTSSVC_StorageConfigurationService

Properties

The following properties are available for this class:

Id	Type	Range	Description
SyncedElement	CIM_LogicalElement		The Target of the Relationship.
SystemElement	CIM_LogicalElement		The Source of the Relationship.
CopyType	uint16	Async 2 Sync 3 UnSyncAssoc 4 Sync Assoc 5 DMTF Reserved .. Vendor Specific 0x8000..	Describes the Replication Policy. Values are: Async: create and maintain an asynchronous copy of the source.Sync: create and maintain a synchronized copy of the source.UnSyncAssoc: create an unsynchronized copy and maintain an association to the source.
ElementName	string		The user friendly name of this association
Name	string		The name which identifies the association.
Progress	uint32		The progress of the copy process, if one is ongoing.
ReplicaType	uint16	Not Specified 0 Fully Copy 2 Before Delta 3 After Delta 4 Log 5 DMTF Reserved .. Vendor Specific 0x8000..	Provides information on how the Replica is being maintained. Values are: Full Copy: This indicates that a full copy of the source object is (or will be) generated. Before Delta: This indicates that the source object will be maintained as a delta data from the replica. After Delta: This indicates that the replica will be maintained as delta data from the source object. Log: This indicates that the replica object is being maintained as a log of changes to the source. Not Specified: The method of maintaining the copy is not specified.
SyncedElementID	string		The device id of the Synced Element
SyncedElementName	string		The name of the SyncedElement.
SynchronizedSet	IBMTSSVC_Synchronized Set		
SynchronizedSetID	string		The id of the SynchronizedSet this StorageSynchronized is a member of.

Id	Type	Range	Description
SynchronizedSet Name	string		The name of the SynchronizedSet this StorageSynchronized is a member of.
SyncState	uint16		Describes the state of the association with respect to Replication activity.
SystemElementID	string		The device id of the System Element
SystemElementName	string		The name of the System Element.

Inherited from class CIM_Synchronized
SyncMaintained, WhenSynced

Inherited from class CIM_StorageSynchronized
CopyType, ReplicaType, SyncState

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_LocalStorageSynchronized

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_StorageConfigurationService

Properties

The following properties are available for this class:

Id	Type	Range	Description
SyncedElement	CIM_LogicalElement		The Target of the Relationship.
SystemElement	CIM_LogicalElement		The Source of the Relationship.

Id	Type	Range	Description
AutoDelete	boolean		Indicates if this mapping is automatically deleted when the copy has completed. If set to true, the mapping is deleted when the copy process completes or is immediately deleted if the copy process has already completed.
CleanProgress	uint32		The clean progress for the copy by percent.
CleanRate	uint32		The clean rate for the copy by percent.
CopyRate	uint16		The copy rate for the copy in percent. The default is approximately six percent.
CopyType	uint16	Async 2 Sync 3 UnSyncAssoc 4 SyncAssoc 5 DMTF Reserved .. Vendor Specific 0x8000..	Describes the Replication Policy.
DependentMapping Count	uint32		The number of FlashCopy operations that are dependent on this one.
Difference	uint32		The number of differences for the FlashCopy operations.
ElementName	string		The user friendly name of this association.
GrainSize	uint32		The size of the grain used for this mapping.
Incremental	boolean		Indicates if the FlashCopy is incremental.
IOGroupId	uint32		The I/O Group ID that this mapping is associated with.
IOGroupName	string		The IO Group Name that this mapping is associated with.
Name	string		The name that identifies the association.
Progress	uint32		The progress of the copy process, if a process is running.
ReplicaType	uint16	Not Specified 0 Full Copy 2 Before Delta 3 After Delta 4 Log 5 DMTF Reserved .. Vendor Specific 0x8000..	Provides information on how the Replica is being maintained.
StartTime	string		The FlashCopy operation Start Time.

Id	Type	Range	Description
SyncedElementID	string		The device id of the Synced Element
SyncedElementName	string		The name of the SyncedElement.
SynchronizedSet	IBMTSSVC_Synchronized Set		
SynchronizedSetID	string		The ID of the SynchronziedSet for which this StorageSynchronized is a member.
SynchronizedSetName	string		The name of the SynchronizedSet for which this StorageSynchronized is a member.
SyncState	uint16	Initialized 2 PrepareInProgress 2 Prepared 4 ResyncInProgress 5 Synchronized 6 Fracture In Progress 7 QuiesceInProgress 8 Quiesced 9 Restore In Progress 10 Idle 11 Broken 12 Fractured 13 DMTF Reserved .. Vendor Specific 0x8000..	Describes the state of the association with respect to Replication activity.
SystemElementID	string		The device ID of the System Element.
SystemElementName	string		The name of the System Element.

Inherited from class CIM_Synchronized
SyncMaintained, WhenSynced

Inherited from class CIM_StorageSynchronized
CopyType, ReplicaType, SyncState

Inherited from class IBMTSSVC_StorageSynchronized
CopyType, ElementName, Name, Progress, ReplicaType, SyncedElementID, SyncedElementName, SynchronizedSet, SynchronizedSetID, SynchronizedSetName, SyncState, SystemElementID, SystemElementName

Method Summary

The following methods are available for this class:

Name	Description
SetAutoDelete	This method can be used to set AutoDelete of a FlashCopy relationship.
SetCleanRate	This method can be used to set CleanRate of a FlashCopy relationship.
SetCopyRate	This method can be used to set CopyRate of a FlashCopy relationship.
SetElementName	This method can be used to set ElementName of a FlashCopy relationship.

Method Detail

SetAutoDelete

Description

This method can be used to set AutoDelete of a FlashCopy relationship.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
enableAutoDelete	boolean		Boolean value for AutoDelete flag.
Out			
none			
Return codes			
none			

SetCleanRate

Description

This method can be used to set CleanRate of a FlashCopy relationship.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
cleanRate	uint32		Percentage value of the clean rate.
force	boolean		Force the setting. If this mapping is part of a consistency group, the mapping is dropped from the group.

Id	Type	Range	Description
Out			
none			
Return codes			
none			

SetCopyRate

Description

This method can be used to set CopyRate of a FlashCopy relationship.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
copyRate	uint16		Percentage value of the copy rate.
force	boolean		Forces the setting of the CopyRate property. If this mapping is part of a consistency group, the mapping is dropped from the group.
Out			
none			
Return codes			
none			

SetElementName

Description

This method can be used to set ElementName of a FlashCopy relationship.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
elementName	string		The new element name.
force	boolean		Forces the setting of the ElementName property. If this mapping is part of a consistency group, the mapping is dropped from the group.
Out			

Id	Type	Range	Description
none			
Return codes			
none			

CopyServices Class IBMTSSVC_StorageReplicationElementCapabilities

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_StorageReplicationCapabilities

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
AlternateReplicationService PointAccess	uint16	None 2 Source 3 Target 4 Proxy 5 DMTF Reserved .. Vendor Specified 0x8000..	<p>Provides StorageConfigurationService instances for source systems and target systems. A client determines that extrinsic methods of the service must be invoked to one instance or the other based on the value of this property. If the primary instance is unavailable, the provider can indicate an alternate instance. The following values are possible:</p> <ul style="list-style-type: none"> • None: no alternate exists. • Source: invoke to source element service instance. • Target: invoke to target element service instance. • Proxy: find and invoke alternate proxy service instance.

Id	Type	Range	Description
BidirectionalConnections Supported	boolean		If set to true, the peer-to-peer connections are bidirectional. If set to false, the connections are unidirectional.
DeltaReplicaPoolAccess	uint16	Any 2 Exclusive 3 Shared 4 DMTF Reserved ... Vendor Specific 0x8000..	Indicates that a specialized pool is required as a container for delta replica elements. The following values are possible: <ul style="list-style-type: none"> • Any: delta replicas can be created in any pool. • Exclusive: one specialized, exclusive pool must be created for each source element that has associated delta replicas. • Shared: one specialized, shared pool must be created to be shared by all source elements with associated delta replicas.
HostAccessibleState	uint16	Initialized 2 Prepare In Progress Prepared 4 Resync In Progress 5 Synchronized 6 Fracture in Progress 7 Quiesce in Progress 8 Quiesced 9 Restore In Progress 10 Idle 11 Broken 12 Fractured 13 Frozen 14 Copy in Progress 15 DMTF Reserved .. Vendor Specific 0x8000..	Lists the replica synchronization states that the provider allows host access to replicas. Accessibility does not guarantee replica contents are valid or consistent.
IncrementalDeltasSupported	boolean		If set to true, all delta replicas that are associated with the same source element can be incrementally dependent. You can only delete or synchronize the oldest replica in the set.

Id	Type	Range	Description
InitialReplicationState	uint16	Initialized 2 Prepared 3 Synchronized 4 Idle 5 DMTF Reserved .. Vendor Specific 0x8000..0xFFFF	Specifies which initial ReplicationState is supported by a particular provider. The following values are possible: <ul style="list-style-type: none"> • Initialized: The replication relationship is known and unsynchronized, but time required to synchronize might be long. • Prepared: The replication relationship is known and unsynchronized and the time required to synchronize is short. • Synchronized: The replicas are synchronized. • Idle: An UnSyncAssoc replica is ready to manage.
InitialSynchronizationDefault	uint16	Not Managed 0 Start 1 Do Not Start 2 DMTF Reserved .. Vendor Specific 0x8000..	Indicates if the background copy is started when the replica is created.
LocalMirrorSnapshotSupported	boolean		If set to true, the local Metro Mirror or Global Mirror feature can be the source for the snapshot.
LowSpaceWarningThreshold Default	uint8		The warning threshold for generating an indication for the RemainingManagedSpace instance. A value of zero indicates that no warning is generated. The threshold is triggered when RemainingManagedSpace is greater than or equal to the following formula: $(TotalManagedSpace \times LowSpaceWarningThreshold) \div 100.$
MaximumConnectionsPer Port	uint16		The maximum number of peer-to-peer connections to which a port can be assigned.
MaximumLocalReplication Depth	uint16		The maximum local mirror replication depth that is allowed by this instance of StorageConfigurationService. A value of one indicates that multilevel replication is not supported.
MaximumPeerConnections	uint16		The maximum number of peer connections that are supported by this instance of StorageConfigurationService.

Id	Type	Range	Description
MaximumPortsPerConnection	uint16		The maximum number of port pairs that are assigned to a peer-to-peer connection.
MaximumRemoteReplication Depth	uint16		The maximum Metro Mirror or Global Mirror replication depth that is allowed by this instance of StorageConfigurationService. Value N means that remote replicas can span N linked peer-to-peer connections. A value of one indicates that multilevel replication is not supported.
MaximumReplicasPerSource	uint16		The maximum number of replicas that can be associated with one source element.
PeerConnectionProtocol	string		A private, vendor-specific protocol for replication data transport. A client verifies that two peers support the same protocol before establishing a peer-to-peer connection.
PersistentReplicasSupported	boolean		If set to true, the replicas can persist during power off or system reset. If set to false, replicas are lost during these events.
RemoteBufferElementType	uint16	Not specified 0 InExtent 2 InPool 3 DMTF Reserved .. Vendor Specific 0x8000..	Remote replication buffer elements are instances of CIM_Memory. A buffer element can be created from a component extent with a BasedOn association or in a storage pool with an AllocatedFromStoragePool association. The provider can also make the size and element type opaque to a client.
RemoteBufferHost	uint16	Array 2 ComponentCS 3 Pipe 4 DMTF Reserved .. Vendor Specific 0x8000..	Indicates if the array provider requires multiple buffer elements.
RemoteBufferLocation	uint16	Source 2 Target 3 Both 4 DMTF Reserved .. Vendor Specific 0x8000..	Allows the provider to indicate the required location for remote buffer elements.

Id	Type	Range	Description
RemoteBufferSupported	uint16	Not Supported 0 Required 2 Optional 3 DMTF Reserved .. Vendor Specific 0x8000..	Peer may require a write buffer for remote replica elements with async I/O buffering. Typically used to increase remote mirror replication engine performance while maintaining high availability.
RemoteMirrorSnapshotSupported	boolean		If set to true, the Metro Mirror or Global Mirror can be the source of the snapshot.
RemoteReplicationServicePoint Access	uint16	Not specified 2 Source 3 Target 4 Proxy 5 DMTF Reserved .. Vendor Specific 0x8000..	Provides StorageConfigurationService instances for source systems and target systems. The value of this property is used to determine the extrinsic methods of the service that are invoked to one instance or the other instance.
ReplicaHostAccessibility	uint16	Not Accessible 2 No Restrictions 3 Source Hosts Only 4 Source Hosts Exclude 5 DMTF Reserved ..	Indicates host access restrictions for replicas with these capabilities.
ReplicationPriorityDefault	uint16	Not Managed 0 Low 1 Same 2 High 3 DMTF Reserved .. Vendor Specific 0x8000..	Allows the priority of background replication I/O operations to be managed relative to host I/O operations. The value can be modified while in the Replication-in-progress state.
SpaceLimitSupported	boolean		If set to true, indicates that the space limits on allocation from StoragePools are enforced.
SpaceLimitWarningThreshold Default	uint8		Warning threshold for instance modification indication for SpaceConsumed by a replica element. Value of zero means no warning generated. The threshold is triggered when SpaceConsumed is greater than or equal to the following formula: $(\text{SpaceLimit} \times \text{SpaceLimitWarningThreshold}) \div 100$.
SpaceReservationSupported	boolean		If set to true, indicates that the space that is reserved for replicas can be from a specialized pool.

Id	Type	Range	Description
SupportedAsynchronous Actions	uint16	Local Replica Creation 2 Remote Replica Creation 3 Local Replica Modification 4 Remote Replica Modification 5 Local Replica Attachment 6 Remote Replica Attachment 7 Buffer Creation 8 DMTF Reserved ..	An enumeration that indicates the operations that are run as asynchronous jobs. If an operation is included in both this and SupportedSynchronousActions, the underlying implementation indicates that it might not create the job.
SupportedModifyOperations	uint16	Detach 2 Fracture 3 Resync 4 Restore 5 Prepare 6 Unprepare 7 Quiesce 8 Unquiesce 9 Reset To Sync 10 Reset To Async 11 Start Copy 12 Stop Copy 13 DMTF Reserved .. Vendor Specific 0x8000..0xFFFF	An enumeration that indicates which ModifySynchronization operations are supported by this instance of StorageReplicationCapabilities.
SupportedSpecializedElements	uint16	Delta Pool 2 Delta Pool Component 3 Remote Mirror 4 Local Mirror 5 Full Snapshot 6 Delta Snapshot 7 Replication Buffer 8 DMTF Reserved .. Vendor Specific 0x8000..0xFFFF	An enumeration that indicates which specialized storage element types are supported by this instance of StorageReplicationCapabilities. Specialized types are indicated by the value of the IntendedUsage in StorageSetting.

Id	Type	Range	Description
SupportedSynchronizationType	uint16	Async 2 Sync 3 UnSyncAssoc-Full 4 UnSyncAssoc-Delta 5 UnSyncUnAssoc 6 DMTF Reserved .. Vendor Specific 32768..65535	Describes the type of synchronization that is characterized by this instance of StorageReplicationCapabilities.
SupportedSynchronousActions	uint16	Local Replica Creation 2 Remote Replica Creation 3 Local Replica Modification 4 Remote Replica Modification 5 Local Replica Attachment 6 Remote Replica Attachment 7 Buffer Creation 8 NetworkPipeCreation 9 DMTF Reserved ..	An enumeration that indicates the operations that are run without the creation of a job. If an operation is included in both this and SupportedAsynchronousActions, the underlying instrumentation indicates that it might not create a job.
UseReplicationBufferDefault	uint16	Not Managed 0 Use Buffer 1 Do Not Use Buffer 2 DMTF Reserved .. Vendor Specific 0x8000..	Indicates if an asynchronous remote replica pair is allowed to use a write buffer for asynchronous write buffering.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_Capabilities

ElementName

Inherited from class CIM_StorageReplicationCapabilities

AlternateReplicationServicePointAccess, BidirectionalConnectionsSupported, DeltaReplicaPoolAccess, HostAccessibleState, IncrementalDeltasSupported, InitialReplicationState, InitialSynchronizationDefault, LocalMirrorSnapshotSupported, LowSpaceWarningThresholdDefault, MaximumConnectionsPerPort, MaximumLocalReplicationDepth, MaximumPeerConnections, MaximumPortsPerConnection, MaximumRemoteReplicationDepth, MaximumReplicasPerSource, PeerConnectionProtocol, PersistentReplicasSupported, RemoteBufferElementType, RemoteBufferHost, RemoteBufferLocation, RemoteBufferSupported, RemoteMirrorSnapshotSupported, RemoteReplicationServicePointAccess, ReplicaHostAccessibility, ReplicationPriorityDefault, SpaceLimitSupported, SpaceLimitWarningThresholdDefault, SpaceReservationSupported, SupportedAsynchronousActions, SupportedModifyOperations, SupportedSpecializedElements, SupportedSynchronizationType, SupportedSynchronousActions, UseReplicationBufferDefault

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_StorageReplicationCapabilities**Description****Subclasses**

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Capabilities	CIM_Capabilities		The Capabilities object associated with the element.
ManagedElement	CIM_ManagedElement	Min 1 Max 1	The managed element.

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_SyncCopyStorageSynchronizedSet

Remote Copy Consistency Group for Metro Mirror copy operations.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_ClusterScopeSyncCopySet

Properties

The following properties are available for this class:

Id	Type	Range	Description
CopyType	uint16	Async 2 Sync 3 UnSyncAssoc 4 DMTF Reserved ... Vendor Specific 0x8000...	Describes the Replication Policy. The following values are possible: <ul style="list-style-type: none">• Async: create and maintain an asynchronous copy of the source.• Sync: create and maintain a synchronized copy of the source.• UnSyncAssoc: create an unsynchronized copy and maintain an association to the source.

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
AuxiliaryID	string		The ID of the auxiliary cluster.
AuxiliaryName	string		The name of the auxiliary cluster.

Id	Type	Range	Description
Availability	uint32	Online 0 Primary Offline 1 Secondary Offline 2 I/O Channel Offline 3	The availability of the set.
Connected	boolean		The status of the connection.
Description	string		Provides a textual description of the object.
ElementCount	uint32		The number of SyncCopyStorage Synchronized in this set.
FreezeTime	string		The time the relationship was stopped.
MasterID	string		The ID of the master cluster.
MasterName	string		The name of the master cluster.
NativeState	uint16	Idling 0 Idling disconnected 1 Consistent synchronized 2 Consistent disconnected 3 Consistent stopped 4 Inconsistent copying 5 Inconsistent stopped 7 Empty 8	The native state of the set.
Primary	uint32	Master 0 Auxiliary 1 Unknown 2	Shows which side is currently the primary in the relationship. The primary volumes are the ones that are accessible for I/O operations by the clients.
Status	uint32	Prepared 4 ReSyncInProgress 5 Synchronized 6 Broken 12 Fractured 13 Empty 0x1000 Fractured Idle 0x8101	The status of the SynchronizedSet.
SyncMaintained	boolean		Indicates if synchronization is maintained.
Caption	string	Max Length 15	A short textual description (one-line string) of the object.

Id	Type	Range	Description
ElementName	string	Max Length 15	A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class IBMTSSVC_SynchronizedSet
ElementName

Method Summary

Not applicable.

Method Detail

Not applicable.

CopyServices Class IBMTSSVC_FlashCopyStorageSynchronizedSet

A synchronized set aggregates multiple StorageSynchronized in order to ensure consistent copying.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_ClusterScopeFlashCopySet

Properties

The following properties are available for this class:

Id	Type	Range	Description
CopyType	uint16	Async 2 Sync 3 UnSyncAssoc 4 UnSyncUnAssoc 5 DMTF Reserved .. Vendor Specific 0x8000..	Describes the Replication Policy. The following values are possible: <ul style="list-style-type: none"> • Async: create and maintain an asynchronous copy of the source. • Sync: create and maintain a synchronized copy of the source. • UnSyncAssoc: create an unsynchronized copy and maintain an association to the source.
InstanceID	string		Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.

Id	Type	Range	Description
Caption	string	Max Length 64	A short textual description (one-line string) of the object.
Description	string		Provides a textual description of the object.
Status	uint32	Initialized 2 PrepareInProgress 3 Prepared 4 ResyncInProgress 5 Idle 11 Broken 12 Empty 0x1000 Stopped 0x8001 Stopping 0x8002	The status of the SynchronizedSet.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.

Inherited from class CIM_ManagedElement
--

Caption, Description, ElementName

Inherited from class IBMTSSVC_SynchronizedSet
--

ElementName

Method Summary

Not applicable.

Method Detail

Not applicable.

DeviceConfiguration Class IBMTSSVC_DeviceConfigurationServiceAvailableToProfile

This association is used for discovery purposes so that clients know which services are available for the Virtualizer profile.

Description

DeviceConfigurationService is a vendor-defined class, but it will still be associated to the Virtualizer RegisteredProfile.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
ServiceProvided	CIM_Service		The Service that is available.
UserOfService	CIM_ManagedElement		The ManagedElement that can use the Service.

Method Summary

Not applicable.

Method Detail

Not applicable.

DeviceConfiguration Class IBMTSSVC_DeviceConfigurationService

This service allows the active management of the devices for which a CIM Agent is configured.

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_ConcreteDependencyDeviceConfiguration

IBMTSSVC_DeviceConfigurationServiceAvailableToProfile

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	The scoping System's CreationClassName. Each StorageManagementSystem has one DeviceConfigurationService. Set to IBMTSSVC_StorageManagement Service.
Name	string		The Name property is used to uniquely identify a CIM Server. The CIM Server must ensure that this value is globally unique. In order to ensure uniqueness, this value will be of the form IBMTSSVC:<IP Address of system>.
<i>SystemCreationClass Name</i>	string	Max Length 256	The CreationClassName of the scoping System.
<i>SystemName</i>	string	Max Length 256	The Name of the scoping System.
ElementName	string		Will be of the form "DeviceConfigurationService for StorageManagementSystem at <StorageManagementSystem.Name>".

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement

EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_Service

Started, StartMode, PrimaryOwnerContact, PrimaryOwnerName

Method Summary

Name	Description
AddDevice	Adds a storage device to the CIM Agent device configuration.
RefreshConnection	Attempts to connect to the device described by the DeviceConfiguration.
RemoveDevice	Removes a storage device from the CIM Agent device configuration.

Inherited from class CIM_EnabledLogicalElement

RequestStateChange

Inherited from class CIM_Service
StartService, StopService

Method Detail

AddDevice

Description

Adds a storage device to the CIM Agent device configuration. When errors occur with the connection to the device, the device is still added to the configuration of the CIM Agent. If the configuration needs to be changed for any reason, it should be removed and then re-added.

Parameters

Id	Type	Range	Description
In			
DeviceConfig	IBMTSSVC_Device Configuration		The created DeviceConfiguration. If unsuccessful, null is returned.
DeviceType	uint16		DeviceType specifies the type of Device being added. Currently only 2145 is supported.
IPAddress2	string		The secondary IP (service) address of the Storage Device to be added. This is optional.
Password	string		The Password of the Storage Device to be added. This is an optional parameter.
UserName	string		The User Name of the Storage Device to be added. This is an optional parameter. Admin is used by default.
IPAddress	string		The IP address of the Storage Device to be added.
Out			
DeviceConfig	IBMTSSVC_Device Configuration		The created DeviceConfiguration. If unsuccessful, null is returned.
Return Codes			
<i>none</i>			

RefreshConnection

Description

Attempts to connect to the device described by the DeviceConfiguration. If a connection already exists, it will be tested to make sure it is still active.

Parameters

Id	Type	Range	Description
In			
DeviceConfig	IBMTSSVC_Device Configuration		
Out			
<i>none</i>			
Return Codes			
<i>none</i>			

RemoveDevice

Description

Removes a storage device from the CIM Agent device configuration.

Parameters

Id	Type	Range	Description
In			
DeviceConfig	IBMTSSVC_Device Configuration		Device to be removed.
Out			
<i>none</i>			
Return Codes			
<i>none</i>			

DeviceConfiguration Class IBMTSSVC_DeviceConfiguration

This class represents a storage device for which the CIM Agent is configured.

Description

This class only represents a list of entries, it does not represent any sort of live connectivity to the device.

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_ConcreteDependencyDeviceConfiguration

IBMTSSVC_DeviceConfigurationService

IBMTSSVC_DeviceSettingData

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		Of the form IBMTSSVC:<IP of Cluster>.
ElementName	string		Will be of the form DeviceConfiguration for device at <IP of Cluster>.
DeviceType	uint16	2145 0	DeviceType specifies the type of Device.
IPAddress	string		The primary IP address of the Storage Device
IPAddress2	string		The secondary (service) IP address of the Storage Device.
Password	string		The Password of the primary IP address of the Storage Device.
UserName	string		The User Name of the primary IP address of the Storage Device.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_SettingData
ElementName

Method Summary

Not applicable.

Method Detail

Not applicable.

DeviceConfiguration Class IBMTSSVC_HostedDeviceConfigurationService

CIM_HostedService is an association between a Service and the System on which the functionality resides.

Description

A System can host many Services. A Service is hosted on the System where the LogicalDevices or SoftwareFeatures that implement the Service are located. The model does not represent Services hosted across multiple systems. This is modeled as an ApplicationSystem that acts as an aggregation point for Services that are each located on a single host.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_MasterConsole	Min 1 Max 1	The hosting system.
Dependent	IBMTSSVC_DeviceConfiguration Service		The Service hosted on the System.

Method Summary

Not applicable.

Method Detail

Not applicable.

DeviceConfiguration Class

IBMTSSVC_ConcreteDependencyDeviceConfiguration

This class is an association between the DeviceConfiguration and the DeviceConfigurationService instance that was used to create it.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_DeviceConfiguration Service		The DeviceConfigurationService
Dependent	IBMTSSVC_DeviceConfiguration		The DeviceConfiguration

Method Summary

Not applicable.

Method Detail

Not applicable.

DeviceConfiguration Class IBMTSSVC_DeviceSettingData

This class is the association between a Cluster and its DeviceConfiguration.

Description

If communication to the storage device is not successful, an instance of this association is not returned.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
ManagedElement	IBMTSSVC_Cluster		The Cluster that is the managed element.
SettingData	IBMTSSVC_Device Configuration		The SettingData object that is associated with the element.
IsCurrent	uint16	Unknown 0 Is Default 1 Is Not Default 2	An enumerated integer that indicates that the referenced setting is currently being used in the operation of the element or that this information is unknown.
IsDefault	uint16	Unknown 0 Is Default 1 Is Not Default 2	An enumerated integer that indicates that the referenced setting is a default setting for the element or that this information is unknown.

Inherited from class CIM_ElementSettingData

IsCurrent, IsDefault

Method Summary

Not applicable.

Method Detail

Not applicable.

Fabric Class IBMTSSVC_FabricElementView

This class represents an element that is present on the fibre-channel fabric.

Description

Subclasses

Not applicable.

Referenced By

IBMTSSVC_ClusterFabricView

Properties

The following properties are available for this class:

Id	Type	Range	Description
Key			
ClusterName	string	Max Length 256	The Cluster name of the Element.
ID	string	Max Length 256	The ID (Node ID) of the Element.
LocalNPortID	string	Max Length 256	The local NPortID of the Element.
LocalPort	string	Max Length 256	The Local Port of the Element.
LocalWWPN	string	Max Length 256	The local WWPN of the Element.
Name	string	Max Length 256	The name of the Element.
NodeName	string	Max Length 256	The Node Name for the Element.
RemoteNPortID	string	Max Length 256	The Remote NportID of the Element.
RemoteWWPN	string	Max Length 256	The Remote WWPN of the Element.
State	string	Max Length 256	The state of the Element.
SystemName	string	Max Length 256	The System name (cluster IP: cluster ID) of the Element.
Type	string	Max Length 256	The Type of Element.

Inherited from class **CIM_ManagedElement**

Caption, Description, ElementName

Inherited from class **CIM_ManagedSystemElement**

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Method Summary

Not applicable.

Method Detail

Not applicable.

FCPort Class IBMTSSVC_InitiatorControllerForPort

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_InitiatorController		
Dependent	IBMTSSVC_FCPort		

Inherited from class CIM_ProtocolControllerForDevice

AccessPriority, AccessState, DeviceNumber

Method Summary

Not applicable.

Method Detail

Not applicable.

FCPort Class IBMTSSVC_InitiatorControllerOnCluster

An association of the Initiator Controller with the Cluster.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Cluster	Min 1 Max 1	The parent system in the Association.
PartComponent	IBMTSSVC_InitiatorController	Min 1 Max 1	The LogicalDevice that is a component of a System.

Method Summary

Not applicable.

Method Detail

Not applicable.

FCPort Class IBMTSSVC_InitiatorController

This class represents a logical controller that is used for modeling the authorization path from host ports to volumes.

Description

This represents the SAN Volume Controller as a Host to the Backend Storage. This class is used for SMIS 1.0 Compatibility.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_InitiatorControllerForPort
- IBMTSSVC_InitiatorControllerOnCluster
- IBMTSSVC_ProtocolControllerAccessUnit

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
DeviceID	string	Max Length 64	An address or other identifying information to uniquely name the LogicalDevice.
SystemCreationClass Name	string	Max Length 256	The CreationClassName for the scoping system.

Id	Type	Range	Description
SystemName	string	Max Length 256	The Name for the scoping system.
AccessGranted	boolean		Provides a quick interface for finding Devices with no AuthorizationSubject association to an AccessControllInformation instance either directly or through a Controller. If set to true, the Device has granted access to a consumer. If set to false, no access has been granted.
Description	string		Provides a textual description of the object.
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	An integer enumeration that indicates the enabled and disabled states of an element. This property can also indicate the transitions between these requested states. For example, the values shutting down (4) and starting (10) are transient states between enabled and disabled.
IdentifyingDescriptions	string		An array of free-form strings that provide explanations and details behind the entries in the OtherIdentifyingInfo array. Each entry of this array is related to the entry in OtherIdentifyingInfo that is located at the same index.
MaxUnitsControlled	uint32		The maximum number of Units that can be controlled by or accessed through this ProtocolController.
Name	string	Max Length 1024	The label by which the object is known. Format: RedundancyGroup_id:Host_id.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 3 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	<p>The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.</p>
OtherEnabledState	string		<p>A string that describes the enabled or disabled state of the element when the EnabledState property is set to Other (1). This property must be set to null when EnabledState is any value other than 1.</p>
OtherIdentifyingInfo	string	Max Length 256	<p>Captures additional data, beyond DeviceID information, that can be used to identify a LogicalDevice.</p>

Id	Type	Range	Description
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 12 DMTF Reserved .. Vendor Reserved 32768..65535	An integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. If EnabledState is set to Not Applicable (5), this property is not used. By default, the RequestedState of the element is set to No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration.
StatusDescriptions	string		Strings that describe the various OperationalStatus array values. For example, if the value Stopping is assigned to OperationalStatus, this property might contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value that indicates the default or startup configuration for the Enabled State of an element. The default value is Enabled.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement

EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_LogicalDevice

AdditionalAvailability, Availability, ErrorCleared, ErrorDescription, IdentifyingDescriptions, LastErrorCode, MaxQuiesceTime, OtherIdentifyingInfo, PowerManagementCapabilities, PowerManagementSupported, PowerOnHours, StatusInfo, TotalPowerOnHours

Inherited from class CIM_ProtocolController

MaxUnitsControlled

Inherited from class CIM_SCSIProtocolController

NameFormat, OtherNameFormat

Method Summary

Inherited from class CIM_EnabledLogicalElement

RequestStateChange

Inherited from class CIM_LogicalDevice

EnableDevice, OnlineDevice, QuiesceDevice, Reset, RestoreProperties, SaveProperties, SetPowerState

Method Detail

Not applicable.

FCPort Class IBMTSSVC_IOGroupPort

Returns the fibre-channel ports that are associated with an I/O group.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_IOGroup	Min 1 Max 1	The I/O group.
Dependent	IBMTSSVC_FCPort		The fibre-channel port.

Method Summary

Not applicable.

Method Detail

Not applicable.

FCPort Class IBMTSSVC_HostedSCSIProtocolEndpoint

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Node	Min 1 Max 1	
Dependent	IBMTSSVC_SCSIProtocol Endpoint		

Method Summary

Not applicable.

Method Detail

Not applicable.

FCPort Class IBMTSSVC_FCPort

Fibre-Channel port of a SAN Volume Controller node.

Description

Generally all fibre-channel ports of a SAN Volume Controller RedundancyGroup expose the same devices. All fibre-channel ports of a SAN Volume Controller cluster share the same BackendVolumes.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_DeviceSAPImplementation

IBMTSSVC_IOGroupPort

IBMTSSVC_InitiatorControllerForPort

IBMTSSVC_PortsOnCluster

IBMTSSVC_ProtocolControllerForPort

IBMTSSVC_SystemFCPort

Properties

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
DeviceID	string	Max Length 64	An address or other identifying information to uniquely name the LogicalDevice.
SystemCreationClass Name	string	Max Length 256	The CreationClassName for the scoping system.
SystemName	string	Max Length 256	The Name for the scoping system.
ActiveCOS	uint16		An array of integers that indicates the Classes of Service (COS) that are active. The Active COS is indicated in ActiveCOS.

Id	Type	Range	Description
ActiveFC4Types	uint16	Unknown 0 Other 1 ISO/IEC 8802 - 2 LLC 4 IP over FC 5 SCSI - FCP 8 SCSI - GPP 9 IPI - 3 Master 17 IPI - 3 Slave 18 IPI - 3 Peer 19 CP IPI - 3 Master 21 CP IPI - 3 Slave 22 CP IPI - 3 Peer 23 SBCCS Channel 25 SBCCS Control 26 FC-SB-2 Channel 27 FC-SB-2 Control Unit 28 Fibre Channel Services (FC-GS, FC-GS-2, FC-GS-3) 32 FC-SW 34 FC - SNMP 36 HIPPI - FP 64 BBL Control 80 BBL FDDI Encapsulated LAN PDU 81 BBL 802.3 Encapsulated LAN PDU 82 FC - VI 88 FC - AV 96 Vendor Unique 255	An array of integers that indicates the Fibre Channel FC-4 protocols that are currently running. A list of all protocols that are supported is indicated in the SupportedFC4Types property.
AutoSense	boolean		A Boolean that indicates if the NetworkPort is capable of automatically determining the speed or other communications characteristics of the attachednetwork media.
Description	string		Provides a textual description of the object.

Id	Type	Range	Description
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	An integer enumeration that indicates the enabled and disabled states of an element. This property can also indicate the transitions between these requested states. For example, the values shutting down (4) and starting (10) are transient states between enabled and disabled.
FullDuplex	boolean		Boolean that indicates that the port is operating in full duplex mode.
IdentifyingDescriptions	string		An array of free-form strings that provide explanations and details behind the entries in the OtherIdentifyingInfo array. Each entry of this array is related to the entry in OtherIdentifyingInfo that is located at the same index.
LinkTechnology	uint16	Unknown 0 Other 1 Ethernet 2 IB 3 FC 4 FDDI 5 ATM 6 Token Ring 7 Frame Relay 8 Infrared 9 BlueTooth 10 Wireless LAN 11	An enumeration of the types of links. When set to 1 (Other), the related property OtherLinkTechnology contains a string description of the type of link.
MaxSpeed	uint64		The maximum bandwidth of the Port in Bits per Second.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	Indicates the current status of the port.
OtherEnabledState	string		A string that describes the enabled or disabled state of the element when the EnabledState property is set to 1 ("Other"). This property must be set to null when EnabledState is any value other than 1.
OtherIdentifyingInfo	string	Max Length 256	Captures additional data, beyond DeviceID information, that can be used to identify a LogicalDevice.
OtherPortType	string		Describes the type of module, when PortType is set to 1 (Other).
PermanentAddress	string	Max Length 64	Defines the network address that is hardcoded into a port. The hardcoded address can be changed using a software upgrade or a software configuration. When this change is made, update the field at the same time. PermanentAddress should be left blank if there is no hardcoded address for the NetworkAdapter.
PortNumber	uint16		NetworkPorts are often numbered relative to either a logical module or a network element.

Id	Type	Range	Description
PortType	uint16		The specific mode currently enabled for the Port. The values: "N"= Node Port, "NL"= Node Port supporting FC arbitrated loop, "E"= Expansion Port connecting fabric elements "F"= Fabric (element) Port, "FL"= Fabric (element) Port supporting FC arbitrated loop, "B"= Bridge and "G"= Generic Port. PortTypes are defined in the ANSI X3 standards. When set to 1 (Other), the related property OtherPortType contains a string description of the type of port.
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Rest 11 Not applicable 12 DMTF Reserved .. Vendor Reserved 32768..65535	An integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. If EnabledState is set to Not Applicable (5), this property is not used. By default, the RequestedState of the element is set to No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration.
Speed	uint64		The current bandwidth of the Port in Bits per Second. For ports that vary in bandwidth or for those where no accurate estimation can be made, this property must contain the nominal bandwidth.
StatusDescriptions	string		Strings that describe the various OperationalStatus array values. For example, if Stopping is the value assigned to OperationalStatus, this property can contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.
SupportedCOS	uint16		An array of integers that indicate the fibre-channel Classes of Service (COS) that are supported. The active COS are indicated in ActiveCOS.

Id	Type	Range	Description
SupportedFC4 Types	uint16	Unknown 0 Other 1 ISO/IEC 8802 - 2 LLC 4 IP over FC 5 SCSI - FCP 8 SCSI - GPP 9 IPI - 3 Master 17 IPI - 3 Slave 18 IPI - 3 Peer 19 CP IPI - 3 Master 21 CP IPI - 3 Slave 22 CP IPI - 3 Peer 23 SBCCS Channel 25 SBCCS Control 26 FC-SB-2 Channel 27 FC-SB-2 Control Unit 28 Fibre Channel Services (FC-GS, FC-GS-2, FC-GS-3) 32 FC-SW 34 FC - SNMP 36 HIPPI - FP 64 BBL Control 80 BBL FDDI Encapsulated LAN PDU 81 BBL 802.3 Encapsulated LAN PDU 82 FC - VI 88 FC - AV 96 Vendor Unique 255	An array of integers that indicate the Fibre Channel FC-4 protocols supported. The protocols that are active and running are indicated in the ActiveFC4Types property.
SupportedMaximumTransmissionUnit	uint64		The maximum transmission unit (MTU) that can be supported. The default is 2048 bytes.
UsageRestriction	uint16	Unknown 0 Front-end only 2 Back-end only 3 Not restricted 4	In some circumstances, a LogicalPort might be identifiable as a front end or back end port. If there is no restriction on the use of the port, set the value to not restricted.
ElementName	string		

Id	Type	Range	Description
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value that indicates the default or startup configuration for the Enabled State of an element. The default value is Enabled.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_LogicalDevice
AdditionalAvailability, Availability, ErrorCleared, ErrorDescription, IdentifyingDescriptions, LastErrorCode, MaxQuiesceTime, OtherIdentifyingInfo, PowerManagementCapabilities, PowerManagementSupported, PowerOnHours, StatusInfo, TotalPowerOnHours

Inherited from class CIM_LogicalPort
MaxSpeed, OtherPortType, PortType, Speed, UsageRestriction, RequestedSpeed

Inherited from class CIM_NetworkPort
ActiveMaximumTransmissionUnit, AutoSense, FullDuplex, LinkTechnology, NetworkAddresses, OtherLinkTechnology, OtherNetworkPortType, PermanentAddress, PortNumber, Speed, SupportedMaximumTransmissionUnit

Inherited from class CIM_FCPort
ActiveCOS, ActiveFC4Types, PortType, SupportedCOS, SupportedFC4Types

Method Summary

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_LogicalDevice
EnableDevice, OnlineDevice, QuiesceDevice, Reset, RestoreProperties, SaveProperties, SetPowerState

Method Detail

Not applicable.

FCPort Class

IBMTSSVC_ClusterScopeStorageVolumeBackendVolumeView

Description

Defines the Cluster scope of this instance.

Subclasses

Not applicable

Referenced By

Not applicable

Properties

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster		The Cluster.
Dependent	IBMTSSVC_StorageVolumeBackend VolumeView		The Instance.

Method Summary

Not applicable.

Method Detail

Not applicable.

FCPort Class IBMTSSVC_DeviceSAPImplementation

Description

Not applicable

Subclasses

Not applicable

Referenced By

Not applicable

Properties

Id	Type	Range	Description
Antecedent	IBMTSSVC_FCPort	Min 1 Max 1	The Logical Device

Id	Type	Range	Description
Dependent	IBMTSSVC_SCSIProtocol Endpoint	Min 1 Max 1	The ServiceAccessPoint implements using the LogicalDevice

Method Summary

Not applicable

Method Detail

Not applicable

FCPort Class IBMTSSVC_BackendTargetSCSIProtocolEndpoint

A SCSIProtocolEndpoint represents the protocol (command) aspects of a logical SCSI port, independent of the connection/transport.

Description

SCSIProtocolEndpoint is either directly or indirectly associated to one or more instances of LogicalPort depending on the underlying transport. Indirect associations aggregate one or more LogicalPorts using intermediate ProtocolEndpoints. SCSIProtocolEndpoint is also associated to a SCSIProtocolController, representing the SCSI device. This implementation represents the SCSIProtocolEndpoint (RemoteServiceAccessPoint) of the Backend Storage.

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_SCSIInitiatorTargetLogicalUnitPath

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string	Max Length 256	Uniquely identifies the Service and provides an indication of the functionality that is managed. This functionality is described in more detail in the Description property of the object.
SystemCreationClassName	string	Max Length 256	The CreationClassName of the scoping System. The Computer System that represents the Backing storage.

Id	Type	Range	Description
SystemName	string	Max Length 256	The Name of the scoping System. The Computer system that represents the backing storage.
ConnectionType	uint16	Other 1 Fibre Channel 2 Parallel SCSI 3 SSA 4 IEEE 1394 RDMA 6 iSCSI 7 SAS 8 ADT 9	The supported connection type for this endpoint. The connection type might be required before the port(s) are associated.
OtherConnectionType	string		The connection type, if ConnectionType is set to Other.
Role	uint16	Unknown 0 Initiator 2 Target 3 Both Initiator and Target 4	Clients must have the proper authorization to run extrinsic methods and modify write properties. The role assigned to an IBMTSSVC_User must be compatible with the role that is required by the operation.
TargetRelativePort Number	uint32		For ports on a target device, the port number, relative to the storage system. 0 is reserved by T10, 1 is port A, 2 is port B, etc. These numbers are used in SCSI commands that operate on target port groups.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_ProtocolEndpoint
Description, EnabledState, NameFormat, OperationalStatus, OtherTypeDescription, ProtocolIFType, ProtocolType, TimeOfLastStateChange

Inherited from class CIM_SCSIProtocolEndpoint
ConnectionType, OtherConnectionType, Role, TargetRelativePortNumber

Method Summary

The following method is available for this class.

Inherited from class CIM_EnabledLogicalElement

RequestStateChange

Method Detail

Not applicable.

FCPort Class IBMTSSVC_SystemFCPort

Associates fibre-channel ports with a node.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Node	Min 1 Max 1	The node.
PartComponent	IBMTSSVC_FCPort	Min 1 Max 1	The fibre-channel port.

Method Summary

Not applicable.

Method Detail

Not applicable.

FCPort Class IBMTSSVC_SCSIProtocolEndpoint

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_DeviceSAPImplementation
- IBMTSSVC_HostedSCSIProtocolEndpoint

- IBMTSSVC_SAPAvailableForElement
- IBMTSSVC_SCSIInitiatorTargetLogicalUnitPath

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string	Max Length 256	Uniquely identifies the Service and provides an indication of the functionality that is managed. This functionality is described in more detail in the Description property of the object.
SystemCreationClassName	string	Max Length 256	The CreationClassName of the scoping System.
SystemName	string	Max Length 256	The Name of the scoping System.
Caption	string	Max Length 64	A short textual description (one-line string) of the object.
Description	string		Provides a textual description of the object.
OtherTypeDescription	string	Max Length 64	A string that describes the type of ProtocolEndpoint when the Type property of this class (or any of its subclasses) is set to 1 (Other). Set this property to NULL when the Type property is any value other than 1.

Id	Type	Range	Description
ProtocolIFType	uint16	Unknown 0 Other 1 Regular 1822 2 HDH 1822 3 DDN X.25 4 RFC877 X.25 5 Ethernet CSMA/CD 6 ISO 802.3 CSMA/CD 7 ISO 802.4 Token Bus 8 ISO 802.5 Token Ring 9 ISO 802.6 MAN 10 StarLAN 11 Proteon 10Mbit 12 Proteon 80Mbit 13 HyperChannel 14 FDDI 15 LAP-B 16 SDLC 17 DS1 18 E1 19 Basic ISDN 20 Primary ISDN 21 Proprietary Point-to-Point Serial 22 PPP 23 Software Loopback 24 EON 25 Ethernet 3Mbit 26 NSIP 27 SLIP 28 Ultra 29	An enumeration that is synchronized with the IANA if Type MIB. This property is used to categorize and classify instances of the ProtocolEndpoint class. If the ProtocolIFType is set to 1 (Other), use the OtherTypeDescription string property to provide the type.

Id	Type	Range	Description
		DS3 30	
		SIP 31	
		Frame Relay 32	
		RS-232 33	
		Parallel 34	
		ARCNet 35	
		ARCNet Plus 36	
		ATM 37	
		MIO X.25 38	
		SONET 39	
		X.25 PLE 40	
		ISO 802.211c 41	
		LocalTalk 42	
		SMDS DXI 43	
		Frame Relay Service 44	
		V.35 45	
		HSSI 46	
		HIPPI 47	
		Modem 48	
		AAL5 49	
		SONET Path 50	
		SONET VT 51	
		SMDS ICIP 52	
		Proprietary Virtual/Internal 53	
		Proprietary Multiplexor 54	
		IEEE 802.12 55	
		Fibre Channel 56	
		HIPPI Interface 57	
		Frame Relay Interconnect 58	
		ATM Emulated LAN for 802.3 59	
		ATM Emulated LAN for 802.5 60	

Id	Type	Range	Description
		ATM Emulated Circuit 61 Fast Ethernet (100BaseT) 62 ISDN 63 V.11 64 V.36 65 G703 at 64K 66 G703 at 2Mb 67 QLLC 68 Fast Ethernet 100BaseFX 69 Channel 70 IEEE 802.11 71 IBM 260/370 OEMI Channel 72 ESCON 73 Data Link Switching 74 ISDN S/T Interface 75 ISDN U Interface 76 LAP-D 77 IP Switch 78 Remote Source Route Bridging 79 ATM Logical 80 DS0 81 DS0 Bundle 82 BSC 83 Async 84 Combat Net Radio 85 ISO 802.5r DTR 86 Ext Pos Loc Report System 87 AppleTalk Remote Access Protocol 88 Proprietary Connectionless 89 ITU X.29 Host PAD 90	

Id	Type	Range	Description
		ITU X.3 Terminal PAD 91 Frame Relay MPI 92 ITU X.213 93 ADSL 94 RADSL 95 SDSL 96 VDSL 97 ISO 802.5 CRFP 98 Myrinet 99 Voice Receive and Transmit 100 Voice Foreign Exchange Office 101 Voice Foreign Exchange Service 102 Voice Encapsulation 103 Voice over IP 104 ATM DXI 105 ATM FUNI 106 ATM IMA 107 PPP Multilink Bundle 108 IP over CDLC 109 IP over CLAW 110 Stack to Stack 111 Virtual IP Address 112 MPC 113 IP over ATM 114 ISO 802.5j Fibre Token Ring 115 TDLC 116 Gigabit Ethernet 117 HDLC 118 LAP-F 119 V.37 120	

Id	Type	Range	Description
		X.25 MLP 121 X.25 Hunt Group 122 Transp HDLC 123 Interleave Channel 124 FAST Channel 125 IP (for APPN HPR in IP Networks) 126 CATV MAC Layer 127 CATV Downstream 128 CATV Upstream 129 Avalon 12MPP Switch 130 Tunnel 131 Coffee 132 Circuit Emulation Service 133 ATM SubInterface 134 Layer 2 VLAN using 802.1Q 135 Layer 3 VLAN using IP 136 Layer 3 VLAN using IPX 137 Digital Power Line 138 Multimedia Mail over IP 139 DTM 140 DCN 141 IP Forwarding 142 MSDSL 143 IEEE 1394 144 IF-GSN/HIPPI-6400 145 DVB-RCC MAC Layer 146 DVB-RCC Downstream 147 DVB-RCC Upstream 148 ATM Virtual 149 MPLS Tunnel 150 SRP 151	

Id	Type	Range	Description
		Voice over ATM 152 Voice over Frame Relay 153 ISDL 154 Composite Link 155 SS7 Signaling Link 156 Proprietary P2P Wireless 157 Frame Forward 158 RFC1483 Multiprotocol over ATM 159 USB 160 IEEE 802.3ad Link Aggregate 161 BGP Policy Accounting 162 FRF .16 Multilink FR 163 H.323 Gatekeeper 164 H.323 Proxy 165 MPLS 166 Multi-Frequency Signaling Link 167 HDSL-2 168 S-HDSL 169 DS1 Facility Data Link 170 Packet over SONET/SDH 171 DVB-ASI Input 172 DVB-ASI Output 173 Power Line 174 Non Facility Associated Signaling 175 TR008 176 GR303 RDT 177 GR303 IDT 178 ISUP 179 Proprietary Wireless MAC Layer 180	

Id	Type	Range	Description
		Proprietary Wireless Downstream 181	
		Proprietary Wireless Upstream 182	
		HIPERLAN Type 2 183	
		Proprietary Broadband Wireless Access Point to Multipoint 184	
		SONET Overhead Channel 185	
		Digital Wrapper Overhead Channel 186	
		ATM Adaptation Layer 2 187	
		Radio MAC 188	
		ATM Radio 189	
		Inter Machine Trunk 190	
		MVL DSL 191	
		Long Read DSL 192	
		Frame Relay DLCI Endpoint 193	
		ATM VCI Endpoint 194	
		Optical Channel 195	
		Optical Transport 196	
		Proprietary ATM 197	
		Voice over Cable 198	
		Infiniband 199	
		TE Link 200	
		Q.2931 201	
		Virtual Trunk Group 202	
		SIP Trunk Group 203	
		SIP Signaling 204	
		CATV Upstream Channel 205	
		Econet 206	
		FSAN 155Mb PON 207	
		FSAN 622Mb PON 208	
		Transparent Bridge 209	
		Line Group 210	
		Voice E&M Feature Group 211	

Id	Type	Range	Description
		Voice FGD EANA 212 Voice DID 213 MPEG Transport 214 6To4 215 GTP 216 Paradyne EtherLoop 1 217 Paradyne EtherLoop 2 218 Optical Channel Group 219 HomePNA 220 GFP 221 ciscoISLvlan 222 actelisMetaLOOP 223 Fcip 224 IANA Reserved ..4095 IPv4 4096 IPv6 4097 IPv4/v6 4098 IPX 4099 DECnet 4100 SNA 4101 CONP 4102 CLNP 4103 VINES 4104 XNS 4105 ISDN B Channel Endpoint 4106 ISDN D Channel Endpoint 4107 BGP 4108 OSPF 4109 UDP 4110 TCP 4111 802.11a 4112 802.11b 4113 802.11g 4114 802.11h 4115 DMTF Reserved ..32767 Vendor Reserved 32768..	

Id	Type	Range	Description
ProtocolType	uint16	Unknown 0 Other1 IPv4 2 IPv6 3 IPX 4 AppleTalk 5 DECnet 6 SNA 7 CONP 8 CLNP 9 VINES 10 XNS 11 ATM 12 Frame Relay 13 Ethernet 14 TokenRing 15 FDDI 16 Infiniband 17 Fibre Channel 18 ISDN BRI Endpoint 19 ISDN B Channel Endpoint 20 ISDN D Channel Endpoint 21 IPv4/v6 22 BGP 23 OSPF 24 MPLS 25 UDP 26 TCP 27	An enumeration that provides information to categorize and classify different instances of this class. For most instances, information in this enumeration and the subclass definition overlap. However, there are several cases where a specific subclass of ProtocolEndpoint is not required. For example, there is no Fibre Channel subclass of ProtocolEndpoint). Therefore, this property is required to define the type of Endpoint. This property is deprecated in lieu of the ProtocolIFType enumeration. This is done to have better alignment between the IETF's IF-MIB and this CIM class.
ConnectionType	uint16	Other 1 Fibre Channel 2 Parallel SCSI 3 SSA 4 IEEE 1394 5 RDMA 6 iSCSI 7 SAS 8 ADT 9	The supported connection type for this endpoint. The connection type might be required before the port(s) are associated. The connection type is used in some SCSI commands.
Role	uint16	Unknown 0 Initiator 2 Target 3 Both Initiator and Target 4	For iSCSI, each SCSIProtocolEndpoint must act as either a target or an initiator endpoint. Other transports allow a SCSI PE to act as both an initiator and a target endpoint. This property indicates which role this ProtocolEndpoint implements.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_ProtocolEndpoint
Description, EnabledState, NameFormat, OperationalStatus, OtherTypeDescription, ProtocolIFType, ProtocolType, TimeOfLastStateChange

Inherited from class CIM_SCSIProtocolEndpoint
ConnectionType, OtherConnectionType, Role, TargetRelativePortNumber

Method Summary

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Method Detail

Not applicable.

FCPort Class IBMTSSVC_StorageVolumeBackendVolumeView

Represents a mapping between a StorageVolume and a BackendVolume.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_ClusterScopeStorageVolumeBackendVolumeView

Properties

The following properties are available for this class:

Id	Type	Range	Description
BackendVolumeID	uint16		The BackendVolume (mdisk) object ID.

Id	Type	Range	Description
StorageVolumeID	uint16		The StorageVolume (vdisk) object ID.
SystemName	string	Max Length 256	The system scoping identifier. Format: cluster_ip
Count	uint16		The number of storage extents that the StorageVolume has on the BackendVolume.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Method Summary

Not applicable.

Method Detail

Not applicable.

Indications Class IBMTSSVC_InstCreation

IBMTSSVC_InstCreation notifies when a new instance is created.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
IndicationIdentifier	string		An identifier for the Indication. This property is similar to a key value in that it can be used for identification, when correlating Indications (see the CorrelatedIndications array). Its value must be unique as long as Alert correlations are reported, but can be reused or left null if no future Indications reference it in their CorrelatedIndications array. Use the form <Object><Identifier> Created <IndicationTime>. The time is omitted if it is unknown.
IndicationTime	datetime		The time and date of creation of the Indication. The property can be set to null if the entity creating the Indication is not capable of determining this information. IndicationTime can be the same for two Indications that are generated in rapid succession.
SourceInstance	string		A copy of the instance that changed to generate the Indication. SourceInstance contains the current values of the properties that are selected by the Indication Filter's Query. In the case of CIM_InstDeletion, the property values are copied before the instance is deleted.
SourceInstanceModelPath	string		The Model Path of the SourceInstance. The following format must be used to encode the Model Path: <NamespacePath>:<ClassName>.<Prop1> = <Value1>,<Prop2> = <Value2>

Inherited from class CIM_Indication
CorrelatedIndications, IndicationIdentifier, IndicationTime, OtherSeverity, PerceivedSeverity

Inherited from class CIM_InstIndication
SourceInstance, SourceInstanceHost, SourceInstanceModelPath

Method Summary

Not applicable.

Method Detail

Not applicable.

Indications Class IBMTSSVC_InstDeletion

CIM_InstDeletion notifies when an existing instance is deleted.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

Id	Type	Range	Description
IndicationFilter	string		An identifier for the Indication. This property is similar to a key value in that it can be used for identification when correlating Indications (see the CorrelatedIndications array). The value must be unique as long as Alert correlations are reported, but can be reused or left NULL if no future Indications reference it in their CorrelatedIndications array. Use the form <Object><Identifier> Deleted <IndicationTime>. The time is omitted if it is unknown.
IndicationTime	datetime		The time and date of creation of the Indication. The property can be set to NULL if the entity creating the Indication is not capable of determining this information. IndicationTime can be the same for two Indications that are generated in rapid succession.
SourceInstance	string		A copy of the instance that changed to generate the Indication. SourceInstance contains the current values of the properties selected by the Indication Filter's Query. In the case of CIM_InstDeletion, the property values are copied before the instance is deleted.
SourceInstanceModel Path	string		The Model Path of the SourceInstance. The following format MUST be used to encode the Model Path:<NamespacePath>:<ClassName>.<Prop1>=<Value1>,<Prop2>=<Value2>.

Inherited from class CIM_Indication

CorrelatedIndications, IndicationIdentifier, IndicationTime, OtherSeverity, PerceivedSeverity

Inherited from class CIM_InstIndication

SourceInstance, SourceInstanceHost, SourceInstanceModelPath

Method Summary

Not applicable

Method Detail

Not applicable

Indications Class IBMTSSVC_InstModification

CIM_InstModification notifies when an instance is modified.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
IndicationIdentifier	string		An identifier for the Indication. This property is similar to a key value in that it can be used for identification, when correlating Indications (see the CorrelatedIndications array). The value is unique as long as Alert correlations are reported, but can be reused or set to null if no future Indications reference it in their CorrelatedIndications array. Use the form <Object><Identifier> Modified <IndicationTime>. This property is omitted if it is unknown.
IndicationTime	datetime		The time and date of creation of the Indication. The property can be set to null if the entity that creates the Indication is not capable of determining this information. The IndicationTime can be the same for two Indications that are generated in rapid succession.
PreviousInstance	string		A copy of the previous instance whose change generated the Indication. This property contains older values of an instance's properties (as compared to SourceInstance), that are selected by the IndicationFilter's Query.
SourceInstance	string		A copy of the instance that changed to generate the Indication. SourceInstance contains the current values of the properties selected by the Indication Filter's Query. In the case of CIM_InstDeletion, the property values are copied before the instance is deleted.
SourceInstanceModel Path	string		The Model Path of the SourceInstance. The following format must be used to encode the Model Path: <NamespacePath>.<ClassName>.<Prop1> = <Value1>.<Prop2> = <Value2>

Inherited from class CIM_Indication
CorrelatedIndications, IndicationIdentifier, IndicationTime, OtherSeverity, PerceivedSeverity

Inherited from class CIM_InstIndication
--

SourceInstance, SourceInstanceHost, SourceInstanceModelPath

Inherited from class CIM_InstModification
--

PreviousInstance

Method Summary

Not applicable.

Method Detail

Not applicable.

JobControl Class IBMTSSVC_Job

A job instance is used to monitor asynchronous commands on the device.

Description

Subclasses

The following classes are subclasses of this class:

IBMTSSVC_FlashCopyJob

IBMTSSVC_FormatVolumeJob

IBMTSSVC_MigrateVolumeJob

IBMTSSVC_SyncCopyJob

Referenced By

The following classes reference this class:

IBMTSSVC_HostedJob

IBMTSSVC_StorageConfigurationService

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm:<OrgID>:<LocalID>. Where<OrgID>and<LocalID>are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
Description	string		Provides a textual description of the object.
ErrorCode	uint16		<p>A vendor-specific error code. The value must be set to zero if the Job completed without error. Note that this property is also present in the JobProcessingStatistics class. This class is necessary to capture the processing information for recurring Jobs, because only the last run error can be stored in this single-valued property.</p>
ErrorDescription	string		<p>A free-form string that contains the vendor error description. Note that this property is also present in the JobProcessingStatistics class. This class is necessary to capture the processing information for recurring Jobs, because only the last run error can be stored in this single-valued property.</p>

Id	Type	Range	Description
JobState	uint16		<p>JobState is an integer enumeration that indicates the operational state of a Job. It can also indicate transitions between these states. Following is a brief description of the states: New (2) indicates that the job has never been started. Starting (3) indicates that the job is moving from the New, Suspended, or Service states into the Running state. Running (4) indicates that the Job is running. Suspended (5) indicates that the Job is stopped, but may be restarted in a seamless manner. Shutting Down (6) indicates the job is moving to a Completed, Terminated, or Killed state. Completed (7) indicates that the job has completed normally. Terminated (8) indicates that the job has been stopped by a Terminate state change request. The job and all its underlying processes are ended and may be restarted (this is job-specific) only as a new job. Killed (9) indicates that the job has been stopped by a Kill state change request. Underlying processes may have been left running and cleanup may be required to free up resources. Exception (10) indicates that the Job is in an abnormal state that may be indicative of an error condition. Actual status may be surfaced though job-specific objects. Service (11) indicates that the Job is in a vendor-specific state that supports problem discovery and/or resolution.</p>
JobStatus	string		<p>A free-form string that represents the status of the job. The primary status is reflected in the inherited OperationalStatus property. JobStatus provides additional, implementation-specific details.</p>
Name	string		<p>The user friendly name for this instance of Job. In addition, the user friendly name can be used as a property for a search or query. (Note: Name does not have to be unique within a namespace.)</p>

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non- Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.
TimeOfLastState Change	datetime		This property is not supported.
DeleteOnCompletion	boolean		Indicates whether or not the job should be automatically deleted upon completion. Note that the completion of a recurring job is defined by its JobRunTimes or UntilTime properties, or when the Job is terminated by manual intervention. If this property is set to false and the job completes, then the extrinsic method DeleteInstance must be used to delete the job instead of updating this property.
PercentComplete	uint16		The percentage of the job that has completed at the time that this value is requested.
TimeBeforeRemoval	datetime		This property is not supported.

Inherited from class CIM_ManagedElement
--

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
--

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_Job

ElapsedTime, ErrorCode, ErrorDescription, JobStatus, OtherRecoveryAction, Owner, PercentComplete, RecoveryAction, StartTime, TimeSubmitted, DeleteOnCompletion, JobRunTimes, LocalOrUtcTime, Notify, Priority, RunDay, RunDayOfWeek, RunMonth, RunStartInterval, ScheduledStartTime, UntilTime
--

Inherited from class CIM_ConcreteJob

JobState, Name, TimeOfLastStateChange, TimeBeforeRemoval
--

Method Summary

Inherited from class CIM_Job

KillJob

Inherited from class CIM_ConcreteJob

RequestStateChange

Method Detail

Not applicable

JobControl Class IBMTSSVC_HostedJob

This class associates the Job with the Cluster it is running on.

Description

Subclasses

The following subclasses are used for this class:

- IBMTSSVC_HostedFlashCopyJob
- IBMTSSVC_HostedFormatVolumeJob
- IBMTSSVC_HostedMigrateVolumeJob
- IBMTSSVC_HostedSyncCopyJob

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_Job		

Method Summary

Not applicable.

Method Detail

Not applicable.

JobControl Class IBMTSSVC_MigrateVolumeJob

A job instance is used to monitor asynchronous volume migration operations on the device.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_HostedMigrateVolumeJob

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
Description	string		Provides a textual description of the object.
ErrorCode	uint16		<p>A vendor-specific error code. The value must be set to zero if the Job completed without error. This property is also present in the JobProcessingStatistics class. This class is necessary to capture the processing information for recurring Jobs, because only the last run error can be stored in this single-valued property.</p>
ErrorDescription	string		<p>A free-form string that contains the vendor error description. This property is also present in the JobProcessingStatistics class. This class is necessary to capture the processing information for recurring Jobs because only the last 'run error can be stored in this single-valued property.</p>
JobStatus	string		<p>A free-form string that represents the status of the job. The primary status is reflected in the inherited OperationalStatus property. JobStatus provides additional, implementation-specific details.</p>
MigrationType	string		The type of volume migration operation.
Name	string		<p>The user friendly name for this instance of Job. In addition, the user friendly name can be used as a property for a search or query.</p>

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.
TimeOfLastState Change	datetime		This property is not supported.
DeleteOnCompletion	boolean		Indicates if the job is automatically deleted after it completes. The completion of a recurring job is defined by its JobRunTimes or UntilTime properties, or when the job is terminated by a manual process. If this property is set to false and the job completes, the extrinsic method DeleteInstance must be used to delete the job instead of updating this property.
TimeBeforeRemoval	datetime		This property is not supported.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
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HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_Job

ElapsedTime, ErrorCode, ErrorDescription, JobStatus, OtherRecoveryAction, Owner, PercentComplete, RecoveryAction, StartTime, TimeSubmitted, DeleteOnCompletion, JobRunTimes, LocalOrUtcTime, Notify, Priority, RunDay, RunDayOfWeek, RunMonth, RunStartInterval, ScheduledStartTime, UntilTime
--

Inherited from class CIM_ConcreteJob

JobState, Name, TimeOfLastStateChange, TimeBeforeRemoval
--

Inherited from class IBMTSSVC_Job
--

Description, ErrorCode, ErrorDescription, JobState, JobStatus, Name, OperationalStatus, TimeOfLastStateChange, DeleteOnCompletion, PercentComplete, TimeBeforeRemoval

Method Summary

Inherited from class CIM_Job

KillJob

Inherited from class CIM_ConcreteJob

RequestStateChange

Method Detail

Not applicable.

JobControl Class IBMTSSVC_SyncCopyJob

A job instance is used to monitor asynchronous remote copy operations on the device.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_HostedSyncCopyJob

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
Description	string		Provides a textual description of the object.
ErrorCode	uint16		<p>A vendor-specific error code. The value must be set to zero if the Job completed without error. This property is also present in the JobProcessingStatistics class. This class is necessary to capture the processing information for recurring Jobs, because only the last run error can be stored in this single-valued property.</p>

Id	Type	Range	Description
ErrorDescription	string		A free-form string that contains the vendor error description. This property is also present in the JobProcessingStatistics class. This class is necessary to capture the processing information for recurring Jobs because only the last 'run error can be stored in this single-valued property.
JobStatus	string		A free-form string that represents the status of the job. The primary status is reflected in the inherited OperationalStatus property. JobStatus provides additional, implementation-specific details.
Name	string		The user friendly name for this instance of Job. In addition, the user friendly name can be used as a property for a search or query. The Name property does not have to be unique within a namespace.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	<p>The current state of the element.</p> <p>The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered.</p> <p>The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted.</p> <p>The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.</p>
TimeOfLastStateChange	datetime		This property is not supported.

Id	Type	Range	Description
DeleteOnCompletion	boolean		Indicates if the job is automatically deleted after it completes. The completion of a recurring job is defined by its JobRunTimes or UntilTime properties, or when the job is terminated by a manual process. If this property is set to false and the job completes, the extrinsic method DeleteInstance must be used to delete the job instead of updating this property.
TimeBeforeRemoval	datetime		This property is not supported.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_Job

ElapsedTime, ErrorCode, ErrorDescription, JobStatus, OtherRecoveryAction, Owner, PercentComplete, RecoveryAction, StartTime, TimeSubmitted, DeleteOnCompletion, JobRunTimes, LocalOrUtcTime, Notify, Priority, RunDay, RunDayOfWeek, RunMonth, RunStartInterval, ScheduledStartTime, UntilTime

Inherited from class CIM_ConcreteJob

JobState, Name, TimeOfLastStateChange, TimeBeforeRemoval

Inherited from class IBMTSSVC_Job

Description, ErrorCode, ErrorDescription, JobState, JobStatus, Name, OperationalStatus, TimeOfLastStateChange, DeleteOnCompletion, PercentComplete, TimeBeforeRemoval

Method Summary

Inherited from class CIM_Job

KillJob

Inherited from class CIM_ConcreteJob

RequestStateChange

Method Detail

Not applicable.

JobControl Class IBMTSSVC_HostedFlashCopyJob

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_FlashCopyJob		

Method Summary

Not applicable.

Method Detail

Not applicable.

JobControl Class IBMTSSVC_HostedFormatVolumeJob

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_FormatVolumeJob		

Method Summary

Not applicable.

Method Detail

Not applicable.

JobControl Class IBMTSSVC_HostedMigrateVolumeJob

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_MigrateVolumeJob		

Method Summary

Not applicable.

Method Detail

Not applicable.

JobControl Class IBMTSSVC_HostedSyncCopyJob

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_Job		

Method Summary

Not applicable.

Method Detail

Not applicable.

JobControl Class IBMTSSVC_FormatVolumeJob

A job instance is used to monitor asynchronous format volume operations on the device.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_HostedFormatVolumeJob

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
Description	string		Provides a textual description of the object.
ErrorCode	uint16		<p>A vendor-specific error code. The value must be set to zero if the Job completed without error. This property is also present in the JobProcessingStatistics class. This class is necessary to capture the processing information for recurring Jobs, because only the last run error can be stored in this single-valued property.</p>
ErrorDescription	string		<p>A free-form string that contains the vendor error description. This property is also present in the JobProcessingStatistics class. This class is necessary to capture the processing information for recurring Jobs because only the last 'run error can be stored in this single-valued property.</p>
JobStatus	string		<p>A free-form string that represents the status of the job. The primary status is reflected in the inherited OperationalStatus property. JobStatus provides additional, implementation-specific details.</p>
Name	string		<p>The user-friendly name for this instance of Job. In addition, the user friendly name can be used as a property for a search or query. The Name property does not have to be unique within a namespace.</p>

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	<p>The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.</p>
TimeOfLastState Change	datetime		This property is not supported.
DeleteOnCompletion	boolean		<p>Indicates if the job is automatically deleted after it completes. The completion of a recurring job is defined by its JobRunTimes or UntilTime properties, or when the job is terminated by a manual process. If this property is set to false and the job completes, the extrinsic method DeleteInstance must be used to delete the job instead of updating this property.</p>
TimeBeforeRemoval	datetime		This property is not supported.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_Job
ElapsedTime, ErrorCode, ErrorDescription, JobStatus, OtherRecoveryAction, Owner, PercentComplete, RecoveryAction, StartTime, TimeSubmitted, DeleteOnCompletion, JobRunTimes, LocalOrUtcTime, Notify, Priority, RunDay, RunDayOfWeek, RunMonth, RunStartInterval, ScheduledStartTime, UntilTime

Inherited from class CIM_ConcreteJob
JobState, Name, TimeOfLastStateChange, TimeBeforeRemoval

Inherited from class IBMTSSVC_Job
Description, ErrorCode, ErrorDescription, JobState, JobStatus, Name, OperationalStatus, TimeOfLastStateChange, DeleteOnCompletion, PercentComplete, TimeBeforeRemoval

Method Summary

Inherited from class CIM_Job
KillJob

Inherited from class CIM_ConcreteJob
RequestStateChange

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_AuthorizedControllerPrivilege

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Type	Range	Description
IBMTSSVC_AuthorizedPrivilege	Min 1 Max 1	
IBMTSSVC_ProtocolController	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_AuthorizedStorageHardwareID

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Privilege	IBMTSSVC_AuthorizedPrivilege	Min 1 Max 1	
PrivilegedElement	IBMTSSVC_StorageHardwareID	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_AvailableHardwareID

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_CandidateStorageHardware IDPort		
Dependent	IBMTSSVC_StorageHardwareIDManagement Service		

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_CandidateStorageHardwareIDPort

A WWPN of a potential client that is visible on the fibre-channel network.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_AvailableHardwareID

Properties

The following properties are available for this class:

Id	Type	Range	Description
StorageID	string		The WWPNs that have not been bound to an existing StorageHardwareID that are visible to the SAN Volume Controller over the fabric network.
SystemName	string		The name of the scoping system the candidate hwid belongs to. Format ClusterIP:ClusterID
Description	string		A textual description of the object.

Id	Type	Range	Description
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. Note that the Name property of ManagedSystemElement is also defined as a user-friendly name. But, it is often subclassed to be a Key. It is not reasonable that the same property can convey both identity and a user-friendly name, without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
IDType	uint16	Other 1 PortWWN 2 NodeWWN 3 Hostname 4 iSCSI Name 5	The type of the ID property. iSCSI IDs can use one of three iSCSI formats - iqn, eui, or naa. This three letter format is the name prefix; so a single iSCSI type is provided here, the prefix can be used to further refine the format.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_ClusterMaskingCapabilities

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Capabilities	IBMTSSVC_ProtocolController MaskingCapabilities		The Capabilities object that is associated with the element.
ManagedElement	IBMTSSVC_Cluster	Min 1 Max 1	The IBMTSSVC_Controller Masking Capabilities for this cluster.

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class

IBMTSSVC_ClusterScopeHardwareIdStorageVolumeView

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_HardwareIdStorage VolumeView	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_ClusterScopePrivilege

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_AuthorizedPrivilege	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_ManagesHardwareID

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_StorageHardwareID		
Dependent	IBMTSSVC_StorageHardwareID ManagementService	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_ManagementServiceForPrivilege

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_PrivilegeManagement Service	Min 1 Max 1	
Dependent	IBMTSSVC_AuthorizedPrivilege	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_ConfigurationServiceForController

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_ControllerConfiguration Service	Min 1 Max 1	
Dependent	IBMTSSVC_ProtocolController	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_ControllerConfigurationServiceForSystem

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_ControllerConfiguration Service	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_ControllerConfigurationServiceMaskingCapabilities

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Capabilities	IBMTSSVC_ProtocolController MaskingCapabilities		The capabilities object that is associated with the element.
ManagedElement	IBMTSSVC_ControllerConfiguration Service	Min 1 Max 1	The capabilities for this service.

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_SystemVolumeController

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_ProtocolController	Min 1 Max 1	
Dependent	IBMTSSVC_StorageVolume	Min 1 Max 1	
AccessPriority	uint16		Describes the priority given to accesses of the device thru this controller. The highest priority path will have the lowest value for this parameter. No priorities, constant value of 0.

Id	Type	Range	Description
AccessState	uint16	Unknown 0 Active 1 Inactive 2	Indicates if the Controller is actively commanding or accessing the Device (1) or not (2). Also, the value Unknown (0), can be defined. This information is necessary when a LogicalDevice can be commanded by or accessed through multiple Controllers.
DeviceNumber	string		The address of associated Device in context of the antecedent Controller. This is the LUN number.
UniqueID	string		The unique ID of the volume shown on SCSI inquiry page 83h.

Inherited from class CIM_ProtocolControllerForDevice
AccessPriority, AccessState, DeviceNumber

Inherited from class CIM_ProtocolControllerForUnit
DeviceAccess

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_StorageHardwareID

The IBMTSSVC_StorageHardwareID class represents the port that the host uses to access volumes.

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_AuthorizedStorageHardwareID
- IBMTSSVC_ManagesHardwareID
- IBMTSSVC_StorageHardwareIDManagementService

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.
CurrentlyAuthenticated	boolean		Indicates if the Identity is authenticated and is currently known within the scope of an AuthenticationService or authority. By default, authenticity is not assumed. This property is set and cleared by the security infrastructure and is only readable within the management infrastructure. The value might not be sufficient to determine authentication or authorization. Properties of an Identity subclass (such as a security token or computer hardware port and communication details) can be required by the security infrastructure.
Description	string		Provides a textual description of the object.
IDType	uint16	Other 1 PortWWN 2 NodeWWN 3 Hostname 4 iSCSI Name 5	The type of the ID property. iSCSI IDs can use one of three iSCSI formats: iqn, eui, or naa. The three letter format is the name prefix that can be used to further refine the format.
NumberOfIOGroups	uint32		
NumberOfPorts	uint32		
OtherIDType	string		The ID type when IDType is set to Other.
PortAuthenticated	boolean		Indicates if the Identity is authenticated and is currently known within the scope of an AuthenticationService or authority. This vector corresponds to the Port value with the same index in the PortWWNs array.

Id	Type	Range	Description
PortWWN	string		The list of WWPNs that belong to the host that is represented by the IBMTSSVC_StorageHardwareID instance.
StorageID	string	Max Length 256	The hardware worldwide unique ID. Because the StorageHardwareID represents the SAN Volume Controller Host object (a collection of ports), the unique id has the format ClusterIP:HostID
Caption	string	Max Length 64	A short textual description (one-line string) of the object.
ClientType	uint16	Generic 0 HPUX 1 TPGS 2	The type of the Client.
ElementName	string	Max Length 15	A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
PortLoginMask	string		A four character mask of target ports that are enabled for host login on each node. Valid mask values are from 0000 (no ports enabled) to 1111 (all 4 ports enabled). For example, a mask of 0001 enables only port 1, a mask of 0011 enables ports 1 and 2, 0111 enables ports 1, 2, and 3. By default, all ports are enabled.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_Identity
CurrentlyAuthenticated

Inherited from class CIM_StorageHardwareID
IDType, OtherIDType, StorageID

Method Summary

Name	Description
GetIOGroups	Retrieves the list of I/O groups that are associated with this host.

Method Detail

GetIOGroups

Description

Returns a vector of strings that list the I/O groups that are associated with this host.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
IOGroupNames	string		Returns the names of the mapped I/O groups.
Out			
IOGroupNames	string		Returns the names of the mapped I/O groups.
Return codes			
none			

MaskingMapping Class IBMTSSVC_StorageHardwareIDsForSystem

The IBMTSSVC_StorageHardwareIDsForSystem class provides a list of host ports to the cluster.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	The cluster.
Dependent	IBMTSSVC_StorageHardwareID ManagementService	Min 1 Max 1	The host ports.

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class

IBMTSSVC_StorageHardwareIDManagementService

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_AvailableHardwareID
- IBMTSSVC_ManagesHardwareID
- IBMTSSVC_StorageHardwareIDsForSystem

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string	Max Length 256	Uniquely identifies the Service and provides an indication of the functionality that is managed. This functionality is described in more detail in the Description property of the object.
SystemCreationClassName	string	Max Length 256	The CreationClassName of the scoping System.
SystemName	string	Max Length 256	The Name of the scoping System.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_Service
Started, StartMode, PrimaryOwnerContact, PrimaryOwnerName

Method Summary

Name	Description
CreateStorageHardwareID	Creates a CIM_StorageHardwareID to associate the CIM_ConcreteDependency between this service and the new CIM_StorageHardwareID.
DeleteStorageHardwareID	Deletes a CIM_StorageHardwareID and removes the associations that are no longer required, which includes CIM_ConcreteDependency and CIM_AuthorizedSubject.
ModifyHostIOGroupMapping	Modifies the I/O groups that are mapped to the host.

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_Service
StartService, StopService

Inherited from class CIM_StorageHardwareIDManagementService
AddHardwareIDsToCollection, CreateGatewayPathID, CreateHardwareIDCollection, CreateStorageHardwareID, DeleteStorageHardwareID

Method Detail

CreateStorageHardwareID

Description

Creates a CIM_StorageHardwareID to associate the CIM_ConcreteDependency between this service and the new CIM_StorageHardwareID.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
ElementName	string	Max Length 15	The ElementName of the new StorageHardwareID instance.

Id	Type	Range	Description
StorageID	string		The value that is used by the SecurityService to represent Identity. For example, a hardware worldwide unique name. This parameter can be of the format WWPN:WWPN:WWPN or a single PortWWN with the remainder input into the AdditionalPorts parameter.
IDType	uint16		The type of the ID property. iSCSI IDs can use one of three iSCSI formats: iqn, eui, or naa. This three letter format is the name prefix that can be used to further refine the format.
OtherIDType	string		The ID type when IDType is set to Other.
Setting	CIM_StorageClientSettingData		REF to the StorageClientSettingData that contains the OSType that is appropriate for this initiator. If left NULL, the instrumentation assumes a standard OSType.
Validate	boolean		Validates the WWPN before the WWPN is added. The default value is true.
AdditionalPorts	string		Each item in the vector is an additional WWPN in the StorageHardwareID.
PortLoginMask	string		A four character mask of target ports that are enabled for host login on each node. Valid mask values are from 0000 (no ports enabled) to 1111 (all 4 ports enabled). For example, a mask of 0001 enables only port 1, a mask of 0011 enables ports 1 and 2, 0111 enables ports 1, 2, and 3. By default, all ports are enabled.
IOGroups	IBMTSSVC_IOGroup		An array of references that contain the IOGroup instances that are viewable from the new StorageHardwareID (IOGroup Mapping).
HardwareID	IBMTSSVC_StorageHardwareID		REF to the new StorageHardwareID instance.
Return codes			
none			

DeleteStorageHardwareID

Description

Deletes a CIM_StorageHardwareID and removes the associations that are no longer required, which includes CIM_ConcreteDependency and CIM_AuthorizedSubject.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
HardwareID	IBMTSSVC_StorageHardwareID		The storage hardware ID that you want to delete.
Force	boolean		Forces the deletion of a StorageHardwareID, even if there are StorageVolumes that are associated to the ProtocolController of this StorageHardwareID. This parameter is set to false by default.
Out			
none			
Return codes			
none			

ModifyHostIOGroupMapping

Description

Modifies the I/O groups that are mapped to the host.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Host	IBMTSSVC_StorageHardware ID		The host that you want to modify.
IOGroups	string		The list of I/O groups that you want to modify. You can specify either I/O group names or IDs.
Operation	uint32		The operation to perform on the given host or I/O group. The IOGroups parameter is ignored if the operation is RemoveAllMappings.

Id	Type	Range	Description
Force	boolean		Forces the changes when set to true. If this parameter is set to false, a deletion operation can fail if it results in the loss of a VDisk to host mapping.
Out			
none			
Return codes			
none			

MaskingMapping Class IBMTSSVC_SAPAvailableForElement

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
AvailableSAP	IBMTSSVC_SCSIProtocolEndpoint		The Service Access Point that is available.
ManagedElement	IBMTSSVC_ProtocolController		

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_HardwareIdStorageVolumeView

Represents a mapping between a StorageHardwareID and a Volume.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_ClusterScopeHardwareIdStorageVolumeView

Properties

Id	Type	Range	Description
HostName	string	Max Length 256	The StorageHardwareID (host) object name.
HostOID	string	Max Length 256	The StorageHardwareID (host) object ID.
HostScsiID	string	Max Length 256	The StorageHardwareID (host) SCSI ID.
SystemName	string	Max Length 256	The system scoping identifier. Format: cluster_ip
VolumeName	string	Max Length 256	The StorageVolume (VDisk) object name.
VolumeOID	string	Max Length 256	The StorageVolume (VDisk) object ID.
VolumeUniqueID	string	Max Length 256	The StorageVolume (VDisk) Unique Identifier.
VolumeWWPN	string	Max Length 256	The StorageVolume (VDisk) WWPN.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class

IBMTSSVC_ProtocolControllerMaskingCapabilities

A subclass of Capabilities that defines the Masking-related capabilities of a ProtocolController.

Description

Subclasses

Not applicable

Referenced By

- IBMTSSVC_ClusterMaskingCapabilities
- IBMTSSVC_ControllerConfigurationServiceMaskingCapabilities

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.
AttachDeviceSupported	boolean		Set to true if this storage system supports the AttachDevice method.
Caption	string	Max Length 64	The Caption property is a short textual description (one- line string) of the object.

Id	Type	Range	Description
ClientSelectableDevice Numbers	boolean		Set to true if this storage system allows the client to specify the DeviceNumber parameter when calling ControllerConfigurationService.AttachDevice() and ControllerConfigurationService.AttachDevice() and Set to false if the implementation does not allow unit numbers to vary for a ProtocolController. However, if set to false and a Device is not the Dependent of a ProtocolControllerForUnit association, the client must provide a DeviceNumber parameter in ControllerConfigurationService.AttachDevice. If set to false and the Device is already the Dependent of a ProtocolControllerForUnit association, then the client can omit the DeviceNumber parameter (or supply the same value) in subsequent ControllerConfigurationService.AttachDevice calls.
Description	string		Provides a textual description of the object.
ElementName	string		The user friendly name for this instance of Capabilities. In addition, the user friendly name can be used as a index property for a search of query. (Note: Name does not have to be unique within a namespace.)
OneHardwareIDPerView	boolean		Set to true if this storage system limits configurations to a single subject hardware ID per view. Otherwise, multiple hardware ID types can be used. The default is FALSE, that multiple ID types may be used in a single view.
OtherValidHardwareID Types	string		An array of strings describing types for valid StorageHardwareID.IDType. Used when the ValidHardwareIdTypes includes 1 ("Other").
PortsPerView	uint16	One Port per View 2 Multiple Ports per View 3 All Ports Share the same View 4	An integer enumeration indicating the way that ports per view (ProtocolController) are handled by the underlying storage system.
PrivilegeDeniedSupported	boolean		Set to true if this storage system allows a client to create a Privilege instance with PrivilegeGranted set to FALSE.
ProtocolControllerRequires AuthorizedIdentity	boolean		If true, this property indicates that a Privilege/Identity pair MUST be specified when CreateProtocolControllerWithPorts() is called. If false, then the Privilege/Identity pair in CreateProtocolControllerWithPorts() cannot be set.

Id	Type	Range	Description
ProtocolControllerSupports Collections	boolean		If true, this property indicates that the Identity parameter of CreateProtocolControllerWithPorts() MUST contain a reference to a CIM_Collection (or subclass) or to a CIM_Identity (or subclass).
UniqueUnitNumbersPer Port	boolean		When set to false, different ProtocolControllers attached to a LogicalPort can expose the same unit numbers. If true, then this storage system requires unique unit numbers across all the ProtocolControllers connected to a LogicalPort.
ValidHardwareIdTypes	uint16	Other 1 Port WWN 2 Node WWN 3 Host Name 4	A list of the valid values for StorageHardwareID.IDType.
CreateProtocolControllers Supported	boolean		Set to true if this storage system supports the CreateProtocolControllerWithPorts method.
ExposePathsSupported	boolean		
SPCAllowsNoInitiators	boolean		Set to true if the instrumentation allows a client to create a configuration where an SPC has no StorageHardwareIDs associated through CIM_AuthorizedTarget/ CIM_AuthorizedPrivilege/ CIM_AuthorizedSubject
SPCAllowsNoLUs	boolean		Set to true if the instrumentation allows a client to create a configuration where an SPC has no LogicalDevices associated via CIM_ProtocolcontrollerForUnit associations
SPCAllowsNoTargets	boolean		Set to true if the instrumentation allows a client to create a configuration where an SPC has no target SCSIProtocolendpoints associated via CIM_SAPAvaiableforElement associations
SPCSupportsDefault Views	boolean		Set to true if the instrumentation supports default view SPCs that expose logical units to all initiators (so called promiscuous LUNs. Default view SPCs must be associated to a CIM_StorageHardwareID instance with Name set to the null string. A target port must not be associated with more than a single default view SPC. If PortsPerView is All Ports share the same View', then at most one default view SPC can be associated with the target system. If SPCAllowsNoLUs is true, the instrumentation might instantiate a static default view instance or let the client create one as needed using ExposePaths. For other values of PortsPerView, all default view SPC must share the same null-Name CIM_StorageHardwareID instance.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_Capabilities

ElementName

Inherited from class CIM_ProtocolControllerMaskingCapabilities

AttachDeviceSupported, ClientSelectableDeviceNumbers, CreateProtocolControllerSupported, ExposePathsSupported, MaximumMapCount, OneHardwareIDPerView, OtherValidHardwareIDTypes, PortsPerView, PrivilegeDeniedSupported, ProtocolControllerRequiresAuthorizedIdentity, ProtocolControllerSupportsCollections, SPCAllowsNoInitiators, SPCAllowsNoLUs, SPCAllowsNoTargets, SPCSupportsDefaultViews, UniqueUnitNumbersPerPort, ValidHardwareIdTypes

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_ProtocolController**Description****Subclasses**

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_AuthorizedControllerPrivilege
- IBMTSSVC_ConfigurationServiceForController
- IBMTSSVC_ControllerConfigurationService
- IBMTSSVC_ProtocolControllerForPort
- IBMTSSVC_ProtocolControllerOnCluster
- IBMTSSVC_SAPAvailableForElement
- IBMTSSVC_SystemVolumeController

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
DeviceID	string	Max Length 64	An address or other identifying information used to uniquely name the LogicalDevice.

Id	Type	Range	Description
SystemCreationClass Name	string	Max Length 256	The CreationClassName of the scoping system.
SystemName	string	Max Length 256	The System Name of the scoping system.
AccessGranted	boolean		This property provides a quick interface for finding Devices with no AuthorizationSubject association to an AccessControlInformation instance, either directly or through a Controller. If set to true, the Device has granted access to some consumer. If set to false, no access has been granted.
ConnectionRole	uint16	Unknown 0 Server 2 Client 3	A protocol controller can have one or more of several roles in a connection: It can be a client (for example, a SCSI initiator) that consumes the connection, it can be a server (for example a SCSI Target) that provides the connection, or in Certain applications, a controller can have both functions (both providing and consuming the connection).
Description	string		Provides a textual description of the object.
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF 8..32767 Vendor Reserved 32768..65535	An enumerated value that indicates the default or startup configuration for the Enabled State of an element. The default value is Enabled.

Id	Type	Range	Description
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	An integer enumeration that indicates the enabled and disabled states of an element. This property can also indicate the transitions between these requested states. For example, the values shutting down (4) and starting (10) are transient states between enabled and disabled.
IdentifyingDescriptions	string		An array of free-form strings that provide explanations and details behind the entries in the OtherIdentifyingInfo array. Each entry of this array is related to the entry in OtherIdentifyingInfo that is located at the same index.
MaxUnitsControlled	uint32		The maximum number of Units that can be controlled by or accessed through this ProtocolController.
Name	string	Max Length 1024	Uniquely identifies the Service and provides an indication of the functionality that is managed. This functionality is described in more detail in the Description property of the object.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.
OtherEnabledState	string		A string that describes the enabled or disabled state of the element when the EnabledState property is set to 1 (Other). This property must be set to null when EnabledState is any value other than 1.
OtherIdentifyingInfo	string	Max Length 256	Captures data in addition to DeviceID information that can be used to identify a LogicalDevice. For example, you can use this property to hold the operating system's user-friendly name for the Device.

Id	Type	Range	Description
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 12 DMTF Reserved .. Vendor Reserved 32768..65535	An integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. If EnabledState is set to Not Applicable (5), this property is not used. By default, the RequestedState of the element is set to No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration.
StatusDescriptions	string		Strings that describe the various OperationalStatus array values. For example, if the value Stopping is assigned to OperationalStatus, this property might contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.
NameFormat	uint16		

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement

EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_LogicalDevice

AdditionalAvailability, Availability, ErrorCleared, ErrorDescription, IdentifyingDescriptions, LastErrorCode, MaxQuiesceTime, OtherIdentifyingInfo, PowerManagementCapabilities, PowerManagementSupported, PowerOnHours, StatusInfo, TotalPowerOnHours

Inherited from class CIM_ProtocolController

MaxUnitsControlled

Inherited from class CIM_SCSIProtocolController

NameFormat, OtherNameFormat

Method Summary

Inherited from class CIM_EnabledLogicalElement

RequestStateChange

Inherited from class CIM_LogicalDevice

EnableDevice, OnlineDevice, QuiesceDevice, Reset, RestoreProperties, SaveProperties, SetPowerState
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Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_ProtocolControllerForPort

The IBMTSSVC_ProtocolControllerForPort instance represents the existence of a StorageHardwareID that is mapped to a StorageVolume using the protocol controller with a port mask that allows it to view the port.

Description

To maintain backwards compatibility, the ProtocolControllerForPort instance is required in this version of SMI-S.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_ProtocolController		
Dependent	IBMTSSVC_FCPort		

Inherited from class CIM_ProtocolControllerForDevice

AccessPriority, AccessState, DeviceNumber

Method Summary

Not applicable.

Method Detail

Not applicable.

MaskingMapping Class IBMTSSVC_PrivilegeServiceForSystem

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_PrivilegeManagement Service	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_SystemVPD

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Node		
Dependent	IBMTSSVC_NodeVPD		

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_CandidateNode

This class represents a SAN Volume Controller node which is not yet a member of a cluster.

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_ClusteringCandidate

IBMTSSVC_ClusteringConfigurationService

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	The name of the class or the subclass used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string		The inherited Name serves as key of a System instance in an enterprise environment.
Caption	string	Max Length 64	A short textual description (one- line string) of the object.

Id	Type	Range	Description
Dedicated	uint16	Not Dedicated 0 Unknown 1 Other 2 Storage 3 Router 4 Switch 5 Layer 3 Switch 6 Central Office Switch 7 Hub 8 Access Server 9 Firewall 10 I/O 11 Print 12 Web Caching 13 Management 14 Block Server 15 File Server 16 Mobile User Device 17 Repeater 18 Bridge/Extender 19 Gateway 20	An enumeration that indicates if the ComputerSystem is a special-purpose System or general purpose System. For example, you can specify that the System is dedicated to Print (11) or acts as a Hub (8). An example of a dedicated user device is a mobile phone or a barcode scanner in a store that communicates through radio frequency. These systems are quite limited in functionality and programmability and are not considered general purpose computing platforms. Alternately, an example of a mobile system that is general purpose is a handheld computer. Although limited in its programmability, new software can be downloaded and its functionality expanded by the user.
Description	string		A textual description of the object.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. But, it is often subclassed to be a Key. It is not reasonable that the same property can convey both identity and a user-friendly name, without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.

Id	Type	Range	Description
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	<p>EnabledState is an integer enumeration that indicates the enabled and disabled states of an element. It can also indicate the transitions between these requested states. For example, shutting down (4) and starting (10) are transient states between enabled and disabled. The following text briefly summarizes the various enabled and disabled states: Enabled (2) indicates that the element is or could be executing commands, will process any queued commands, and queues new requests. Disabled (3) indicates that the element will not execute commands and will drop any new requests. Shutting Down (4) indicates that the element is in the process of going to a Disabled state. Not Applicable (5) indicates the element does not support being enabled or disabled. Enabled but Offline (6) indicates that the element might be completing commands, and will drop any new requests. Test (7) indicates that the element is in a test state. Deferred (8) indicates that the element might be completing commands, but will queue any new requests. Quiesce (9) indicates that the element is enabled but in a restricted mode. The behavior of the element is similar to the Enabled state, but it processes only a restricted set of commands. All other requests are queued. Starting (10) indicates that the element is in the process of going to an Enabled state. New requests are queued.</p>
IdentifyingDescriptions	string		<p>An array of free-form strings providing explanations and details behind the entries in the OtherIdentifying Info array. Each entry of this array is related to the entry in OtherIdentifyingInfo that is located at the same index.</p>
NameFormat	string	Max Length 64	<p>The System object and its derivatives are Top Level Objects of CIM. They provide the scope for numerous components. Having unique System keys is required. A heuristic can be defined in individual System subclasses to attempt to always generate the same System Name Key. The NameFormat property identifies how the System name was generated, using the subclass heuristic.</p>

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	<p>The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.</p>
OtherDedicatedDescriptions	string		A string describing how or why the system is dedicated when the Dedicated array includes the value Other (2).
OtherEnabledState	string		A string that describes the enabled or disabled state of the element when the EnabledState property is set to Other (1). This property must be set to null when EnabledState is any value other than 1.

Id	Type	Range	Description
OtherIdentifyingInfo	string	Max Length 256	OtherIdentifyingInfo captures additional data, beyond System Name information, that could be used to identify a ComputerSystem. If only the Fibre Channel name is available and is unique (able to be used as the System key), this property is NULL and the WWN becomes the System key. Its data is placed in the Name property.
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 12 DMTF Reserved .. Vendor Reserved 32768..65535	RequestedState is an integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. Note that when EnabledState is set to 5 ("Not Applicable"), this property has no meaning. By default, the RequestedState of the element is No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration. There are two new values in RequestedState that build on the status of the EnabledState property. These are the Reboot (10) and Reset (11) states. The Reboot state refers to moving from the Shut Down state to the Enabled state. Reset indicates that the element is first Disabled and then Enabled. Shut Down requests an orderly transition to the Disabled state, and might involve removing power to completely erase any existing state. The Disabled state requests an immediate disabling of the element, such that it does not run or accept any commands or processing requests. This property is set as the result of a method invocation (such as Start or StopService on CIM_Service), or can be overridden and defined as writeable in a subclass. The method approach is considered superior to a writeable property because it allows an explicit invocation of the operation and the return of a result code. An instance of EnabledLogicalElement might not support RequestedStateChange. If this occurs, the value Not Applicable (12) is used.
ResetCapability	uint16	Other 1 Unknown 2 Disabled 3 Enabled 4 Not Implemented 5	If Enabled (4), the ComputerSystem can be reset through the hardware. If disabled (3), hardware reset is not allowed.

Id	Type	Range	Description
StatusDescriptions	string		Strings describing the various OperationalStatus array values. For example, if Stopping is the value assigned to OperationalStatus, this property can contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value indicating an administrator's default or startup configuration for the Enabled State of an element. By default, the element is Enabled (2).
HardwareType	string	Max Length 256	The hardware type for this node.
UPSSerialNumber	string	Max Length 256	The serial number of the UPS for this node.
UPSUniqueID	string	Max Length 256	The unique identifier for the UPS for this node.

Inherited from class CIM_ManagedElement

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_System
NameFormat, PrimaryOwnerContact, PrimaryOwnerName, Roles

Inherited from class CIM_ComputerSystem
Dedicated, IdentifyingDescriptions, NameFormat, OtherDedicatedDescriptions, OtherIdentifyingInfo, PowerManagementCapabilities, ResetCapability

Method Summary

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_ComputerSystem
SetPowerState

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_CandidateRemoteCluster

Description

A potential candidate cluster for establishing a Metro Mirror or Global Mirror partnership.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_PartnershipCandidate

IBMTSSVC_StorageConfigurationService

Properties

The following properties are available for this class:

Id	Type	Range	Description
Name	string	Max Length 1024	The label by which the object is known. Format: cluster_ip:candidate_id
Caption	string	Max Length 64	A short textual description (one- line string) of the object.
Description	string		The Description property provides a textual description of the object.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. Note that the Name property of ManagedSystemElement is also defined as a user-friendly name. But, it is often subclassed to be a Key. It is not reasonable that the same property can convey both identity and a user-friendly name, without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
IsConfigured	boolean		Partnership configuration state.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	<p>The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.</p>
StatusDescriptions	string		<p>Strings describing the various OperationalStatus array values. For example, if Stopping is the value assigned to OperationalStatus, this property can contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.</p>

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_ClusteringCandidate

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_CandidateNode		
Dependent	IBMTSSVC_Cluster	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_ClusterConcretelIdentity

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The properties are available for this class:

Id	Type	Range	Description
SameElement	IBMTSSVC_ClusterRedundancy Set	Min 1 Max 1	
SystemElement	IBMTSSVC_Cluster	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_ClusterScopeNodeVPD

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster		The Cluster.
Dependent	IBMTSSVC_NodeVPD		The instance.

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_PartnershipCandidate

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_CandidateRemote Cluster		
Dependent	IBMTSSVC_Cluster	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_NodeComponentOfIOGroup

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_IOGroup	Min 1 Max 1	
PartComponent	IBMTSSVC_Node	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_NodeComponentOfCluster

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Cluster	Min 1 Max 1	
PartComponent	IBMTSSVC_Node	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_MemberOfIOGroupRedundancySet

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Collection	IBMTSSVC_IOGroupRedundancy Set	Min 1 Max 1	
Member	IBMTSSVC_Node	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_MemberOfClusterRedundancySet

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Collection	IBMTSSVC_ClusterRedundancy Set	Min 1 Max 1	
Member	IBMTSSVC_IOGroup	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_Cluster

This class represents a group of between one and four Redundancy Groups that form a cluster.

Description

A cluster can have up to eight Nodes.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_CascadingElementCapabilities
IBMTSSVC_CascadingHostedService
IBMTSSVC_ClusterConcreteIdentity
IBMTSSVC_ClusterDumps
IBMTSSVC_ClusterFabricView
IBMTSSVC_ClusterFeatures
IBMTSSVC_ClusterMaskingCapabilities
IBMTSSVC_ClusterScopeAsyncCopySet
IBMTSSVC_ClusterScopeCandidateVolume
IBMTSSVC_ClusterScopeCloneCopySet
IBMTSSVC_ClusterScopeFlashCopySet
IBMTSSVC_ClusterScopeHardwareIdStorageVolumeView
IBMTSSVC_ClusterScopeNodeVPD
IBMTSSVC_ClusterScopePrivilege
IBMTSSVC_ClusterScopeStorageVolumeBackendVolumeView
IBMTSSVC_ClusterScopeSyncCopySet
IBMTSSVC_ClusteringCandidate
IBMTSSVC_ClusteringServiceForSystem
IBMTSSVC_ComputerSystemPackage
IBMTSSVC_ConnectedBackendController
IBMTSSVC_ControllerConfigurationServiceForSystem
IBMTSSVC_DeviceSettingData

IBMTSSVC_ElementConformsToProfile
IBMTSSVC_HostedAllocatedResources
IBMTSSVC_HostedConcretePool
IBMTSSVC_HostedFlashCopyJob
IBMTSSVC_HostedFormatVolumeJob
IBMTSSVC_HostedJob
IBMTSSVC_HostedMigrateVolumeJob
IBMTSSVC_HostedPrimordialPool
IBMTSSVC_HostedRemoteServiceAccessPoint
IBMTSSVC_HostedStorageConfigurationService
IBMTSSVC_HostedSyncCopyJob
IBMTSSVC_IOGroupComponentOfCluster
IBMTSSVC_InitiatorControllerOnCluster
IBMTSSVC_InstalledClusterSoftwareIdentity
IBMTSSVC_NodeComponentOfCluster
IBMTSSVC_PartnershipCandidate
IBMTSSVC_PortsOnCluster
IBMTSSVC_PrivilegeServiceForSystem
IBMTSSVC_ProtocolControllerOnCluster
IBMTSSVC_RemotePartnership
IBMTSSVC_StorageExtentOnCluster
IBMTSSVC_StorageHardwareIDsForSystem
IBMTSSVC_StorageVolumeOnCluster
IBMTSSVC_UseOfMessageLog

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	CreationClassName indicates the name of the class or the subclass used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string		The label by which the object is known. Format: cluster_ip:object_id
ClusterState	uint16	Unknown 0 Other 1 On-line 2 Off-line 3 Degraded 4 Unavailable 5	Indicates the state of the Cluster. The cluster can be defined to be on-line (2), off-line (3), in a degraded mode of operation (4) or unavailable (5).
Dedicated	uint16	Not Dedicated 0 Unknown 1 Other 2 Storage 3 Router 4 Switch 5 Layer 3 Switch 6 Central Office Switch 7 Hub 8 Access Server 9 Firewall 10 Print 11 I/O 12 Web Caching 13 Management 14 Block Server 15 File Server 16 Mobile User Device 17 Repeater 18 Bridge/Extender 19 Gateway 20	An enumeration that indicates if the ComputerSystem is a special-purpose System.SAN Volume Controller is a dedicated storage device and returns {3,15} ("Storage","Block Server")
Description	string		The Description property provides a textual description of the object.
DiscoveryStatus	sint8	Not Supported -2 Unknown -1 No Discovery In Progress 0 Discovery In Progress 1	The discovery status of the cluster.

Id	Type	Range	Description
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	EnabledState is an integer enumeration that indicates the enabled and disabled states of an element. It can also indicate the transitions between these requested states. For example, Shutting Down (4) and Starting (10) are transient states between enabled and disabled. The following text briefly summarizes the various enabled and disabled states: Enabled (2) indicates that the element is or could be executing commands, will process any queued commands, and queues new requests. Disabled (3) indicates that the element will not execute commands and will drop any new requests. Shutting Down (4) indicates that the element is in the process of going to a Disabled state. Not Applicable (5) indicates the element does not support being enabled or disabled. Enabled but Offline (6) indicates that the element might be completing commands, and will drop any new requests. Test (7) indicates that the element is in a test state. Deferred (8) indicates that the element might be completing commands, but will queue any new requests. Quiesce (9) indicates that the element is enabled but in a restricted mode. The behavior of the element is similar to the Enabled state, but it processes only a restricted set of commands. All other requests are queued. Starting (10) indicates that the element is in the process of going to an Enabled state. New requests are queued.
IdentifyingDescriptions	string		An array of free-form strings providing explanations and details behind the entries in the OtherIdentifying Info array. Note, each entry of this array is related to the entry in OtherIdentifyingInfo that is located at the same index.
MaxNumberOf Nodes	uint32		Indicates the maximum number of nodes that may participate in the Cluster. If unlimited, enter 0.
NameFormat	string	Max Length 64	The NameFormat property identifies how the ComputerSystem Name is generated. The SAN Volume Controller returns the cluster's id as Name, therefore this attribute is set to Other.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18DMTF Reserved .. Vendor Reserved 0x8000..	The cluster's operational status.
OtherDedicated Descriptions	string		A string describing how or why the system is dedicated when the Dedicated array includes the value Other (2).
OtherEnabledState	string		A string that describes the enabled or disabled state of the element when the EnabledState property is set to Other (1). This property must be set to null when EnabledState is any value other than 1.

Id	Type	Range	Description
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 12 DMTF Reserved .. Vendor Reserved 32768..65535	An integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. When EnabledState is set to Not Applicable (5), this property has no meaning. By default, the RequestedState of the element is No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration. There are two new values in RequestedState that build on the states of EnabledState. These are the Reboot (10) and Reset (11) states. The Reboot state refers to moving from the Shut Down state to an Enabled state. Reset indicates that the element is first Disabled and then Enabled. A Shut Down requests an orderly transition to the Disabled state, and might involve removing power to completely erase any existing state. The Disabled state requests an immediate disabling of the element. The element does not accept any commands or process any requests. This property is set as the result of a method invocation (such as Start or StopService on CIM_Service), or can be overridden and defined as WRITEable in a subclass. The method approach is considered superior to a WRITEable property because it allows an explicit invocation of the operation and the return of a result code. A particular instance of EnabledLogicalElement might not support RequestedStateChange. If this occurs, the value Not Applicable (12) is used.
ResetCapability	uint16	Other 1 Unknown 2 Disabled 3 Enabled 4 Not Implemented 5	If enabled (4), the ComputerSystem can be reset through the hardware. If disabled (3), hardware reset is not allowed.
StatusDescriptions	string		Strings describing the various OperationalStatus array values. For example, if "Stopping" is the value assigned to OperationalStatus, then this property may contain an explanation as to why an object is being stopped. Note that entries in this array are correlated with those at the same array index in OperationalStatus.
Types	uint16	Unknown 0 Other 1 Failover 2 Performance 3 Distributed OS 4 Node Grouping 5 SysPlex 6	The cluster types. This specifies whether the cluster is for failover (2), performance (3), etc. The values which can be specified are not mutually exclusive. Thus, Types is an array.
AllocatedCapacity	uint64		The total capacity of all StorageVolumes in the cluster.

Id	Type	Range	Description
AvailableCapacity	uint64		The currently available space in the cluster. This is approx. BackendStorageCapacity-AllocatedCapacity.
BackendStorage Capacity	uint64		The total capacity of all backend storage connected to the cluster.
Caption	string	Max Length 64	The Caption property is a short textual description (one- line string) of the object.
CodeLevel	string		The code level of the cluster.
ConsoleIP	string		The IP address of the management console.
ConsolePort	string		The port address of the management console.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. But, it is often subclassed to be a Key. It is not reasonable that the same property can convey both identity and a user-friendly name, without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
EmailSetting	string		The email setting.
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value indicating an administrator's default or startup configuration for the Enabled State of an element. By default, the element is Enabled (2).
FcPortSpeed	uint64		The transmission speed of the attached Fibre-Channel.
GMInterClusterDelay Simulation	uint32		The Global Mirror Inter-Cluster Delay Simulation. Accepts values from 0 to 100, default is 0. This property is only supported if cluster supports Global Mirror.
GMIntraClusterDelay Simulation	uint32		The Global Mirror Intra-Cluster Delay Simulation. Accepts values from 0 to 100, default is 0. This property is only supported if cluster supports Global Mirror.
GMLinkTolerance	uint32		The Global Mirror link tolerance. Accepts values from 60 to 86400 in steps of 10, default is 60. This property is only supported if cluster supports Global Mirror.
Locale	string		The current locale setting of the cluster.
OtherIdentifying Info	string	Max Length 256	The cluster's IP Address, Subnet Mask, Default Gateway and Service IP Address.

Id	Type	Range	Description
PoolCapacity	uint64		The total capacity of all StoragePools in the cluster.
PrimaryOwnerContact	string	Max Length 256	The Email address of the primary contact person for this cluster
PrimaryOwnerName	string	Max Length 64	The name of the primary system owner. The system owner is the primary user of the system.
RequiredMemory	uint32		The amount of required memory for that cluster.
SNMPCommunity	string		The SNMP community.
SNMPServerIP	string		The SNMP server ip address.
SNMPSetting	string		The SNMP setting of the cluster.
StatisticsFrequency	uint32		Indicates the update interval for the cluster statistics
StatisticsStatus	boolean		Is true if statistics collection is active.
TimeZone	string		The timezone setting of the cluster.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_System
NameFormat, PrimaryOwnerContact, PrimaryOwnerName, Roles

Inherited from class CIM_ComputerSystem
Dedicated, IdentifyingDescriptions, NameFormat, OtherDedicatedDescriptions, OtherIdentifyingInfo, PowerManagementCapabilities, ResetCapability

Inherited from class CIM_Cluster
ClusterState, Interconnect, InterconnectAddress, MaxNumberOfNodes, Types

Method Summary

Not applicable.

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_ComputerSystem

SetPowerState

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_Features

This class represents the features that are enabled for the SAN Volume Controller cluster.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_ClusterFeatures

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
AutoDeleteFlashCopy	boolean		Provides support for the auto deletion of FlashCopy mappings.
CachelessVdisk	boolean		Provides support for no cache virtual disks.
CascadingFlashCopy	boolean		Provides support for cascading FlashCopy operations.
CleaningMode	boolean		Provides support for cleaning multiple target FlashCopy mappings.
Description	string		Provides a textual description of the object.
EightPBVirtualization	boolean		Provides support for 8 PB virtualization.
FlashCopyStartTime	boolean		Provides support to specify a FlashCopy start time.
GlobalMirror	boolean		Indicates if the Global Mirror feature is enabled.
HostIoGroup	boolean		Indicates if the hosts are assigned by I/O group.
IncrementalFlashCopy	boolean		Provides support for incremental FlashCopy operations.
LunDiscoveryStatus	boolean		Provides the status of a LUN discovery.
MultiTargetFlashCopy	boolean		Provides support for multiple target FlashCopy operations.
NodePortSpeed	boolean		Indicates if the port speed is configurable.
PortMask	boolean		Indicates if you can mask host ports.
PortSpeedSettable	boolean		Indicates if you can set the cluster port speed.

Id	Type	Range	Description
UserAuditing	boolean		Indicates if you can audit CLI commands.
UserConfigBitMaps	boolean		Provides support for you to configure the bitmap.
VDiskPreferredNode	boolean		Provides support to specify a preferred VDisk for I/O group migration.
VdiskUnitDevice	boolean		VDisks have Unit Device Identifiers
FlashCopy	boolean		Indicates if the FlashCopy feature is enabled.
MaximumCapacity	uint64		Specifies the maximum capacity that can be used.
RemoteCopy	boolean		Indicates if the Metro Mirror feature is enabled.

Inherited from class CIM_ManagedElement
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Caption, Description, ElementName

Inherited from class CIM_Capabilities
--

ElementName

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_IOGroupRedundancySet

The IOGroupRedundantSet class defines an interface for a set of Volumes. All Nodes and Volumes are associated with exactly one IOGroupRedundancySet.

Description

The read and write cache provided by a node is duplicated for redundancy. When I/O is performed to a Volume, the node that processes the I/O duplicates the data on the Partner node in the IOGroupRedundancySet. This class represents the set aspect of an I/O group where as the IOGroup class represents the system aspect.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_IOGroupConcretIdentity

IBMTSSVC_MemberOfIOGroupRedundancySet

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.
Caption	string	Max Length 64	A short textual description (one- line string) of the object.
Description	string		Provides a textual description of the object.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. It is often subclassed to be a Key. When Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
MaxNumberSupported	uint32		Indicates the largest number of elements that can participate in the RedundancySet. A value of 0 indicates there is no limit on the number of elements.
MinNumberNeeded	uint32		Indicates the smallest number of elements that must be operational in order to function. For example, in an N+1 redundancy relationship, the MinNumberNeeded property is set equal to N. In a LimitedSparing environment, this property is not used and must be set to zero.

Id	Type	Range	Description
RedundancyStatus	uint16	Unknown 0 DMTF Reserved 1 Fully Redundant 2 Degraded Redundancy 3 Redundancy Lost 4 Overall Failure 5	Provides information on the state of the RedundancyGroup. The Fully Redundant (2) state means that all of the configured redundancy is still available. The Degraded Redundancy (3) state means that some configured elements are degraded, missing or failed but that the number of elements in the set is still greater than the minimum required. The MinNumberNeeded ;'Redundancy Lost means that sufficient configured elements are missing or failed and that no redundancy is available. The next failure experienced causes an overall failure. The Overall Failure (5) state means that there has been an overall failure of the RedundancySet.
TypeOfSet	uint16	Unknown 0 Other 1 N+1 2 Load Balanced 3 Sparing 4 Limited Sparing 5 DMTF Reserved .. Vendor Reserved 0x8000..	Provides information on the type of redundancy. N+1 (2) indicates that all members are active, are unaware and function independent of one another. However, there exist at least one extra member to achieve functionality. An example of N+1 is a system that has 2 power supplies, but only requires one power supply to function properly. The Load Balanced (3) state indicates all members are active. However, there functionality is not independent of each other. Their functioning is determined by a load balancing algorithm (implemented in hardware and/or software). Sparing is implied because each member can be a spare. The Sparing (4) state indicates that all members are active and are aware of each other. However, their functionality is independent until failover. Each member can be a spare. The Limited Sparing (5) state indicates that all members are active and they might be aware of each other. Instead, their redundancy is indicated by the IsSpare relationship.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_RedundancySet
MaxNumberSupported, MinNumberNeeded, OtherTypeOfSet, RedundancyStatus, TypeOfSet, VendorIdentifyingInfo, LoadBalanceAlgorithm, OtherLoadBalanceAlgorithm

Method Summary

Inherited from class CIM_RedundancySet
Failover

Method Detail

Not applicable

MultipleComputerSystem Class IBMTSSVC_Node

This class represents a single SAN Volume Controller unit.

Description

Nodes work in pairs for redundancy. The pairs are associated by their I/O Group. One or more Node pairs form a Cluster. When the Cluster is formed, one Node is designated the configuration Node. This node is chosen automatically and it is this Node that binds to the Cluster IP address. This forms the Configuration Interface to the Cluster.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

- IBMTSSVC_ClusteringConfigurationService
- IBMTSSVC_HostedSCSIProtocolEndpoint
- IBMTSSVC_MemberOfIOGroupRedundancySet
- IBMTSSVC_NodeComponentOfCluster
- IBMTSSVC_NodeComponentOfIOGroup
- IBMTSSVC_NodeDumps
- IBMTSSVC_StorageConfigurationService
- IBMTSSVC_SystemFCPortIBMTSSVC_SystemVPD

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string		The inherited Name serves as key of a System instance in an enterprise environment.

Id	Type	Range	Description
Dedicated	uint16	Not Dedicated 0 Unknown 1 Other 2 Storage 3 Router 4 Switch 5 Layer 3 Switch 6 Central Office Switch 7 Hub 8 Access Server 9 Firewall 10 Print 11 I/O 12 Web Caching 13 Management 14 Block Server 15 File Server 16 Mobile User Device 17 Repeater 18 Bridge/Extender 19 Gateway	<p>An enumeration that indicates whether the ComputerSystem is a special-purpose System or a general purpose System. For example, you can specify that the System is dedicated to Print (11) or acts as a Hub (8). An example of a dedicated user device is a mobile phone or a barcode scanner in a store that communicates through radio frequency. These systems are quite limited in functionality and programmability, and are not considered general purpose computing platforms. Alternately, an example of a mobile system that is general purpose is a handheld computer. Although limited in its programmability, new software can be downloaded and its functionality expanded by the user.</p>
Description	string		Provides a textual description of the object.

Id	Type	Range	Description
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	EnabledState is an integer enumeration that indicates the enabled and disabled states of an element. It can also indicate the transitions between these requested states. For example, shutting down (value=4) and starting (value=10) are transient states between enabled and disabled. Enabled (2) indicates that the element is or could be executing commands, processes any queued commands, and queues new requests. Disabled (3) indicates that the element does not run any commands and drops any new requests. Shutting Down (4) indicates that the element is in the process of going to a Disabled state. Not Applicable (5) indicates the element does not support being enabled or disabled. Enabled but Offline (6) indicates that the element might be completing commands, and drops any new requests. Test (7) indicates that the element is in a test state. Deferred (8) indicates that the element might be completing commands, but queues any new requests. Quiesce (9) indicates that the element is enabled but in a restricted mode. The behavior of the element is similar to the Enabled state, but it processes only a restricted set of commands. All other requests are queued. Starting (10) indicates that the element is in the process of going to an Enabled state. New requests are queued.
IdentifyingDescriptions	string		An array of free-form strings that provide explanations and details behind the entries in the OtherIdentifyingInfo array. Each entry of this array is related to the entry in OtherIdentifyingInfo that is located at the same index.
IsConfigNode	boolean		If set to true, this node is the configuration node for the cluster.
NameFormat	string		The ComputerSystem object and its derivatives are Top Level Objects of CIM. They provide the scope for numerous components. The System keys must be unique. The NameFormat property identifies how the ComputerSystem Name is generated. The NameFormat ValueMap qualifier defines the various mechanisms for assigning the name. You can use the inherited ElementName property to assign another name for the ComputerSystem.

Id	Type	Range	Description
NativeStatus	uint16	Offline 0 Online 1 Pending 2 Adding 3 Deleting 4 Flushing 5	The native operational status for the node.
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 Flushing 19 DMTF Reserved .. Vendor Reserved 0x8000..	<p>The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.</p>
OtherDedicated Descriptions	string		A string that describes how or why the system is dedicated when the Dedicated array includes the value Other (2).

Id	Type	Range	Description
OtherEnabledState	string		A string that describes the enabled or disabled state of the element when the EnabledState property is set to Other (1). This property must be set to null when EnabledState is any value other than 1.
OtherIdentifying Info	string	Max Length 256	The Redundancy Group ID, RedundancyGroup Name, Partner Node Name, Partner Node ID, and WWWN for the node.
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 12 DMTF Reserved .. Vendor Reserved 32768..65535	An integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. When EnabledState is set to Not Applicable (5), this property has no meaning. By default, the RequestedState of the element is No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration. There are two new values in RequestedState that build on the states of EnabledState. These are the Reboot (10) and Reset (11) states. The Reboot state refers to moving from the Shut Down state to an Enabled state. Reset indicates that the element is first Disabled and then Enabled. A Shut Down requests an orderly transition to the Disabled state, and might involve removing power to completely erase any existing state. The Disabled state requests an immediate disabling of the element. The element does not accept any commands or process any requests. This property is set as the result of a method invocation (such as Start or StopService on CIM_Service), or can be overridden and defined as WRITEable in a subclass. The method approach is considered superior to a WRITEable property because it allows an explicit invocation of the operation and the return of a result code. A particular instance of EnabledLogicalElement might not support RequestedStateChange. If this occurs, the value Not Applicable (12) is used.
ResetCapability	uint16	Other 1 Unknown 2 Disabled 3 Enabled 4 Not Implemented 5	If Enabled (4), the ComputerSystem can be reset through the hardware. If Disabled (3), a hardware reset is not allowed.

Id	Type	Range	Description
StatusDescriptions	string		Strings that describe the various OperationalStatus array values. For example, if Stopping is the value assigned to OperationalStatus, this property might contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.
Caption	string	Max Length 64	A short textual description (one- line string) of the object.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. It is often subclassed to be a Key. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value that indicates an administrator's default or startup configuration for the Enabled State of an element. By default, the element is Enabled (2).
HardwareType	string	Max Length 256	The hardware type of this node.
PortSpeeds	string		Speed of each of the node ports.
UPSSerialNumber	string	Max Length 256	The serial number of the UPS for this node
UPSUniqueID	string	Max Length 256	The unique identifier for the UPS for this node.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_System
NameFormat, PrimaryOwnerContact, PrimaryOwnerName, Roles

Inherited from class CIM_ComputerSystem
--

Dedicated, IdentifyingDescriptions, NameFormat, OtherDedicatedDescriptions, OtherIdentifyingInfo, PowerManagementCapabilities, ResetCapability
--

Method Summary

Inherited from class CIM_EnabledLogicalElement

RequestStateChange

Inherited from class CIM_ComputerSystem
--

SetPowerState

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_NodeVPD

Provides the vital product data (VPD) of a SAN Volume Controller node.

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_ClusterScopeNodeVPD

IBMTSSVC_SystemVPD

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm:<OrgID>:<LocalID>.</p> <p>Where<OrgID>and<LocalID>are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
Description	string		The Description property provides a textual description of the object.
EthernetIP	string		Provides the Ethernet IP address.
FrontPanelID	string		Provides the front panel ID of the node.
NodeVPD	string		Provides the vital product data of the node.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_SettingData
ElementName

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_IOGroup

This class represents an I/O group that contains two Nodes and defines an interface for a set of Volumes.

Description

All Nodes and Volumes are associated with exactly one I/O Group. The read and write cache provided by a node is duplicated for redundancy. When I/O is performed to a Volume, the node that processes the I/O operations duplicates the data on the Partner node in the I/O Group. This class represents the system aspect of an IO group and the IOGroupSet class represents the set aspect.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_ClusteringConfigurationService

IBMTSSVC_IOGroupComponentOfCluster

IBMTSSVC_IOGroupConcretelIdentity

IBMTSSVC_IOGroupPort

IBMTSSVC_MemberOfClusterRedundancySet

IBMTSSVC_NodeComponentOfIOGroup

IBMTSSVC_StorageConfigurationService

IBMTSSVC_StorageVolumeOnIOGroup

Properties

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, allows all instances of this class and its subclasses to be uniquely identified.
Name	string		The label by which the object is known. Format: <cluster_ip>:<object_id>

Id	Type	Range	Description
Dedicated	uint16	Not Dedicated 0 Unknown 1 Other 2 Storage 3 Router 4 Switch 5 Layer Three Switch 6 Central Office Switch 7 Hub 8 Access Server 9 Firewall 10 Print 11 I/O 12 Web Caching 13 Management 14 Block Server 15 File Server 16 Mobile User Device 17 Repeater 18 Bridge Extender 19 Gateway 20	An enumeration that indicates if the ComputerSystem is a special-purpose System or a general purpose system. The SAN Volume Controller is a dedicated storage device and returns {3,15} ("Storage","Block Server").
Description	string		The Description property provides a textual description of the object.
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	EnabledState is an integer enumeration that indicates the enabled and disabled states of an element. It can also indicate the transitions between these requested states. For example, shutting down (value=4) and starting (value=10) are transient states between enabled and disabled. Enabled (2) indicates that the element is or could be executing commands, will process any queued commands, and queues new requests. Disabled (3) indicates that the element will not execute commands and will drop any new requests. Shutting Down (4) indicates that the element is in the process of going to a Disabled state. Not Applicable (5) indicates the element does not support being enabled or disabled. Enabled but Offline (6) indicates that the element might be completing commands, and will drop any new requests. Test (7) indicates that the element is in a test state. Deferred (8) indicates that the element might be completing commands, but will queue any new requests. Quiesce (9) indicates that the element is enabled but in a restricted mode. The behavior of the element is similar to the Enabled state, but it processes only a restricted set of commands. All other requests are queued. Starting (10) indicates that the element is in the process of going to an Enabled state. New requests are queued.

Id	Type	Range	Description
IdentifyingDescriptions	string		An array of free-form strings that provide explanations and details behind the entries in the OtherIdentifying Info array. Each entry of this array is related to the entry in OtherIdentifyingInfo that is located at the same index.
NameFormat	string		The NameFormat property identifies how the ComputerSystem Name is generated. The SAN Volume Controller returns the ID of the node for the Name, therefore this attribute is set to Other.
NumberOfHosts	uint32		The number of hosts that are associated with the group.
NumberOfNodes	uint32		The number of nodes that are in the group.
NumberOfVolumes	uint32		The number of virtual disks that are offered by the group.
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non- Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communi- cation 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode18 DMTF Reserved .. Vendor Reserved 0x8000..	No status information is available on the group level. Look for the individual status of the node.
OtherDedicatedDescriptions	string		A string that describes how or why the system is dedicated when the Dedicated array includes the value Other (2).
OtherEnabledState	string		A string that describes the enabled or disabled state of the element when the EnabledState property is set to Other (1). This property must be set to null when EnabledState is any value other than 1.

Id	Type	Range	Description
OtherIdentifyingInfo	string	Max Length 256	The I/O Group, Name ,ID, and WWNN of each Node in the I/O Group.
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change 5 Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 12 DMTF Reserved .. Vendor Reserved 32768..65535	RequestedState is an integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. Note that when EnabledState is set to 5 ("Not Applicable"), this property has no meaning. By default, the RequestedState of the element is No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration. There are two new values in RequestedState that build on the status of the EnabledState property. These are the Reboot (10) and Reset (11) states. The Reboot state refers to moving from the Shut Down state to the Enabled state. Reset indicates that the element is first Disabled and then Enabled. Shut Down requests an orderly transition to the Disabled state, and might involve removing power to completely erase any existing state. The Disabled state requests an immediate disabling of the element, such that it does not run or accept any commands or processing requests. This property is set as the result of a method invocation (such as Start or StopService on CIM_Service), or can be overridden and defined as writeable in a subclass. The method approach is considered superior to a writeable property because it allows an explicit invocation of the operation and the return of a result code. An instance of EnabledLogicalElement might not support RequestedStateChange. If this occurs, the value Not Applicable (12) is used.
ResetCapability	uint16	Other 1 Unknown 2 Disabled 3 Enabled 4 Not Implemented 5	If Enabled (4), the ComputerSystem can be reset through the hardware (for example, the power and reset buttons). If Disabled (3), a hardware reset is not allowed.

Id	Type	Range	Description
StatusDescriptions	string		Strings that describe the various OperationalStatus array values. For example, if Stopping is the value assigned to the OperationalStatus property, this property can contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in the OperationalStatus property.
Caption	string	Max Length 64	A short textual description (one- line string) of the object.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. It is often subclassed to be a Key. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value that indicates an administrator's default or startup configuration for the Enabled State of an element. By default, the element is Enabled (2).

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_System
NameFormat, PrimaryOwnerContact, PrimaryOwnerName, Roles

Inherited from class CIM_ComputerSystem
Dedicated, IdentifyingDescriptions, NameFormat, OtherDedicatedDescriptions, OtherIdentifyingInfo, PowerManagementCapabilities, ResetCapability

Method Summary

Name	Description
GetHosts	This method returns the names of associated hosts.

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_ComputerSystem
SetPowerState

Method Detail

GetHosts

Description

This method returns the names of associated hosts.

Parameters

Id	Type	Range	Description
In			
HostNames	string		The returned names of the associated Hosts.
Out			
HostNames	string		The returned names of the associated Hosts.
Return Codes			
<i>none</i>			

MultipleComputerSystem Class IBMTSSVC_IOGroupComponentOfCluster

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Cluster	Min 1 Max 1	
PartComponent	IBMTSSVC_IOGroup	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_ClusterRedundancySet

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_ClusterConcreteIdentity

IBMTSSVC_MemberOfClusterRedundancySet

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.
Caption	string	Max Length 64	A short textual description (one-line string) of the object.
Description	string		Provides a textual description of the object.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
MaxNumberSupported	uint32		The largest number of elements that can participate in the RedundancySet. A value of 0 indicates that there is no limit on the number of elements.
MinNumberNeeded	uint32		The smallest number of elements that must be operational in order to function. For example, in an N+1 redundancy relationship, the MinNumberNeeded property is set equal to N. In a LimitedSparing environment, this property is not used and must be set to zero.

Id	Type	Range	Description
RedundancyStatus	uint16	Unknown 0 DMTF Reserved 1 Fully Redundant 2 Degraded 3 Redundancy Lost 4 Overall Failure 5	Provides information on the state of the RedundancyGroup.
TypeOfSet	uint16	Unknown 0 Other 1 N+1 2 Load Balanced 3 Sparing 4 Limited Sparing 5 DMTF Reserved .. Vendor Reserved 0x8000..	Provides information on the type of redundancy.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_RedundancySet
MaxNumberSupported, MinNumberNeeded, OtherTypeOfSet, RedundancyStatus, TypeOfSet, VendorIdentifyingInfo, LoadBalanceAlgorithm, OtherLoadBalanceAlgorithm

Method Summary

Inherited from class CIM_RedundancySet
Failover

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_IOGroupConcretelIdentity

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
SameElement	IBMTSSVC_IOGroupRedundancy Set	Min 1 Max 1	One aspect of the ManagedElement.
SystemElement	IBMTSSVC_IOGroup	Min 1 Max 1	One aspect of the ManagedElement.

Method Summary

Not applicable.

Method Detail

Not applicable.

MultipleComputerSystem Class IBMTSSVC_ElementConformsToProfile

The CIM_ElementConformsToProfile association defines the RegisteredProfiles to which the referenced ManagedElement is conformant.

Description

This association can apply to any Managed Element.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
ConformantStandard	IBMTSSVC_Registered Profile		
ManagedElement	IBMTSSVC_Cluster		

Method Summary

Not applicable.

Method Detail

Not applicable.

PhysicalPackage Class IBMTSSVC_Chassis

The Chassis class represents the PhysicalElements that enclose other Elements and provide definable functionality, such as a desktop, processing node, UPS, disk or tape storage, or a combination of these.

Description

The instances of these class have a logical identity to the instances of the Node class.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_ComputerSystemPackage

IBMTSSVC_ProductPhysicalComponent

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	The name of the class or the subclass used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Tag	string	Max Length 256	An arbitrary string that uniquely identifies the Physical Element and serves as the key of the Element. The Tag property can contain information such as asset tag or serial number data. The key for PhysicalElement is placed very high in the object hierarchy in order to independently identify the hardware or entity, regardless of physical placement in or on Cabinets, Adapters, and so on. For example, a hot switchable or removable component can be taken from its containing (scoping) Package and be temporarily unused. The object still continues to exist and can even be inserted into a different scoping container. Therefore, the key for Physical Element is an arbitrary string and is defined independently of any placement or location-oriented hierarchy.
AudibleAlarm	boolean		Boolean that indicates if the Frame is equipped with an audible alarm.
Caption	string	Max Length 64	The Caption property is a short textual description (one- line string) of the object.

Id	Type	Range	Description
ChassisPackageType	uint16	Unknown 0 Other 1 SMBIOS Reserved 2 Desktop 3 Low Profile Desktop 4 Pizza Box 5 Mini Tower 6 Tower 7 Portable 8 LapTop 9 Notebook 10 Hand Held 11 Docking Station 12 All in One 13 Sub Notebook 14 Space-Saving 15 Lunch Box 16 Main System Chassis 17 Expansion Chassis 18 SubChassis 19 Bus Expansion Chassis 20 Peripheral Chassis 21 Storage Chassis 22 SMBIOS Reseved 23 Sealed-Case PC 24 SMBIOS Reserved 25 DMTF Reserved .. Vendor Reserved 0x8000.. 0xFFFF	ChassisPackageType indicates the physical form factor for the type of Chassis.
ChassisTypeDescription	string		A string that provides more information on the ChassisPackageType.

Id	Type	Range	Description
ChassisTypes	uint16		The use of this property is deprecated in lieu of ChassisPackageType. A physical package should not have multiple form factors. Therefore, this property is being deprecated in lieu of a single value property. An enumerated, integer-valued array indicating the type of Chassis.
CurrentRequiredOr Produced	sint16		Current required by the Chassis at 120 V. If power is provided by the Chassis (as in the case of a UPS), this property may indicate the amperage produced, as a negative number.
Depth	real32		The depth of the PhysicalPackage in inches.
Description	string		The Description property provides a textual description of the object.
ElementName	string		
Height	real32	Other 1 Unknown 2 Desktop 3 Low Profile Desktop 4 Pizza Box 5 Mini Tower 6 Tower 7 Portable 8 Laptop 9 Notebook 10 Hand Held 11 Docking Station 12 All in One 13 Sub Notebook 14 Space-Saving 15 Lunch Box 16 Main System Chassis 17 Expansion Chassis 18 SubChassis 19 Bus Expansion Chassis 20 Peripheral Chassis 21 Storage Chassis 22 Rack Mount Chassis 23 Sealed-Case PC 24 Multi-system Chassis 25	The height of the PhysicalPackage in inches.

Id	Type	Range	Description
HotSwappable	boolean		The use of this property is being deprecated. Instead RemovalConditions should be used. The RemovalConditions property addresses whether a PhysicalPackage is removable with or without power being applied. A PhysicalPackage is HotSwappable if it is possible to replace the Element with a physically different but equivalent one while the containing Package has power applied to it (ie, is'on'). For example, a disk drive Package inserted using SCA connectors is both Removable and HotSwappable. All HotSwappable packages are inherently Removable and Replaceable.
LockPresent	boolean		Boolean indicating whether the Frame is protected with a lock.
Manufacturer	string	Max Length 256	The name of the organization responsible for producing the PhysicalElement. This organization might be the entity from whom the Element is purchased, but this is not necessarily true. The latter information is contained in the Vendor property of CIM_Product.
Model	string	Max Length 256	The name by which the PhysicalElement is generally known.
MultipleSystemSupport	uint16	Unknown 0 True 1 False 2	MultipleSystemSupport indicates whether or not this chassis supports multiple systems, for example server blades.
Name	string	Max Length 1024	The Name property defines the label by which the object is known. When subclassed, the Name property can be overridden to be a Key property.
NumberOfPowerCords	uint16		Integer indicating the number of power cords which must be connected to the Chassis, for all of the component to operate.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.
PartNumber	string	Max Length 256	The part number assigned by the organization that is responsible for producing or manufacturing the PhysicalElement. NodeVPD - Part_number[0]
RackMountable	uint16	Unknown 0 True 1 False 2	Indicates if the chassis is Rack Mountable.
Removable	boolean		This property is no longer used. Use the RemovalConditions property.

Id	Type	Range	Description
RemovalConditions	uint16	Unknown 0 Not Applicable 2 Removable when off 3 Removable when on or off 4	Describes the conditions under which a PhysicalPackage can be removed. Because all PhysicalPackages are not removable, this property defaults to Not Applicable (2).
Replaceable	boolean		This property is not used because it is redundant with the FRU class and its associations. A PhysicalPackage is Replaceable if it is possible to replace (FRU or upgrade) the Element with a physically different one. For example, some ComputerSystems allow the main Processor chip to be upgraded to one of a higher clock rating. In this case, the Processor is said to be Replaceable. Another example is a power supply Package mounted on sliding rails. All Removable packages are inherently Replaceable.
SecurityBreach	uint16	Other 1 Unknown 2 No Breach 3 Breach Attempted 4 Breach Successful 5	SecurityBreach is an enumerated, integer-valued property indicating whether a physical breach of the Frame was attempted but unsuccessful (4) or attempted and successful (5).
SerialNumber	string	Max Length 256	A manufacturer-allocated number that is used to identify the Physical Element. NodeVPD sytem_serial_number
StatusDescriptions	string		Strings that describe the various OperationalStatus array values. For example, if Stopping is the value assigned to OperationalStatus, this property can contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.
Version	string	Max Length 64	A string that indicates the version of the PhysicalElement.
VisibleAlarm	boolean		Boolean that indicates that the equipment includes a visible alarm.
Weight	real32		The weight of the PhysicalPackage in pounds.
Width	real32		The width of the PhysicalPackage in inches.
OtherIdentifyingInfo	string		OtherIdentifyingInfo captures data in addition to Tag information. This information could be used to identify a Physical Element. One example is bar code data associated with an Element that also has an asset tag. If only bar code data is available and is unique or able to be used as an Element key, this property would be null and the bar code data would be used as the class key, in the Tag property.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_PhysicalElement
CanBeFRUed, Description, ElementName, ManufactureDate, Manufacturer, Model, PartNumber, PoweredOn, SerialNumber, SKU, VendorEquipmentType, Version, OtherIdentifyingInfo, UserTracking

Inherited from class CIM_PhysicalPackage
Depth, Height, HotSwappable, Removable, RemovalConditions, Replaceable, Weight, Width

Inherited from class CIM_PhysicalFrame
AudibleAlarm, BreachDescription, CableManagementStrategy, IsLocked, LockPresent, SecurityBreach, ServiceDescriptions, ServicePhilosophy, VisibleAlarm

Inherited from class CIM_Chassis
ChassisPackageType, ChassisTypeDescription, ChassisTypes, CurrentRequiredOrProduced, HeatGeneration, MultipleSystemSupport, NumberOfPowerCords, RackMountable, TypeDescriptions

Method Summary

Inherited from class CIM_PhysicalPackage
IsCompatible

Method Detail

Not applicable.

PhysicalPackage Class IBMTSSVC_ComputerSystemPackage

Description

Associates a cluster with the corresponding Node Chassis of which it is comprised.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Chassis		The Chassis
Dependent	IBMTSSVC_Cluster	Min 1 Max 1	The Cluster

Inherited from class CIM_ComputerSystemPackage
PlatformGUID

Method Summary

Not applicable

Method Detail

Not applicable

PhysicalPackage Class IBMTSSVC_Product

Represents a SAN Volume Controller unit.

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_ProductPhysicalComponent

Properties

The following properties are available for this class:

Id	Type	Range	Description
IdentifyingNumber	string	Max Length 64	Product identification such as a serial number on software, a dye number on a hardware chip, or a project number.
Name	string	Max Length 256	The commonly used product name.
Vendor	string	Max Length 256	The name of the supplier of the product or the entity that sells the product. Corresponds to the Vendor property in the Product object in the DMTF Solution Exchange Standard.
Version	string	Max Length 64	Product version information.
Caption	string	Max Length 64	A short textual description (one-line string) of the object.
Description	string		Provides a textual description of the object.

Id	Type	Range	Description
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
SKUNumber	string		
WarrantyDuration	uint32		
WarrantyStartDate	datetime		

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_Product
SKUNumber, WarrantyDuration, WarrantyStartDate

Method Summary

Not applicable.

Method Detail

Not applicable.

PhysicalPackage Class IBMTSSVC_ProductPhysicalComponent

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Product	Min 1 Max 1	
PartComponent	IBMTSSVC_Chassis		

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class `IBMTSSVC_ProviderSoftwareIdentity`

`SoftwareIdentity` represents software, viewed as an asset and/or individually identifiable entity (similar to `Physical Element`).

Description

This class does not indicate if the software is installed or running. `SoftwareIdentity` can be associated with a product using the `ProductSoftwareComponent` relationship. The Application Model manages the deployment and installation of software through the `SoftwareFeatures` and `SoftwareElements` classes. The deployment and installation concepts are related to the asset and identity. A `SoftwareIdentity` can correspond to a product or to one or more `SoftwareFeatures` or `SoftwareElements`. The correspondence of Software Identity to Product, `SoftwareFeature` or `SoftwareElement` is indicated using the `ConcreteIdentity` association. There might not be sufficient detail or instrumentation to instantiate `ConcreteIdentity`. If the association is instantiated, information might be duplicated. For example, the Vendor described in the instances of `Product` and `SoftwareIdentity` might be the same. `ConcreteIdentity` can also be used to describe the relationship of the software to any `LogicalFiles` that result from installing it. There might not be sufficient detail or instrumentation to instantiate this association. In this case, `ProviderSoftwareIdentity` represents the Provider Software on the master console.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

`IBMTSSVC_InstalledProviderSoftwareIdentity`

`IBMTSSVC_RegisteredProfileSoftwareIdentity`

`IBMTSSVC_RegisteredSubProfileSoftwareIdentity`

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm:<OrgID>:<LocalID>. Where<OrgID>and<LocalID>are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.
BuildNumber	uint16		The build number of the software.

Id	Type	Range	Description
Classifications	uint16	Unknown 0 Other 1 Driver 2 Configuration Software 3 Application Software 4 Instrumentation 5 Firmware/BIOS 6 Diagnostic Software 7 Operating System 8 Middleware 9 Firmware 10 BIOS/FCODE 11 DMTF Reserved .. Vendor Reserved 0x8000..0xFFFF	An array of enumerated integers that classify this software. For example, the software can be the Instrumentation (5) state, the Diagnostic Software (7) state or the Firmware (10) state. The Firmware/BIOS (6) state is deprecated. Instead, either the Firmware (10) state and/or the BIOS/FCODE (11) state must be used.
MajorVersion	uint16		The major number component of the software version information.
Manufacturer	string		The manufacturer of this software.
MinorVersion	uint16		The minor number component of the software's version information.
Name	string	Max Length 1024	Defines the label by which the object is known. When subclassed, the Name property can be overridden to be a Key property.
RevisionNumber	uint16		The revision or maintenance release component of the software's version information.
VersionString	string		A string that represents the complete software version information. This string and the numeric major, minor, revision, and build properties are complementary. Both the numeric and the string representations of version are provided.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_SoftwareIdentity
BuildNumber, ClassificationDescriptions, Classifications, Languages, MajorVersion, Manufacturer, MinorVersion, ReleaseDate, RevisionNumber, SerialNumber, TargetOperatingSystems, VersionString

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_SubProfileRequiresProfile

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	CIM_ManagedElement		Antecedent represents the independent object in this association.
Dependent	CIM_ManagedElement		Dependent represents the object that is dependent on the Antecedent.

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_SubProfileRequiresProfile

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	CIM_ManagedElement		Represents the independent object in this association.
Dependent	CIM_ManagedElement		Represents the object that is dependent on the Antecedent.

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_SubProfileConformstoSMIS

The CIM_ElementConformsToProfile association defines the RegisteredProfiles to which the referenced ManagedElement is conformant.

Description

This association can apply to any ManagedElement. However, this association is typically applied to a higher level instance. For example, a System, a NameSpace, or a Service instance. When applied to a higher level instance, all constituent parts must allow the ManagedElement conform to the named RegisteredProfile.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
ConformantStandard	IBMTSSVC_RegisteredProfile	Min 1 Max 1	

Id	Type	Range	Description
ManagedElement	IBMTSSVC_RegisteredSub Profile		

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_RegisteredSubProfileSoftwareIdentity

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_ProviderSoftware Identity	Min 1 Max 1	
Dependent	IBMTSSVC_ProviderSoftware Identity	Min 1 Max 1	

Inherited from class CIM_ElementSoftwareIdentity

OtherUpgradeCondition, UpgradeCondition

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_RegisteredProfileSoftwareIdentity

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_ProviderSoftware Identity	Min 1 Max 1	
Dependent	IBMTSSVC_Registered Profile	Min 1 Max 1	

Inherited from class CIM_ElementSoftwareIdentity
OtherUpgradeCondition, UpgradeCondition

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_RegisteredProfileConformsToSMIS

The CIM_ElementConformsToProfile association defines the RegisteredProfiles to which the referenced ManagedElement is conformant.

Description

This association can apply to any Managed Element. If applied to a higher level instance, all constituent parts must support the conformance of the ManagedElement to the named RegisteredProfile. In this situation, it represents the SMI-S profile (Conformant) with the other supported RegisteredProfiles.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
ConformantStandard	IBMTSSVC_Registered Profile	Min 1 Max 1	

Id	Type	Range	Description
ManagedElement	IBMTSSVC_Registered Profile		

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_ReferencedProfile

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	CIM_ManagedElement		Antecedent represents the independent object in this association.
Dependent	CIM_ManagedElement		Dependent represents the object that is dependent on the Antecedent.

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_HostedAccessPoint

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_MasterConsole	Min 1 Max 1	
Dependent	IBMTSSVC_CIMXML CommunicationMechanism		

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_NamespaceInManager

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_ObjectManager	Min 1 Max 1	
Dependent	IBMTSSVC_NameSpace	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_CIMXMLCommunicationMechanism

Description

This class specializes ObjectManagerCommunicationMechanism, adding properties specific to the CIM-XML protocol (XML encoding and CIM Operations).

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_CommMechanismForManager

IBMTSSVC_HostedAccessPoint

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string		Uniquely identifies the ServiceAccessPoint and provides an indication of the functionality that is managed. This functionality is described in more detail in the Description property of the object.
<i>SystemCreationClassName</i>	string	Max Length 256	The CreationClassName of the scoping System.
<i>SystemName</i>	string	Max Length 256	The Name of the scoping System.
AuthenticationMechanisms Supported	uint16	Unknown 0 Other 1 None 2 Basic 3 Digest 4	Enumerated array that describes the types of authentication supported by the ObjectManager, using the encoding/protocol. specified in the property, CommunicationMechanism. The defined values represent the authentication defined in the DMTF document, Specification for CIM Operations over HTTP.
CIMValidated	boolean		Describes whether the CIM Server is strictly validating (validates the XML document against the DTD) or not (loosely validating).
CommunicationMechanism	uint16		The only valid CommunicationMechanism for this subclass is CIM-XML.

Id	Type	Range	Description
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. Note that the Name property of ManagedSystemElement is also defined as a user-friendly name. But, it is often subclassed to be a Key. It is not reasonable that the same property can convey both identity and a user-friendly name, without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
FunctionalProfilesSupported	uint16	Unknown 0 Other 1 Basic Read 2 Basic Write 3 Schema Manipulation 4 Instance Manipulation 5 Association Traversal 6 Query Execution 7 Qualifier Declaration 8 Indications 9	Enumerated array describing the types of operations supported by the ObjectManager, using this encoding/protocol. The enumeration is based on the Functional Profiles defined for conformance in the DMTF document, Specification for CIM Operations over HTTP.
MultipleOperationsSupported	boolean		Boolean indicating whether the ObjectManager supports multiple operation requests (TRUE) or only simple requests (FALSE).

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.
Version	string		An enumeration that describes the CIM-XML protocol version supported by the ObjectManager.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_ObjectManagerCommunicationMechanism
AdvertiseTypeDescriptions, AdvertiseTypes, AuthenticationMechanismDescriptions, AuthenticationMechanismsSupported, CommunicationMechanism, FunctionalProfileDescriptions, FunctionalProfilesSupported, MultipleOperationsSupported, OtherCommunicationMechanismDescription, Version

Inherited from class CIM_CIMXMLCommunicationMechanism
CIMValidated, CIMXMLProtocolVersion, CommunicationMechanism, Version

Method Summary

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Method Detail

Not applicable.

Server Class IBMTSSVC_CommMechanismForManager

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_ObjectManager	Min 1 Max 1	
Dependent	IBMTSSVC_CIMXMLCommunication Mechanism	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_ObjectManagerConformsToProfile

The IBMTSSVC_ElementConformsToProfile association defines the RegisteredProfiles to which the referenced ManagedElement is conformant. In this case, it associates the Object Manager to the Server Registered Profile.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
ConformantStandard	IBMTSSVC_RegisteredProfile	Min 1 Max 1	
ManagedElement	IBMTSSVC_ObjectManager	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_MasterConsole

Description

Subclasses

Not applicable.

Referenced By

- IBMTSSVC_HostedAccessPoint
- IBMTSSVC_HostedDeviceConfigurationService
- IBMTSSVC_HostedService
- IBMTSSVC_InstalledProviderSoftwareIdentity

Properties

Id	Type	Range	Description
CreationClassName	string	Max Length 256	CreationClassName indicates the name of the class or the subclass used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string		The inherited Name serves as key of a System instance in an enterprise environment.
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. Note that the Name property of ManagedSystemElement is also defined as a user-friendly name. But, it is often subclassed to be a Key. It is not reasonable that the same property can convey both identity and a user-friendly name, without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
NameFormat	string	Max Length 64	The System object and its derivatives are Top Level Objects of CIM. They provide the scope for numerous components. Having unique System keys is required. A heuristic can be defined in individual System subclasses to attempt to always generate the same System Name Key. The NameFormat property identifies how the System name was generated, using the subclass'heuristic.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	<p>The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.</p>
PrimaryOwnerContact	string	Max Length 256	A string that provides information on how the primary system owner can be reached (e.g. phone number, email address, ...).
PrimaryOwnerName	string	Max Length 64	The name of the primary system owner. The system owner is the primary user of the system.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_System
NameFormat, PrimaryOwnerContact, PrimaryOwnerName, Roles

Inherited from class CIM_ComputerSystem
Dedicated, IdentifyingDescriptions, NameFormat, OtherDedicatedDescriptions, OtherIdentifyingInfo, PowerManagementCapabilities, ResetCapability

Method Summary

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_ComputerSystem
SetPowerState

Method Detail

Not applicable

Server Class IBMTSSVC_NameSpace

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_NamespaceInManager

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string	Max Length 256	A string to uniquely identify the Namespace within the ObjectManager.

Id	Type	Range	Description
<i>ObjectManagerCreation ClassName</i>	string	Max Length 256	The scoping ObjectManager's CreationClassName.
<i>ObjectManagerName</i>	string	Max Length 256	The scoping ObjectManager's Name.
<i>SystemCreationClass Name</i>	string	Max Length 256	The scoping System's CreationClassName.
<i>SystemName</i>	string	Max Length 256	The scoping System's Name.
ClassType	uint16	Unknown 0 Other 1 CIM 2 DMI Recast 200 SNMP Recast 201 CMIP Recast 202	An enumeration that indicates the schema of the Namespace's objects. For example, they might be instances of classes of a specific CIM version or a mapping from another standard, such as SNMP. If Other is selected, the DescriptionOfClassType property must be populated.
ClassTypeVersion	string		The version of the objects in this namespace. The string representing the version must be in the form: M + "." + N + "." + U. Where M is the major version, N is the minor version and U is the update.
DescriptionOfClass Type	string		A string that provides more detail (beyond the general classification in ClassInfo) for the object hierarchy of the Namespace.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_Namespace
ClassInfo, ClassType, ClassTypeVersion, DescriptionOfClassInfo, DescriptionOfClassType

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_ObjectManager

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_CommMechanismForManager

IBMTSSVC_HostedService

IBMTSSVC_NamespaceInManager

IBMTSSVC_ObjectManagerConformsToProfile

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	CreationClassName indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string		The Name property is used to uniquely identify a CIM Server. The CIM Server must ensure that this value is globally unique. In order to ensure uniqueness, this value must be constructed in the following manner. <Vendor ID>:<Unique ID><Vendor ID> must include a copyrighted, trademarked or otherwise unique name that is owned by the business entity or a registered ID that is assigned to the business entity that is defining the Name. (This is similar to the<Schema Name>_<Class Name>structure of Schema class names.) The purpose of <Vendor ID> is to ensure that <ID> is truly unique across multiple vendor implementations. If such a name is not used, the defining entity must assure that the <ID> portion of the Instance ID is unique when compared with other instance providers. For DMTF defined instances, the <Vendor ID> is CIM. <Unique ID> must include a vendor specified unique identifier. Name is semantically the same as InstanceID.
SystemCreationClassName	string	Max Length 256	The CreationClassName of the scoping System.
SystemName	string	Max Length 256	The Name of the scoping System.
ElementName	string		The ElementName property is used as a name of the CIM Server for human interfaces. This property is required to support the SLP discovery mechanism.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.
Started	boolean		A Boolean that indicates if the Service has been started (TRUE), or stopped (FALSE).
GatherStatisticalData	boolean		The GatherStatisticalData property is used to control the gathering of statistical data made accessible through the CIM_CIMOMStatisticalData objects. If set to true, the data is gathered and can be accessed. If false, the CIM_CIMOMStatisticalData instance MAY exist but MUST show zero values for the counter properties.
Version	string		This attribute contains the current level of the CIMOM.

Inherited from class CIM_ManagedElement

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_Service
Started, StartMode, PrimaryOwnerContact, PrimaryOwnerName

Inherited from class CIM_ObjectManager
Description, ElementName, GatherStatisticalData

Method Summary

Name	Description
ReloadConfiguration	This method reloads the provider-config.
RestartService	The RestartService restarts the ObjectManager.

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_Service
StartService, StopService

Method Detail

ReloadConfiguration

Description

This method reloads the provider-config.xml file.

Parameters

Id	Type	Range	Description
In			
	<i>none</i>		
Out			
	<i>none</i>		
Return Codes			
	<i>none</i>		

RestartService

Description

The RestartService restarts the ObjectManager. The CIMOM is shut down and restarted. The CIMOM is not accessible during the restart process.

Restriction: This method is not supported.

Parameters

Id	Type	Range	Description
In			
	<i>none</i>		
Out			
	<i>none</i>		
Return Codes			
	<i>none</i>		

Server Class IBMTSSVC_HostedService

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_MasterConsole	Min 1 Max 1	
Dependent	IBMTSSVC_ObjectManager		

Method Summary

Not applicable.

Method Detail

Not applicable.

Server Class IBMTSSVC_RegisteredProfile

A RegisteredProfile describes a set of CIM Schema classes with required properties and/or methods, necessary to manage a real-world entity or to support a usage scenario..

Description

RegisteredProfile can be defined by the DMTF or other standards organizations. A RegisteredProfile is a named 'standard' for CIM-based management of a particular System, subsystem, Service or other entity, for a specified set of uses. It is a complete, standalone definition, as opposed to the subclass RegisteredSubProfile, which requires a scoping profile for context. The uses for a RegisteredProfile or SubProfile must be specified in the document that defines the profile. Examples of Profiles are to manage various aspects of an Operating System, Storage Array, or Database. The name of the profile is defined and scoped by its authoring organization.

Subclasses

Not applicable.

Referenced By

The following classes are referenced by this class:

- IBMTSSVC_DeviceConfigurationServiceAvailableToProfile
- IBMTSSVC_ElementConformsToProfile
- IBMTSSVC_ObjectManagerConformsToProfile
- IBMTSSVC_ReferencedProfile
- IBMTSSVC_RegisteredProfileSoftwareIdentity
- IBMTSSVC_SubProfileRequiresProfile

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
AdvertiseTypeDescriptions	string		<p>A free-form string providing additional information related to the AdvertiseType. A description MUST be provided when the AdvertiseType is 1, "Other". An entry in this array corresponds to the entry in the AdvertiseTypes array at the same index. It is not expected that additional descriptions are needed if the Type is set to "Not Advertised" or "SLP". However, as the SLP template expands, or as other advertisement mechanisms are defined, support for additional descriptions may be needed. This array is defined to support this.</p>
AdvertiseTypes	uint16	Other 1 Not Advertised 2 SLP 3	<p>This property signifies the advertisement for the profile information. It is used by the advertising services of the WBEM infrastructure to determine what should be advertised, via what mechanisms. The property is an array so that the profile MAY be advertised using several mechanisms. Note: If this property is null/uninitialized, this is equivalent to specifying the value 2, "Not Advertised".</p>

Id	Type	Range	Description
OtherRegistered Organization	string	Max Length 256	A free-form string providing a description of the organization when 1,"Other", is specified for the RegisteredOrganization.
RegisteredName	string	Max Length 256	The name of this registered profile. Since multiple versions can exist for the same RegisteredName, the combination of RegisteredName, RegisteredOrganization, and RegisteredVersion MUST uniquely identify the registered profile within the scope of the organization.
RegisteredOrganization	uint16	Other 1 DMTF 2 CompTIA 3 Consortium for Service Innovation 4 FAST 5 GGF 6 INTAP 7 itSMF 8 NAC 9 Northwest Energy Efficiency Alliance 10 SNIA 11 TM Forum 12 The Open Group 13 ANSI 14 IEEE 15 IETF 16 INCITS 17 ISO 18 W3C 19	The organization that defines this profile.
RegisteredVersion	string		The version of this profile. The string representing the version MUST be in the form: M + "." + N + "." + U Where: M - The major version (in numeric form) describing the profile's creation or last modification. N - The minor version (in numeric form) describing the profile's creation or last modification. U - The update describing the profile's creation or last modification.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_RegisteredProfile
AdvertiseTypeDescriptions, AdvertiseTypes, OtherRegisteredOrganization, RegisteredName, RegisteredOrganization, RegisteredVersion

Method Summary

Not applicable

Method Detail

Not applicable

Server Class IBMTSSVC_RegisteredSubProfile

A RegisteredSubProfile is a subclass of the RegisteredProfile class to indicate that a scoping profile is required to provide context.

Description

The RegisteredProfile class is specified by the mandatory association, SubProfileRequiresProfile.

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_RegisteredSubProfileSoftwareIdentity

IBMTSSVC_SubProfileRequiresProfile

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
AdvertiseType Descriptions	string		<p>A free-form string that provides additional information that is related to the AdvertiseType. A description must be provided when the AdvertiseType is Other (1). An entry in this array corresponds to the entry in the AdvertiseTypes array at the same index. It is not expected that additional descriptions are needed if the Type is set to Not Advertised or SLP. However, as the SLP template expands or as other advertisement mechanisms are defined, support for additional descriptions might be required. This array is defined to support this.</p>
AdvertiseTypes	uint16	Other 1 Not Advertised 2 SLP 3	<p>The advertisement for the profile information. This property is used by the advertising services of the WBEM infrastructure to determine what to advertise and through which mediums. The property is an array so that the profile can be advertised using several mechanisms. If this property is null, this is equivalent to specifying the value Not Advertised (2).</p>
Caption	string	Max Length 64	<p>A short textual description (one- line string) of the object.</p>
Description	string		<p>Provides a textual description of the object.</p>

Id	Type	Range	Description
ElementName	string		A user-friendly name for the object. This property allows each instance to define a user-friendly name in addition to its key properties, identity data, and description information. The Name property of ManagedSystemElement is also defined as a user-friendly name. The same property cannot convey both identity and a user-friendly name without inconsistencies. Where Name exists and is not a Key (such as for instances of LogicalDevice), the same information can be present in both the Name and ElementName properties.
OtherRegistered Organization	string	Max Length 256	A free-form string that provides a description of the organization when Other (1) is specified for the RegisteredOrganization.
RegisteredName	string	Max Length 256	The name of this registered profile. Since multiple versions can exist for the same RegisteredName, the combination of RegisteredName, RegisteredOrganization, and RegisteredVersion must uniquely identify the registered profile within the scope of the organization.
RegisteredOrganization	uint16	Other 1 DMTF 2 CompTIA 3 Consortium for Service Innovation 4 FAST 5 GGF 6 INTAP 7 itSME 8 NAC 9 Northwest Energy Efficiency Alliance 10 SNIA 11 TM Forum 12 The Open Group 13 ANSI 14 IEEE 15 INCITS 17 ISO 18 W3C 19	The organization that defines this profile.

Id	Type	Range	Description
RegisteredVersion	string		The version of this profile. The string representing the version must be in the form: M + "." + N + "." + U Where M is the major version (in numeric form) that describes the profile's creation or last modification, N is the minor version (in numeric form) that describes the profile's creation or last modification, U is the update that describes the profile's creation or last modification.

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_RegisteredProfile
AdvertiseTypeDescriptions, AdvertiseTypes, OtherRegisteredOrganization, RegisteredName, RegisteredOrganization, RegisteredVersion

Method Summary

Not applicable.

Method Detail

Not applicable.

ServiceMode Class IBMTSSVC_UseOfMessageLog

Description

Not applicable.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_MessageLog		
Dependent	IBMTSSVC_Cluster		
RecordedData	string		A free-form string that describes the use of the Log by the ManagedSystemElement.

Inherited from class CIM_UseOfLog

RecordedData

Method Summary

Not applicable.

Method Detail

Not applicable.

ServiceMode Class IBMTSSVC_ClusteringServiceForSystem

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_ClusteringService		

Method Summary

Not applicable.

Method Detail

Not applicable.

ServiceMode Class IBMTSSVC_ClusteringService

Description

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_ClusteringServiceForSystem

Properties

The following properties are available for this class:

Id	Type	Range	Description
CreationClassName	string	Max Length 256	Indicates the name of the class or the subclass that is used in the creation of an instance. When used with the other key properties of this class, this property allows all instances of this class and its subclasses to be uniquely identified.
Name	string		Uniquely identifies the Service and provides an indication of the functionality that is managed. This functionality is described in more detail in the Description property of the object.
SystemCreationClass Name	string	Max Length 256	The CreationClassName of the scoping System.
SystemName	string	Max Length 256	The Name of the scoping System.
Description	string		Provides a textual description of the object.
EnabledState	uint16	Unknown 0 Other 1 Enabled 2 Disabled 3 Shutting Down 4 Not Applicable 5 Enabled but Offline 6 In Test 7 Deferred 8 Quiesce 9 Starting 10 DMTF Reserved 11..32767 Vendor Reserved 32768..65535	An integer enumeration that indicates the enabled and disabled states of an element. This property can also indicate the transitions between these requested states. For example, the values shutting down (4) and starting (10) are transient states between enabled and disabled.

Id	Type	Range	Description
OperationalStatus	uint16	Unknown 0 Other 1 OK 2 Degraded 3 Stressed 4 Predictive Failure 5 Error 6 Non-Recoverable Error 7 Starting 8 Stopping 9 Stopped 10 In Service 11 No Contact 12 Lost Communication 13 Aborted 14 Dormant 15 Supporting Entity in Error 16 Completed 17 Power Mode 18 DMTF Reserved .. Vendor Reserved 0x8000..	<p>The current state of the element. The Stressed state indicates that the element is functioning, but requires attention. The Failure state indicates that an element is functioning nominally and is expected to fail. The In Service state indicates that an element is being configured, maintained, cleaned, or otherwise administered. The No Contact state indicates that the monitoring system has not been able to establish communications with it. The Lost Communication state indicates that the ManagedSystem element has been contacted successfully in the past, but currently cannot be contacted. The Stopped state indicates a clean and orderly stop. The Aborted state indicates an abrupt stop where the element's state and configuration might require an update. The Dormant state indicates that the element is inactive or quiesced. The Supporting Entity in Error state indicates that this element is OK, but another element that it depends on is in error. The Completed state indicates that the element has completed its operation. This value is combined with either the OK, Error, or Degraded state to allow you to determine if the complete operation passed. The Completed with Degraded state indicates that the operation finished, but did not complete OK. The Power Mode state indicates that the element has additional power model information that is contained in the Associated PowerManagementService association. The OperationalStatus property replaces the Status property on ManagedSystemElement to provide a consistent approach to enumerations. The providers instrumentation must provide both the Status and OperationalStatus properties. The first value of the OperationalStatus property must contain the primary status for the element.</p>
OtherEnabledState	string		<p>A string that describes the enabled or disabled state of the element when the EnabledState property is set to Other 1. This property must be set to null when EnabledState is any value other than 1.</p>

Id	Type	Range	Description
RequestedState	uint16	Enabled 2 Disabled 3 Shut Down 4 No Change Offline 6 Test 7 Deferred 8 Quiesce 9 Reboot 10 Reset 11 Not Applicable 12 DMTF Reserved .. Vendor Reserved 32768..65535	An integer enumeration that indicates the last requested or desired state for the element. The actual state of the element is represented by EnabledState. This property is provided to compare the last requested and current enabled or disabled states. If EnabledState is set to Not Applicable (5), this property is not used. By default, the RequestedState of the element is set to No Change (5). Refer to the EnabledState property description for explanations of the values in the RequestedState enumeration.
Started	boolean		If set to true, the Service is started. If set to false, the Service is stopped.
StatusDescriptions	string		Strings that describe the various OperationalStatus array values. For example, if the value Stopping is assigned to OperationalStatus, this property might contain an explanation as to why an object is being stopped. Entries in this array are correlated with those at the same array index in OperationalStatus.
EnabledDefault	uint16	Enabled 2 Disabled 3 Not Applicable 5 Enabled but Offline 6 No Default 7 DMTF Reserved 8..32767 Vendor Reserved 32768..65535	An enumerated value that indicates the default or startup configuration for the Enabled State of an element. The default value is Enabled.
PrimaryOwnerContact	string	Max Length 256	A string that provides information on how the primary owner of the Service can be reached.
PrimaryOwnerName	string	Max Length 64	The name of the primary owner for the service, if one is defined. The primary owner is the initial support contact for the Service.

Inherited from class CIM_ManagedElement
--

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
--

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_EnabledLogicalElement
EnabledState, OtherEnabledState, RequestedState, TimeOfLastStateChange, EnabledDefault

Inherited from class CIM_Service
Started, StartMode, PrimaryOwnerContact, PrimaryOwnerName

Method Summary

Name	Description
AddNode	Brings a new ComputerSystem into a Cluster.
BackupConfiguration	Starts the backup script.
Clean	Cleans the various dumps on a specific node.
DeleteConfigurationBackup	Deletes a backup in the backup directory.
Dump	Generates a dump file on the SAN Volume Controller cluster.
EvictNode	Removes a ComputerSystem from a cluster.
GetDump	Retrieves a dump file and decodes if necessary.
GetResetPasswordChange FeatureStatus	Returns the status of the password reset feature.
ListConfigurationBackups	Lists the backups in the backup directory.
ModifyIPAddress	Changes the IP address of the cluster.
ModifyResetPassword ChangeFeature	Enables or disables the password reset feature.
RequestStateChange	This method is not supported.
RestoreConfiguration	Starts the configuration restore script.
RestoreConfigurationFile	Copies the locally stored cluster configuration backup file to the SAN Volume Controller cluster.
SetLocale	Sets the locale of a cluster.
SetPasswords	Sets the Admin and/or Service password of the cluster.
SetTimeZone	Sets the time zone of the cluster.
Shutdown	Shuts down the cluster or a node.
StartStatisticsCollection	Starts the statistics collection.
StopStatisticsCollection	Stops the statistics collection.

Inherited from class CIM_EnabledLogicalElement
RequestStateChange

Inherited from class CIM_Service
StartService, StopService

Inherited from class CIM_ClusteringService
AddNode, EvictNode

Method Detail

AddNode

Description

Brings a new ComputerSystem into a cluster. The node to be added is specified as a parameter to the method.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
CS	IBMTSSVC_CandidateNode		The node to add to the cluster. Must be of class IBMTSSVC_CandidateNode.
Set	IBMTSSVC_IOGroup		The IOGroupSet to use to add the node.
Name	string		The new name for the node that you added.
Out			
none			
Return codes			
none			

BackupConfiguration

Description

This method starts the backup script. The script stores the current configuration of the cluster that is associated with this instance in an XML file. The file is named svc.config.backup.xml and is stored in the directory backup/<clustername>/ relative to the CIMOM home directory. If a backup of the current cluster configuration already exists, it is overwritten

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Force	boolean		If set to true, the command continuation is forced.
FilePath	string		The path of the backup files.
Messages	string		The errors or warnings that are received from the backup script. Each array element corresponds to one line.
Out			
FilePath	string		The path of the backup files.
Messages	string		The errors or warnings that are received from the backup script. Each array element corresponds to one line.
Return codes			

Id	Type	Range	Description
none			

Clean

Description

This command allows you to clean the various dumps on a specific node.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Filter	string		The syntax for the filter is 1. If a directory is specified, all relevant dump/log files in this directory are cleaned. The allowable directory arguments are: dumps (cleans all files in all subdirectories, /dumps/configs, /dumps/elogs, /dumps/feature, /dumps/iostats, /dumps/iotracehome/admin2. In addition to the directory, a file filter can be specified. For example, /dumps/eelog/*.txt cleans all files in the /dumps/eelog directory that end in .txt.
Node	IBMTSSVC_Node		Specifies the Node where you want to delete the dump files. If nothing is specified, the dumps on the configuration node are deleted.
Out			
none			
Return codes			
none			

DeleteConfigurationBackup

Description

This method deletes a backup in the backup/ directory.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Backup	string		The name of the backup to delete. (Only<clustername>)
Out			
none			
Return codes			
none			

Dump

Description

This method generates a dump file on the cluster.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Type	uint16		The type of dump that you want to generate. To generate an error log, use the value 1. to generate a feature log, use the value 2.
FileNamePrefix	string		If not specified, the dump is directed to a file with a system defined name. If supplied a filename is created from the prefix and a timestamp, it takes the form of FileNamePrefix_NN_YYMMDD_HHMMSS. Where NN is ID of the current configuration node.
Out			
GeneratedFile	string		The file name of the generated file.
Return codes			
none			

EvictNode

Description

Removes a ComputerSystem from a cluster. The node that you want to remove is specified as a parameter to the method.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
CS	IBMTSSVC_Node		The node to evict from the cluster. Must be of class IBMTSSVC_Node.
Out			
none			
Return codes			
none			

GetDump

Description

Retrieves a dump file and decodes if necessary.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
RetrievalWaitSecs	uint32		Optionally specify a time period (in seconds) to wait for the dump file to be retrieved from the node specified above. If the file has not been retrieved within this time period, the timeout error code (0x8006) is returned. Passing in 0 for this parameter causes the method to wait for the retrieval indefinitely. By default, this method does not wait for the file to be retrieved.
FilePath	string		The fully specified name of the dump file. This must be the name of a file, not a directory. Wildcards are not allowed. The list of available dump files can be found by enumerating the IBMTSSVC_Dump class. Dump files must be in one of the following directories on the cluster: /dumps/configs/, /dumps/elogs/, /dumps/feature/, /dumps/iostats/, /dumps/iotrace/, /home/admin/upgrade/, or /dumps/.
Node	IBMTSSVC_Node		If a node is passed in this parameter, the dump file is retrieved from this node, otherwise the dump file is assumed to exist on the configuration node.
Out			
File	string		The file as a string array.
Return codes			
none			

GetResetPasswordChangeFeatureStatus

Description

Returns the status of the password reset feature.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
IsEnabled	boolean		The status of the password reset feature.
Out			
IsEnabled	boolean		The status of the password reset feature.
Out			
none			

ListConfigurationBackups

Description

Lists the backups in the backup/ directory. Only the directory names are reported of the cluster that is associated with this instance of ClusteringService from the corresponding cluster configuration backup

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Backup	string		Each element of the array contains the name of one backup available in the backup directory.
Out			
Backup	string		Each element of the array contains the name of one backup available in the backup directory.
Return codes			
none			

ModifyIPAddress

Description

Changes the IP address of the cluster.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
ClusterIP	string		The new IP address of the cluster.
Out			
none			
Return codes			
none			

ModifyResetPasswordChangeFeature

Description

Enables or disables the password reset feature.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			

Id	Type	Range	Description
Enable	boolean		If set to true, the password reset feature is enabled. If set to false, the password reset feature is disabled.
Out			
none			
Return codes			
none			

RequestStateChange

Description

This method is not supported.

RestoreConfiguration

Description

Starts the configuration restore script. The script restores the configuration of the cluster that is associated with this instance of ClusteringService from the corresponding cluster configuration backup.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Force	boolean		If set to true, the command runs even if there are non fatal errors.
Format	boolean		If set to true, the VDisks are formatted during the restore.
Phase	uint8		The restoration phase to be performed.
Messages	string		The errors or warnings that are received from the backup script. Each array element corresponds to one line on stdout.
Out			
Messages	string		The errors or warnings that are received from the backup script. Each array element corresponds to one line on stdout.
Return codes			
none			

RestoreConfigurationFile

Description

This method copies the locally stored cluster configuration backup file to the cluster. After you copy the file, contact the IBM Support Center to complete the cluster configuration restoration process.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Clear	boolean		If set to true, the existing configuration files on the cluster are cleared before the local configuration file is copied to the cluster. If this parameter is not specified, no files are cleared.
Out			
none			
Return codes			
none			

SetLocale

Description

Sets the locale of a cluster.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Locale	uint16		The locale to set. Locales are encoded as follows: 0=US English, 1=Simplified Chinese, 2=Traditional Chinese, 3=Japanese, 4=Korean, 5=French, 6=German, 7=Italian, 8=Spanish, 9=Portugese.
Out			
none			
Return codes			
none			

SetPasswords

Description

Sets the Administrator and/or Service password for the cluster.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
AdminPw	string		The new administrator password.
ServicePw	string		The new service password.
Out			

Id	Type	Range	Description
none			
Return codes			
none			

SetTimeZone

Description

Sets the time zone of the cluster.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Zone	uint16		The new time zone of the cluster.
Out			
none			
Return codes			
none			

Shutdown

Description

Shuts down the cluster or a node.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
System	CIM_ComputerSystem		The IBMTSSVC_Node or IBMTSSVC_Cluster to shut down.
Force	boolean		If set to true, all nodes are shut down nodes even if they are the only node in the I/O group.
Out			
none			
Return codes			
none			

StartStatisticsCollection

Description

Starts the statistics collection for the cluster.

Parameters

The following parameters are available for this method:

Id	Type	Range	Description
In			
Interval	uint32		The interval for statistics collection.
Out			
none			
Return codes			
none			

StopStatisticsCollection

Description

Stops the statistics collection for the cluster.

Parameters

There are no parameters available for this method.

ServiceMode Class IBMTSSVC_Dumps

Description

Subclasses

Not applicable.

Referenced By

The following classes reference this class:

IBMTSSVC_ClusterDumps

IBMTSSVC_NodeDumps

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstanceID	string		Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm: <OrgID>:<LocalID>. Where <OrgID> and <LocalID> are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.
Admin	string		
Elogs	string		
Feature	string		
IoStats	string		
IoTrace	string		

Inherited from class CIM_ManagedElement
Caption, Description, ElementName

Inherited from class CIM_SettingData
ElementName

Method Summary

Not applicable.

Method Detail

Not applicable.

ServiceMode Class IBMTSSVC_NodeDumps

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
ManagedElement	IBMTSSVC_Node		
SettingData	IBMTSSVC_Dumps		
IsCurrent	uint16	Unknown 0 Is Current 1 Is Not Current 2	An enumerated integer that indicates that the referenced setting is currently being used in the operation of the element or that this information is unknown.
IsDefault	uint16	Unknown 0 Is Default 1 Is Not Default 2	An enumerated integer that indicates that the referenced setting is a default setting for the element or that this information is unknown.

Id	Type	Range	Description
IsNext	uint16	Unknown 0 Is Next 1 Is Not Next 2 Is Next For Single Use 3	An enumerated integer that indicates if the referenced setting is the next setting to be applied. For example, the application run during a reinitialization, reset, or reconfiguration request. This can be a permanent setting, or a setting used only one time. If it is a permanent setting, the setting is applied every time the managed element reinitializes, until this flag is manually reset. However, if it is single use, the flag is automatically cleared after the settings are applied. If this flag is specified, this takes precedence over any SettingData that might have been specified as Default. For example, if the managed element is a computer system and the value of this flag is set to Is Next, the setting is effective until the flag is changed.

Inherited from class CIM_ElementSettingData

IsCurrent, IsDefault

Method Summary

Not applicable.

Method Detail

Not applicable.

ServiceMode Class IBMTSSVC_ClusterDumps

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
ManagedElement	IBMTSSVC_Cluster		
SettingData	IBMTSSVC_Dumps		
IsCurrent	uint16	Unknown 0 Is Current 1 Is Not Current 2	An enumerated integer that indicates that the referenced setting is currently being used in the operation of the element or that this information is unknown.
IsDefault	uint16	Unknown 0 Is Default 1 Is Not Default 2	An enumerated integer that indicates that the referenced setting is a default setting for the element or that this information is unknown.

Id	Type	Range	Description
IsNext	uint16	Unknown 0 Is Next 1 Is Not Next 2 Is Next For Single Use 3	<p>An enumerated integer indicating whether or not the referenced setting is the next setting to be applied. For example, the application could take place on a reinitialization, reset, reconfiguration request. This could be a permanent setting, or a setting used only one time, as indicated by the flag. If it is a permanent setting then the setting is applied every time the managed element reinitializes, until this flag is manually reset. However, if it is single use, then the flag is automatically cleared after the settings are applied. Also note that if this flag is specified (set to value other than Unknown), then this takes precedence over any SettingData that may have been specified as Default. For example: If the managed element is a computer system, and the value of this flag is Is Next, the setting is effective next time the system resets. And, unless this flag is changed, it persists for subsequent system resets. However, if this flag is set to Is Next For Single Use, this setting will only be used once and the flag would be reset after that to Is Not Next. If the system restarts in a quick succession, the setting is not used until the system is restarted a second time.</p>

Inherited from class CIM_ElementSettingData
IsCurrent, IsDefault

Method Summary

Not applicable.

Method Detail

Not applicable.

Software Class IBMTSSVC_ClusterSoftwareIdentity

SoftwareIdentity represents software, viewed as an asset and/or individually identifiable entity (similar to Physical Element).

Description

It does not indicate if the software is installed, executing, etc. (The latter is the role of the SoftwareFeature/ SoftwareElement classes and the Application Model.) Since software may be acquired, SoftwareIdentity can be associated with a Product using the ProductSoftwareComponent relationship. The Application Model manages the deployment and installation of software via the classes, SoftwareFeatures and SoftwareElements. The installation concepts are related to the asset/identity. A SoftwareIdentity can correspond to a Product or to one or more SoftwareFeatures or SoftwareElements, depending on the granularity of these classes and the deployment model. The correspondence of Software Identity to Product, SoftwareFeature or SoftwareElement is indicated using the ConcreteIdentity association. Note that there may not be sufficient detail or instrumentation to instantiate ConcreteIdentity. And, if the association is instantiated, some duplication of information may result. For example, the Vendor described in the instances of Product and SoftwareIdentity might be the same. However, this is not necessarily true, and it is why vendor and similar information are duplicated in this class. ConcreteIdentity can also be used to describe the relationship of the software to any LogicalFiles that result from installing it. As above, there may not be sufficient detail or instrumentation to instantiate this association. In this case, the ClusterSoftwareIdentity represents the software/firmware on the cluster

Subclasses

Not applicable.

Referenced By

The following class references this class:

IBMTSSVC_InstalledClusterSoftwareIdentity

Properties

Id	Type	Range	Description
InstanceID	string		<p>Within the scope of the instantiating Namespace, InstanceID opaquely and uniquely identifies an instance of this class. In order to ensure uniqueness within the NameSpace, construct the value of InstanceID using the following algorithm:<OrgID>:<LocalID>. Where<OrgID>and<LocalID>are separated by a colon and <OrgID> includes a copyrighted, trademarked, or otherwise unique name that is owned by the business entity that is defining the InstanceID, or is a registered ID that is assigned to the business entity by a recognized global authority. This is similar to the <Schema Name>_<Class Name> structure of Schema class names. To ensure uniqueness, <OrgID> cannot contain a colon. When using this algorithm, the first colon to appear in InstanceID must appear between <OrgID> and <LocalID>. <LocalID> is chosen by the business entity and cannot be reused to identify different underlying (real-world) elements. If the algorithm is not used, the defining entity must assure that the InstanceID is not reused across any InstanceIDs that are produced by this or other providers for this instance's NameSpace. For DMTF defined instances, the algorithm must be used with the <OrgID> set to CIM.</p>
BuildNumber	uint16		The build number of the software.
Classifications	uint16	<ul style="list-style-type: none"> Unknown 0 Other 1 Driver 2 Configuration Software 3 Application Software 4 Instrumentation 5 Firmware/BIOS 6 Diagnostic Software 7 Operating System 8 Middleware 9 Firmware 10 BIOS/FCode 11 DMTF Reserved .. Vendor Reserved 0x8000.. 0xFFFF 	<p>An array of enumerated integers that classify this software. For example, the software can be instrumentation (value=5) or firmware and diagnostic software (10 and 7). The use of value 6, Firmware/BIOS, is being deprecated. Instead, either the value 10 (Firmware) and/or 11 (BIOS/FCode) must be used.</p>

Id	Type	Range	Description
MajorVersion	uint16		The major number component of the software's version information. A newer major release is indicated by a larger numeric value.
Manufacturer	string		Manufacturer of this software.
MinorVersion	uint16		The minor number component of the software's version information.
Name	string	Max Length 1024	The Name property defines the label by which the object is known. When subclassed, the Name property can be overridden to be a Key property.
RevisionNumber	uint16		The revision or maintenance release component of the software's version information.
VersionString	string		A string representing the complete software version information. This string and the numeric major/minor/revision/build properties are complementary. Both numeric and string representations of version are provided.

Inherited from class CIM_ManagedElement
--

Caption, Description, ElementName

Inherited from class CIM_ManagedSystemElement
--

HealthState, InstallDate, Name, OperationalStatus, Status, StatusDescriptions

Inherited from class CIM_SoftwareIdentity
--

BuildNumber, ClassificationDescriptions, Classifications, Languages, MajorVersion, Manufacturer, MinorVersion, ReleaseDate, RevisionNumber, SerialNumber, TargetOperatingSystems, VersionString

Method Summary

Not applicable.

Method Detail

Not applicable.

Software Class IBMTSSVC_InstalledClusterSoftwareIdentity

The InstalledSoftwareIdentity association identifies the System on which a SoftwareIdentity is installed.

Description

This class is a corollary to InstalledSoftwareElement for software as indicated by SoftwareIdentity.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstalledSoftware	CIM_SoftwareIdentity		The SoftwareIdentity that is installed.
System	CIM_System		The system on which the software is installed.

Method Summary

Not applicable.

Method Detail

Not applicable.

Software Class IBMTSSVC_InstalledProviderSoftwareIdentity

The InstalledSoftwareIdentity association identifies the System on which a SoftwareIdentity is installed.

Description

This class is a corollary to InstalledSoftwareElement for software as indicated by SoftwareIdentity.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
InstalledSoftware	IBMTSSVC_ProviderSoftwareIdentity	Min 1 Max 1	
System	IBMTSSVC_MasterConsole	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

Virtualization Class IBMTSSVC_BackendControllerForVolume

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_BackendController		
PartComponent	IBMTSSVC_BackendVolume		

Method Summary

Not applicable.

Method Detail

Not applicable.

Virtualization Class IBMTSSVC_LogicalIdentity

CIM_LogicalIdentity is an abstract association that indicates that two ManagedElements represent different aspects of the same underlying entity. This relationship conveys the objects that can be defined with multiple inheritance.

Description

In most scenarios, the Identity relationship is determined by the equivalence of Keys or some other identifying properties of the related Elements. For example, this relationship can be used to represent that a LogicalDevice is both a bus entity and a functional entity. A Device can be both a USB (bus) and a Keyboard (functional) entity. This is the cascading implementation of the association between the representation of the backend volumes of the backend disk and the SAN Volume Controller local representation of those volumes.

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
SameElement	IBMTSSVC_BackendStorage Volume		
SystemElement	IBMTSSVC_BackendVolume		

Method Summary

Not applicable.

Method Detail

Not applicable.

Virtualization Class IBMTSSVC_PortsOnCluster

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_Cluster	Min 1 Max 1	
Dependent	IBMTSSVC_FCPort	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

Virtualization Class IBMTSSVC_PrimordialPoolForController

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_BackendController		
Dependent	IBMTSSVC_PrimordialStorage Pool		

Method Summary

Not applicable.

Method Detail

Not applicable.

Virtualization Class IBMTSSVC_StorageExtentOnCluster

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Cluster	Min 1 Max 1	

Id	Type	Range	Description
PartComponent	IBMTSSVC_BackendVolume	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

Virtualization Class IBMTSSVC_ProtocolControllerOnCluster

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
GroupComponent	IBMTSSVC_Cluster	Min 1 Max 1	
PartComponent	IBMTSSVC_Protocol Controller	Min 1 Max 1	

Method Summary

Not applicable.

Method Detail

Not applicable.

Virtualization Class IBMTSSVC_SCSIInitiatorTargetLogicalUnitPath

This class defines the three way Association between the backend storage and the Target and Initiator Protocol Endpoints.

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Initiator	IBMTSSVC_SCSIProtocolEndpoint	Min 1 Max 1	An Initiator Endpoint.
LogicalUnit	IBMTSSVC_BackendVolume		A subclass of LogicalDevice representing a SCSI Logical Unit (such as StorageVolume or TapeDrive).
Target	IBMTSSVC_BackendTarget SCSIProtocolEndpoint		A Target Endpoint
AdministrativeOverride	uint16		
AdministrativeWeight	uint32		
LogicalUnitNumber	uint16		
OSDeviceName	string		
State	uint32		

Inherited from class CIM_SCSIInitiatorTargetLogicalUnitPath

AdministrativeOverride, LogicalUnitNumber, OSDeviceName, AdministrativeWeight, State

Method Summary

Not applicable.

Method Detail

Not applicable.

Virtualization Class IBMTSSVC_ProtocolControllerAccessUnit

Description

Subclasses

Not applicable.

Referenced By

Not applicable.

Properties

The following properties are available for this class:

Id	Type	Range	Description
Antecedent	IBMTSSVC_InitiatorController		
Dependent	IBMTSSVC_BackendVolume		

Inherited from class CIM_ProtocolControllerForDevice
AccessPriority, AccessState, DeviceNumber

Inherited from class CIM_ProtocolControllerAccessesUnit
TargetControllerNumber

Method Summary

Not applicable.

Method Detail

Not applicable.

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully.

Features

These are the major accessibility features in the SAN Volume Controller Console :

- You can use screen-reader software and a digital speech synthesizer to hear what is displayed on the screen. The following screen readers have been tested: WebKing v5.5 and Window-Eyes v5.5.
- You can operate all features using the keyboard instead of the mouse.
- You can change the initial delay and repeat rate of the up and down buttons to two seconds when you use the front panel of the SAN Volume Controller to set or change an IP address. This feature is documented in the applicable sections of the SAN Volume Controller publications.

Navigating by keyboard

You can use keys or key combinations to perform operations and initiate many menu actions that can also be done through mouse actions. You can navigate the SAN Volume Controller Console and help system from the keyboard by using the following key combinations:

- To traverse to the next link, button, or topic, press Tab inside a frame (page).
- To expand or collapse a tree node, press → or ←, respectively.
- To move to the next topic node, press V or Tab.
- To move to the previous topic node, press ^ or Shift+Tab.
- To scroll all the way up or down, press Home or End, respectively.
- To go back, press Alt+←.
- To go forward, press Alt+→.
- To go to the next frame, press Ctrl+Tab.
- To move to the previous frame, press Shift+Ctrl+Tab.
- To print the current page or active frame, press Ctrl+P.
- To select, press Enter.

Accessing the publications

You can view the publications for the SAN Volume Controller in Adobe Portable Document Format (PDF) using the Adobe Acrobat Reader. The PDFs are provided at the following Web site:

<http://www.ibm.com/storage/support/2145>

Related reference

“SAN Volume Controller library and related publications” on page xiv
A list of other publications that are related to this product are provided to you for your reference.

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Glossary

Glossary of terms used in the CIM Agent Developer's Reference Guide.

A

agent code

An open-systems standard that interprets Common Information Model (CIM) requests and responses as they transfer between the client application and the device.

association

A class that contains two references that define a relationship between two referenced objects.

C

CIM See *Common Information Model*.

CIM object manager (CIMOM)

The common conceptual framework for data management that receives, validates, and authenticates the CIM requests from the client application. It then directs the requests to the appropriate component or service provider.

CIMOM

See *CIM object manager*.

class The definition of an object within a specific hierarchy. A class can have properties and methods and can serve as the target of an association.

client application

A storage management program that initiates Common Information Model (CIM) requests to the CIM agent for the device.

Common Information Model (CIM)

A set of standards developed by the Distributed Management Task Force (DMTF). CIM provides a conceptual framework for storage management and an open approach to the design and implementation of storage systems, applications, databases, networks, and devices.

D

device

In the CIM Agent, the storage server that processes and hosts client application requests.

IBM definition: A piece of equipment that is used with the computer and does not generally interact directly with the system, but is controlled by a controller.

HP definition: In its physical form, a magnetic disk that can be attached to a SCSI bus. The term is also used to indicate a physical device that has been made part of a controller configuration; that is, a physical device that is known to the controller. Units (virtual disks) can be created from devices after the devices have been made known to the controller.

device provider

A device-specific handler that serves as a plug-in for the Common Information Model (CIM); that is, the CIM object manager (CIMOM) uses the handler to interface with the device.

I

indication

An object representation of an event.

instance

An individual object that is a member of some class. In object-oriented programming, an object is created by instantiating a class.

M

method

A way to implement a function on a class.

N

namespace

The scope within which a Common Information Model (CIM) schema applies.

O

object In object-oriented design or programming, a concrete realization of a class that consists of data and the operations associated with that data.

object model

A representation, such as a diagram, of objects in a given system. Using symbols similar to standard flowchart symbols, an object model depicts the classes the objects belong to, their associations with each other, the attributes that make them unique, and the operations that the objects can perform and that can be performed on them.

object name

An object that consists of a namespace path and a model path. The namespace path provides access to the Common Information Model (CIM) implementation managed by the CIM Agent, and the model path provides navigation within the implementation.

P

property

In the Common Information Model (CIM), an attribute that is used to characterize instances of a class.

Q

qualifier

A value that provides additional information about a class, association, indication, method, method parameter, instance, property, or reference.

R

reference

A pointer to another instance that defines the role and scope of an object in an association.

S

schema

A group of object classes defined for and applicable to a single namespace.

Within the CIM Agent, the supported schemas are the ones that are loaded through the managed object format (MOF).

Service Location Protocol (SLP)

In the Internet suite of protocols, a protocol that identifies and uses network hosts without having to designate a specific network host name.

SMI-S See *Storage Management Initiative Specification*.

Storage Management Initiative Specification (SMI-S)

A design specification developed by the Storage Networking Industry Association (SNIA) that specifies a secure and reliable interface that allows storage management systems to identify, classify, monitor, and control physical and logical resources in a storage area network. The interface is intended as a solution that integrates the various devices to be managed in a storage area network (SAN) and the tools used to manage them.

W

WBEM

See *Web-Based Enterprise Management*.

Web-Based Enterprise Management (WBEM)

A tiered, enterprise-management architecture that was developed by the Distributed Management Task Force (DMTF). This architecture provides the management design framework that consists of devices, device providers, the object manager, and the messaging protocol for the communication between client applications and the object manager.

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CIM Agent Developer's Reference
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