

The VMware CIM Browser Guide

VMware ESXi 6.0

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Contents

About This Book	5
Revision History	5
Intended Audience	5
Document Feedback	5
Technical Support and Education Resources	5
Querying CIM Providers with the VMware CIM Browser	7
Installation	7
Displaying the CIM Browser	7
Adding a Host/Namespace/Class Target	8
Enumerating the Instances of a Class	11
Enumerating the Instances of an Association	12
CIM Associations (Instance): the Easiest Method	12
CIM Associations (Schema): Clicking the Add in Associations (Instance) Icon	13
CIM Associations (Schema): Double-clicking the Association	14
CIM Inheritance: Clicking the Add in Associations (Instance) Icon	15
CIM Inheritance: Clicking the Add in Associations (Schema) Icon	16
Querying WBEM Operations for a Specific Class	17
Searching for Classes in a Browser View	19
Adding a Class to a CIM Associations Browser View	21
Refreshing the Host/Namespace	22
Appendix: CIM Browser Icons	23
Index	25

About This Book

The VMware CIM Browser Guide describes how to display inheritance, associations, instance, and property information about CIM providers.

Revision History

This guide is revised with each release of the product or when necessary. A revised version can contain minor or major changes. [Table 1](#) summarizes the significant changes in each version of this guide.

Table 1. Revision History

Revision	Description
Document Version 1.0	<i>The VMware CIM Browser Guide</i> for VMware ESX 4.1/VMware ESXi 4.1. This is a new guide that documents the use of the VMware CIM Browser.
Document Version 2.0	<i>The VMware CIM Browser Guide</i> for VMware ESXi 5.0
Document Version 2.1	<i>The VMware CIM Browser Guide</i> for VMware ESXi 5.1
Document Version 2.5	<i>The VMware CIM Browser Guide</i> for VMware ESXi 5.5
Document Version 3.0	<i>The VMware CIM Browser Guide</i> for VMware ESXi 6.0

Intended Audience

This guide assumes that the reader has a working familiarity with the following:

- VMware ESXi 6.0 – The conceptual underpinnings and actual functions of ESXi
- CIM providers

Document Feedback

VMware welcomes your suggestions for improving our documentation. Send your feedback to docfeedback@vmware.

Technical Support and Education Resources

The following sections describe the technical support resources available to you. You are also encouraged to contact your partner representative for any questions about VMware CIM Browser.

Self-Service Support

You can use the information here to find information about VMware products and documentation as well as the Common Information Model (CIM).

VMware Information

Use the VMware Technology Network (VTN) for self-help tools and technical information:

- Product information – <http://www.vmware.com/products/>
- Documentation – <http://www.vmware.com/support/pubs>
- Knowledge Base – <http://kb.vmware.com>
- Discussion forums – <http://www.vmware.com/community>
- User groups – <http://www.vmware.com/vcommunity/usergroups.html>

For more information about the VMware Technology Network, go to <http://www.vmtn.net>.

Information About CIM

For profiles, tutorials, and other information about CIM, refer to <http://www.dmtf.org/>.

Online and Telephone Support

To use online support to submit technical support requests, view your product and contract information, and register your products, go to <http://www.vmware.com/support>.

Customers with appropriate support contracts should use telephone support for the fastest response on priority 1 issues. Go to http://www.vmware.com/support/phone_support.html.

Support Offerings

Find out how VMware support offerings can help meet your business needs. Go to <http://www.vmware.com/support/services>.

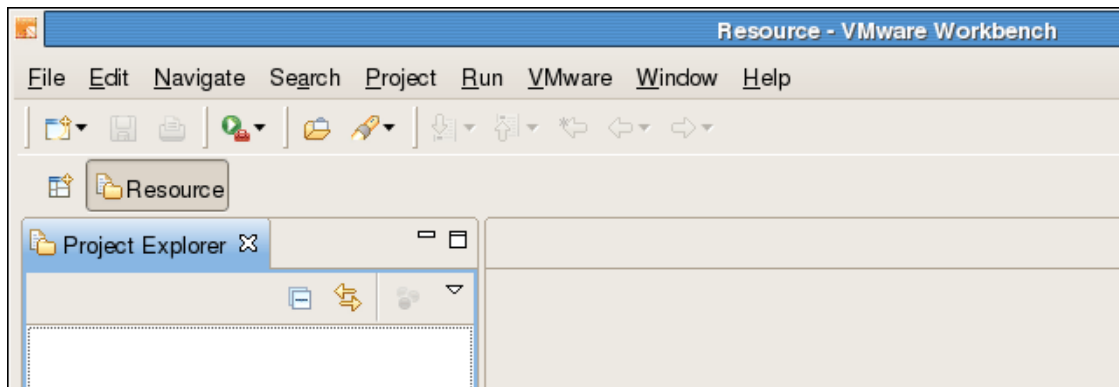
Querying CIM Providers with the VMware CIM Browser

The VMware CIM Browser enables you to query CIM providers loaded on a target VMware ESXi host. You can browse the CIM inheritance hierarchy or list the CIM associations and instances.

Installation

To use the CIM Browser to query providers, you must install the CIM Tools plug-in into the VMware Workbench. For more information, see the *VMware Workbench Getting Started Guide*. Once you have installed the VMware CIM Browser, the VMware menu appears in the menu bar. This includes a selection for the VMware CIM Browser.

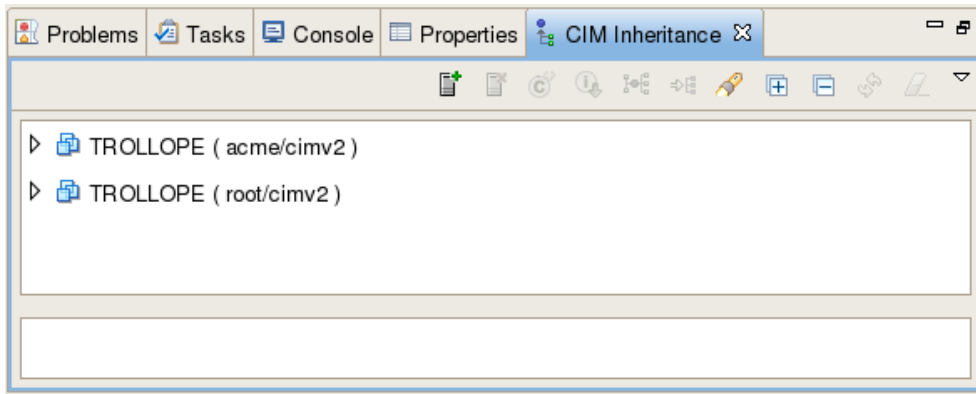
Figure 1. VMware Menu



Displaying the CIM Browser

You can view classes, associations, or instances in the VMware CIM Browser in one of the following ways:


- Display the CIM class inheritance hierarchy by selecting **CIM Inheritance** from **VMware >> CIM Browser**. The CIM Inheritance view appears in VMware Workbench.
- Display associations by selecting **CIM Associations (Schema)** from **VMware >> CIM Browser**. A CIM Associations (Schema) view appears in VMware Workbench.
- Display association instances by selecting **CIM Associations (Instances)** from **VMware >> CIM Browser**. A CIM Associations (Instances) view appears in Workbench.
- Query WBEM operations for a specific class by selecting **WBEM Operation** from **VMware >> CIM Browser**.

Figure 2. CIM Inheritance view with Host/Namespace/Class(es) Definitions

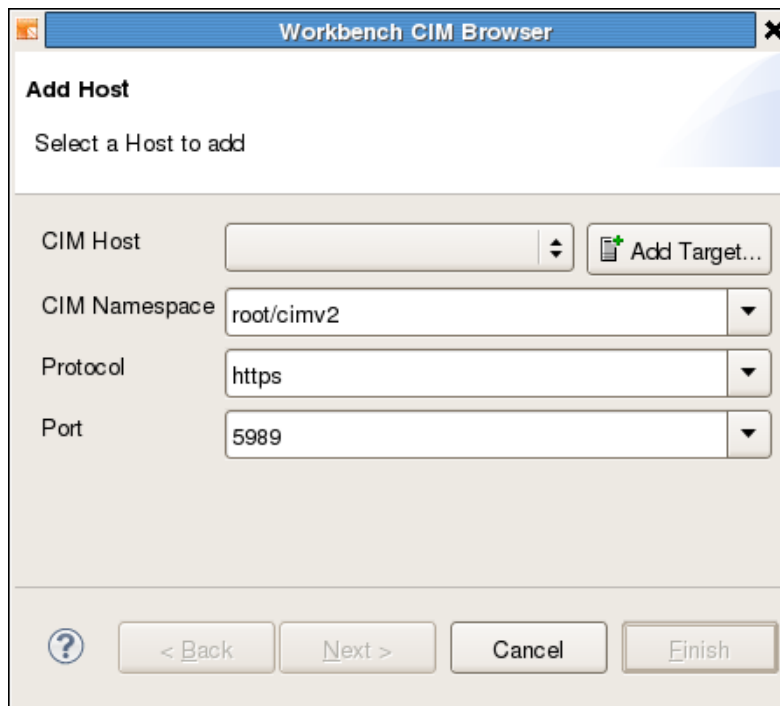
When you display the CIM Inheritance view, the view will be blank, unless one or more host/namespace/class(es) targets have been defined during the current session of VMware Workbench (Figure 2).

- For CIM Inheritance browsing, you must define a host/namespace targets for browsing. Specifying class(es) is optional. If you do not specify classes, the VMware CIM Browser displays all the classes for the specified host/namespace.
- For CIM Associations, you must define a host, namespace, and one or more classes.

Adding a Host/Namespace/Class Target

- 1 In the icon bar next to the view tabs, click the Add New Host icon ().

This displays the Add Host wizard (Figure 3).

Figure 3. Add New Host

- 2 Select the CIM Host you want to browse from the drop-down menu.

If you cannot find the host in the menu, click **Add Target...** to add the host to which you want to connect. For information about adding an ESXi server, see the *VMware Workbench Getting Started Guide*.

- 3 Type the CIM Namespace you want to browse or select the namespace from the drop-down list.
- 4 Select the protocol and port.
- 5 Do one of the following:
 - Click **Finish** to display all the CIM classes in the host/namespace. This is enabled for CIM Inheritance browsing only.
 - Click **Next** to browse specific classes.

This displays the Add CIM Class(es) wizard.

 - For CIM Inheritance, you can select all CIM classes, no classes (in this case you are simply adding a host), or enter one or more specific classes. [Figure 4](#) shows the wizard for CIM Inheritance.
 - For CIM Associations, you must enter one or more classes. [Figure 5](#) shows the wizard for CIM Associations.

Figure 4. Selecting Specific Classes - CIM Inheritance

Workbench CIM Browser

Add CIM Class(es)

Select CIM Classes in CIM Browser

☐ Browse all CIM classes

☐ Browse no CIM Class (add a CIM Host only)

☒ Browse selected CIM Classes

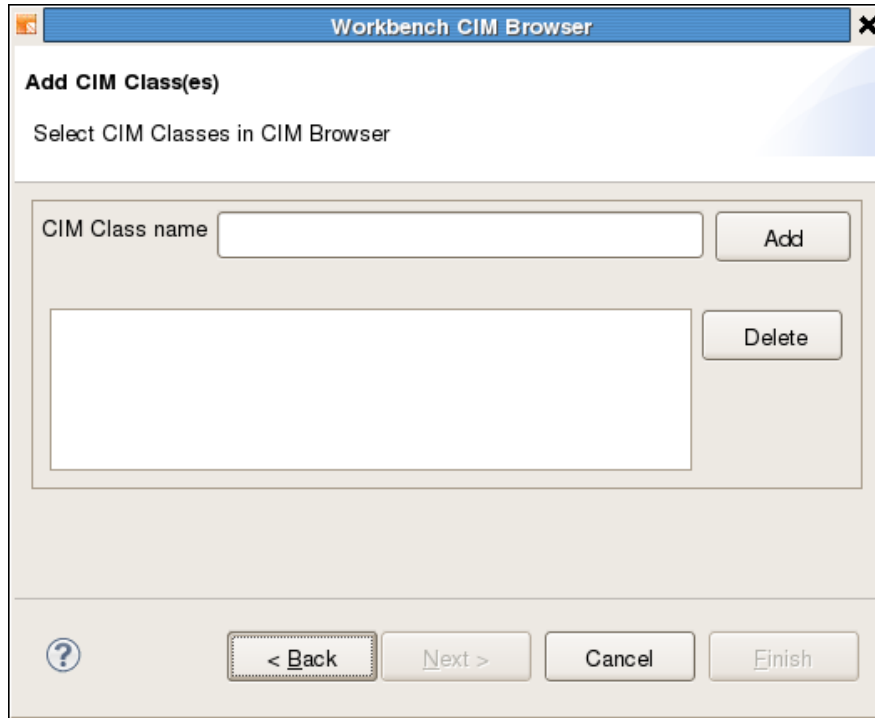
☐ Browse CIM Classes from MOF file(s)

CIM Class name

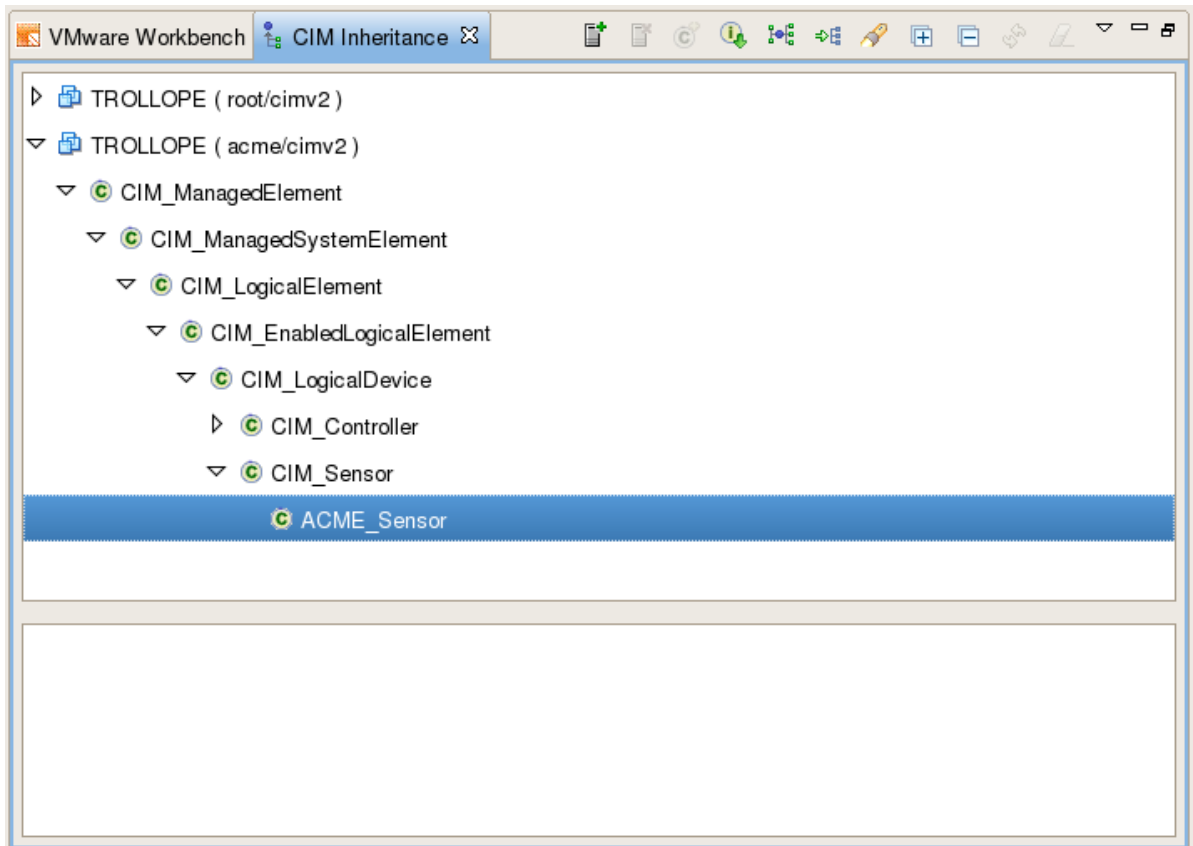
Add

Delete

? < Back Next > Cancel Finish

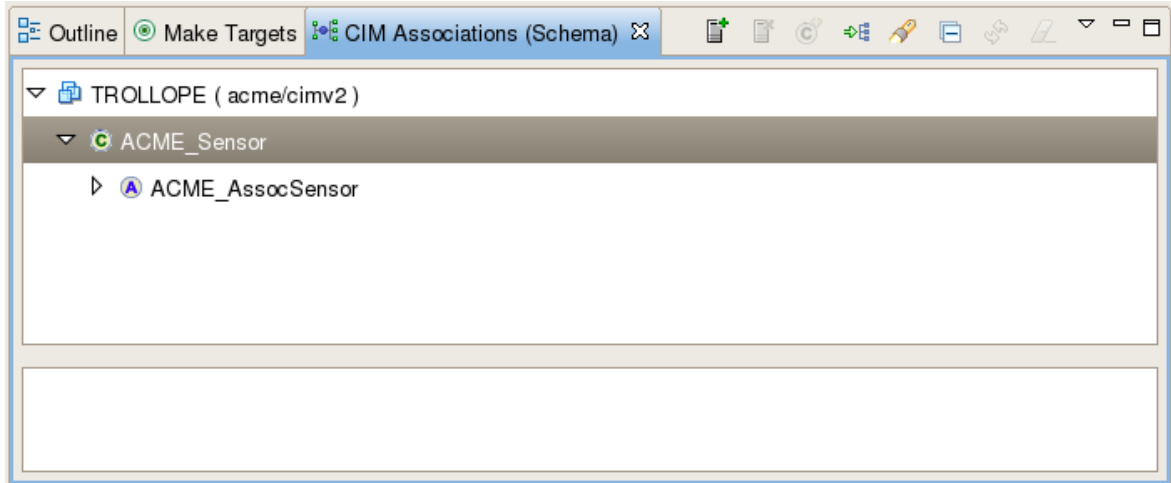
Figure 5. Selecting Specific Classes - Associations

Once you click **Finish**, the view displays the selected classes. If you selected specific classes to browse in the CIM Inheritance hierarchy, those classes are highlighted (Figure 6).

Figure 6. Browsing CIM Inheritance for a Specific Class

If you are browsing the associations for a specific class, that class is highlighted and its associations are displayed ([Figure 7](#)).


Figure 7. Browsing Associations for a Specific Class



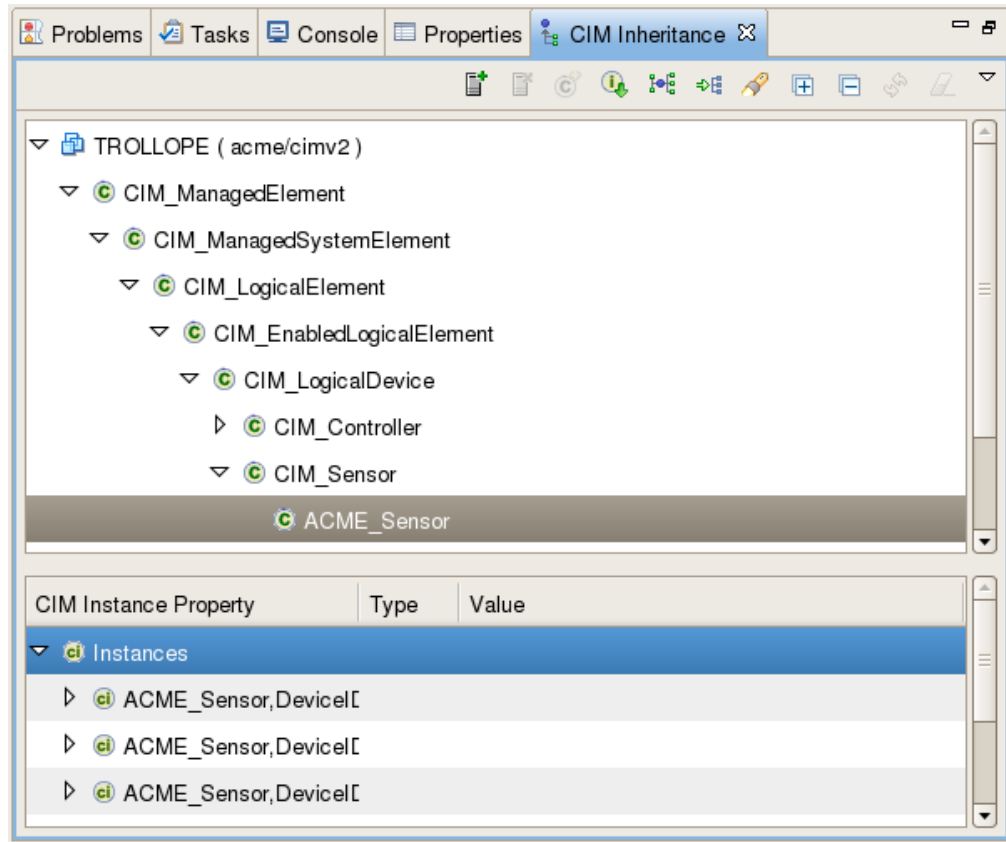
Enumerating the Instances of a Class

NOTE You can also enumerate class instances with the WBEM Operation view. See [“Querying WBEM Operations for a Specific Class”](#) on page 17.


Classes are designated in the VMware CIM Browser with .

- 1 Display the CIM Browser, as described in [“Displaying the CIM Browser”](#) on page 7).
- 2 Enumerate the instances in one of the following ways:
 - Double-click the class
 - Select the class and click the Get Instances icon (.

The instances, methods, properties, and qualifiers are displayed below the hierarchy ([Figure 8](#)).

Figure 8. Getting Instance Information on Classes


Enumerating the Instances of an Association

Associations are designated in the VMware CIM Browser with . You can enumerate association instances using one of several methods.

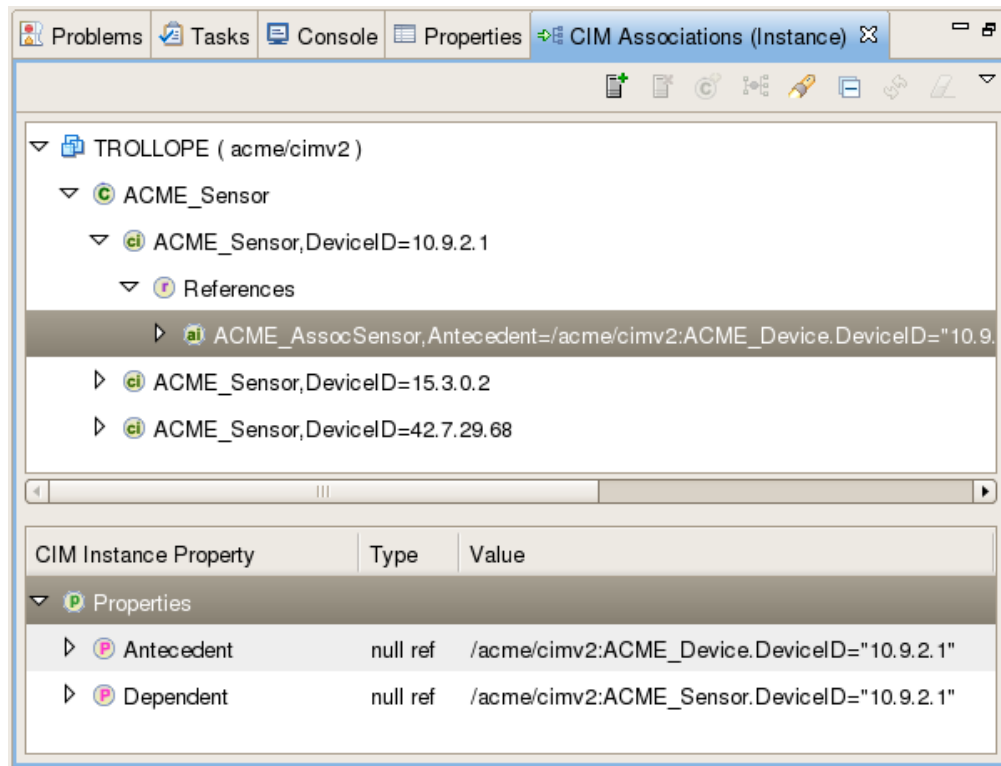
CIM Associations (Instance): the Easiest Method

This is the easiest way to enumerate the instances of an association.

- 1 Select CIM Associations (Instances) from VMware >> CIM Browser, as described in [“Displaying the CIM Browser”](#) on page 7.

The CIM Associations (Instances) view displays the instances ().

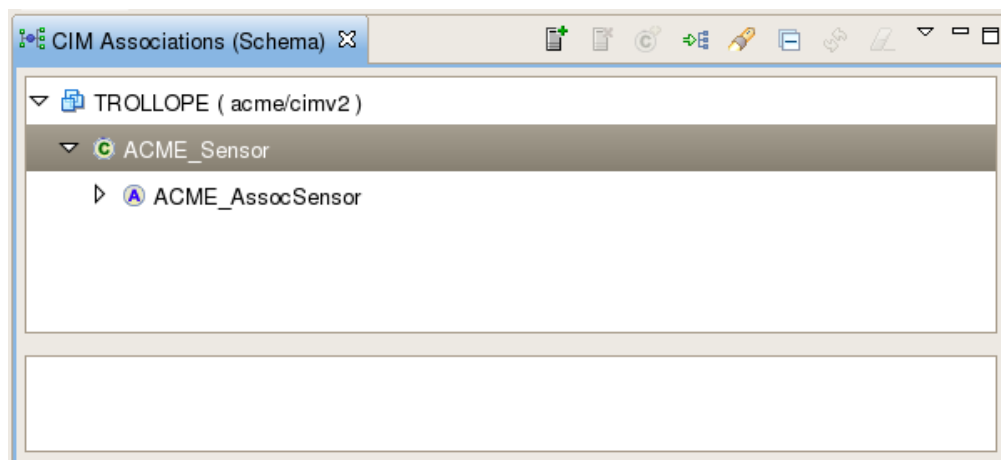
- 2 Double-click on an association instance to display its properties.
- 3 Expand the Antecedent or Dependent property to see the associated classes ([Figure 9](#)).

Figure 9. Instances of an Association in CIM Associations (Instances) View

CIM Associations (Schema): Clicking the Add in Associations (Instance) Icon

- 1 Select CIM Associations (Schema) from VMware >> CIM Browser, as described in [“Displaying the CIM Browser”](#) on page 7.

The CIM Associations (Schema) view displays the class you selected with its association.

Figure 10. CIM Associations (Schema) View


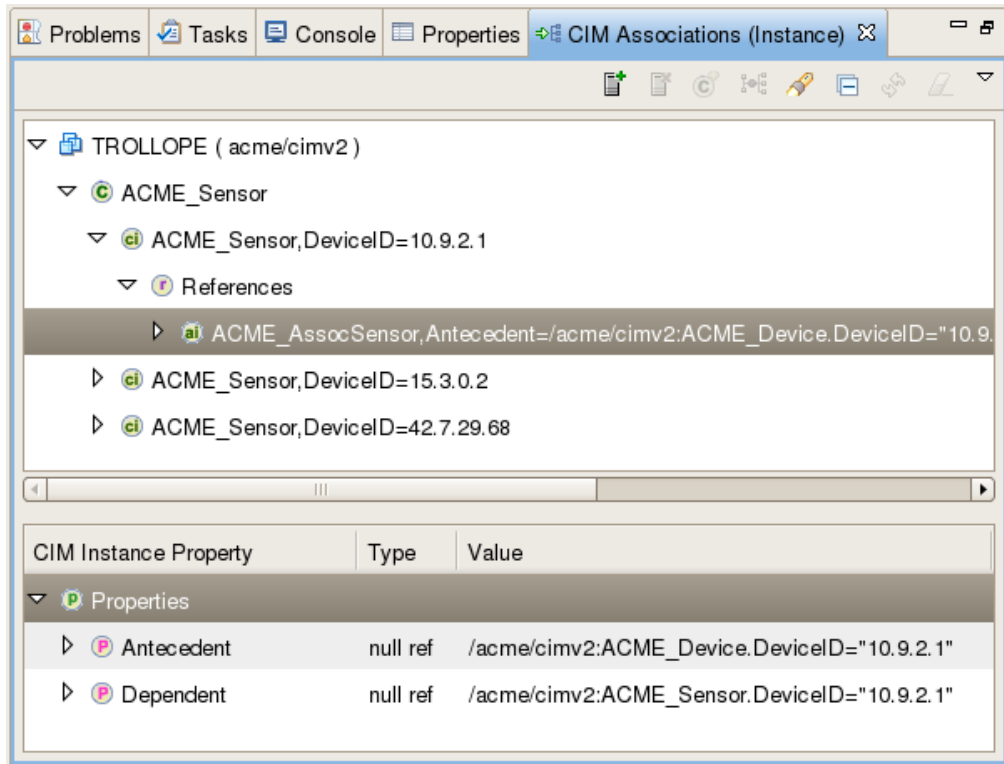
- 2 Click the Add in Associations (Instance) icon ().
- 3 Double-click an association instance to display its properties ([Figure 9](#)).
- 4 Expand the Antecedent or Dependent property to see the associated classes.

Figure 11. Instances of an Association in CIM Associations (Instances) View

CIM Associations (Schema): Double-clicking the Association

- 1 Select CIM Associations (Schema) from VMware >> CIM Browser, as described in [“Displaying the CIM Browser”](#) on page 7.

The CIM Associations (Schema) view displays the class you selected with its association.


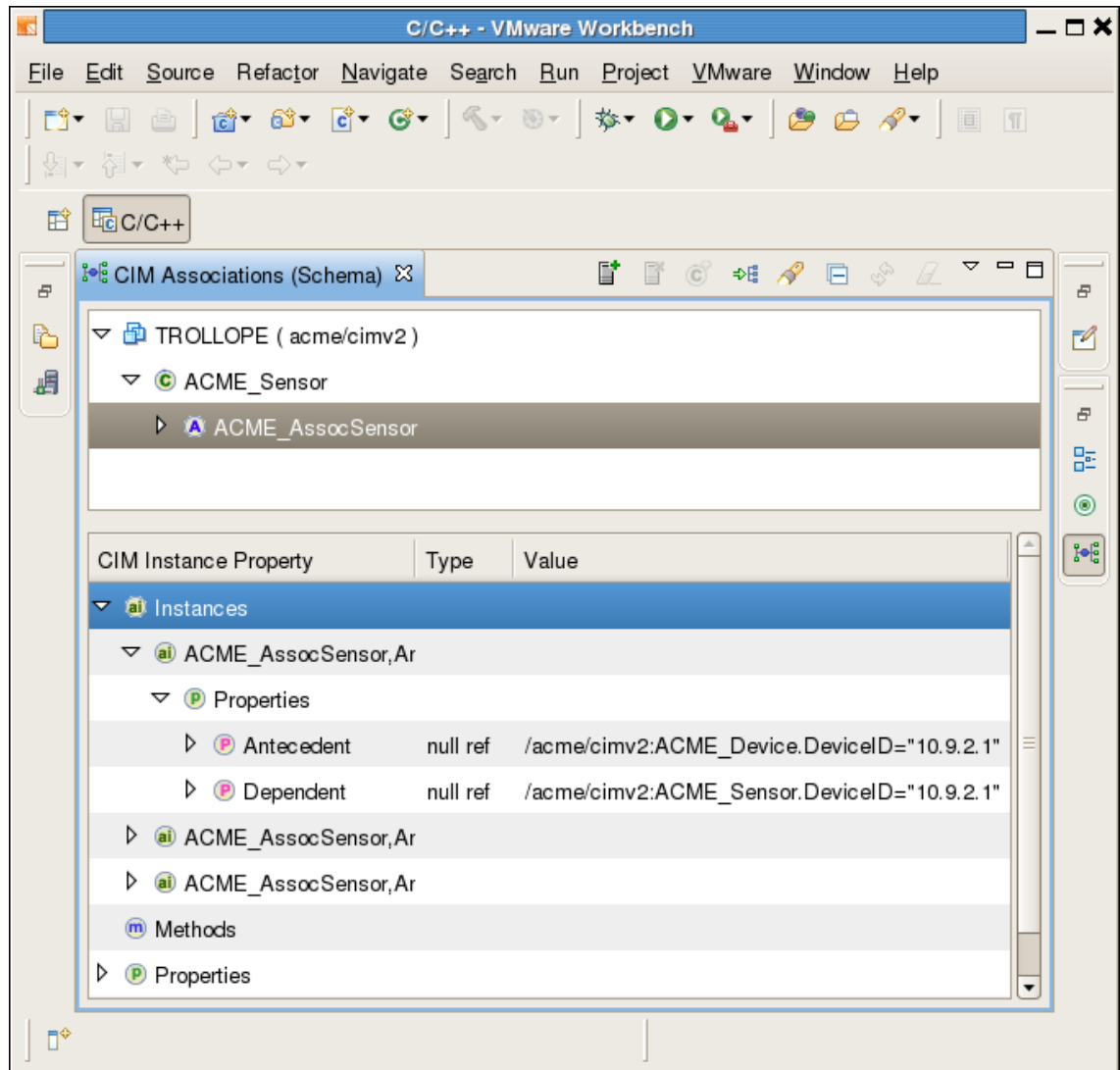
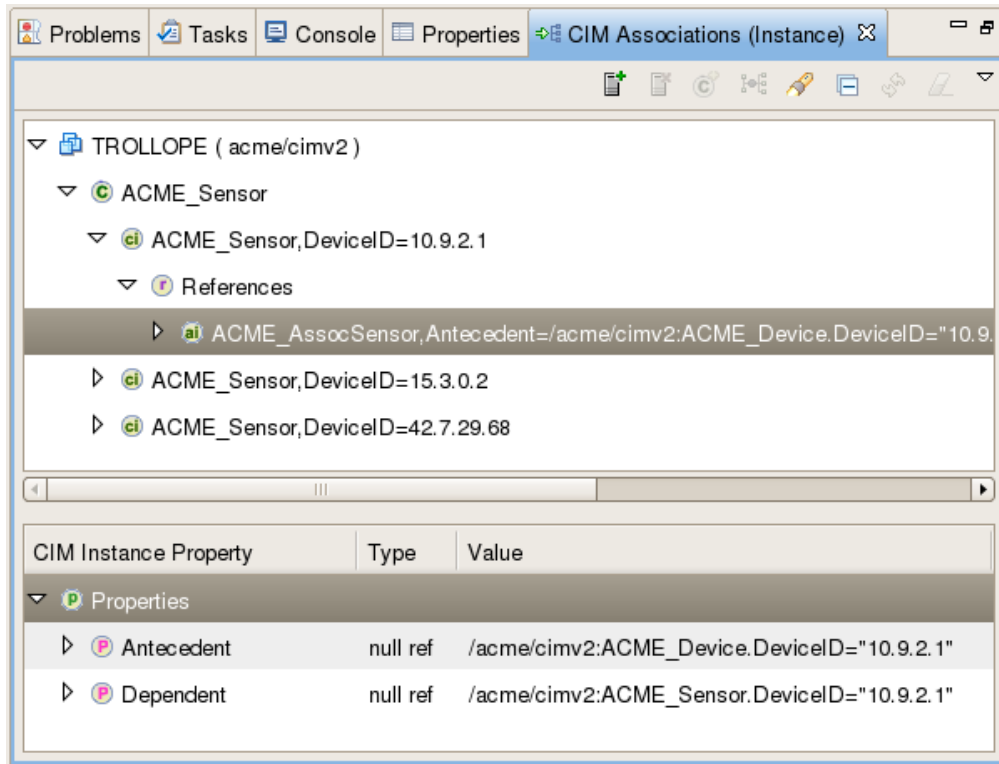
- 2 Double-click the association to display its instances (, methods, properties, and qualifiers.
- 3 Expand an instance to display its Antecedent and Dependent properties.
- 4 Expand either one of these to see the associated classes and their properties.

Figure 12. Instances of an Association

CIM Inheritance: Clicking the Add in Associations (Instance) Icon

- 1 Select CIM Inheritance from VMware >> CIM Browser as described in [“Displaying the CIM Browser”](#) on page 7.
- 2 Select the class whose association instances you want to enumerate.
- 3 Click the Add in Associations (Instance) icon (🔍).
This displays the Add in Associations (Instance) view.
- 4 Double-click on an association instance (ai) to display its properties.
- 5 Expand the Antecedent or Dependent property to see the associated classes (Figure 9).

Figure 13. Instances of an Association in CIMAssociations (Instances) View

CIM Inheritance: Clicking the Add in Associations (Schema) Icon


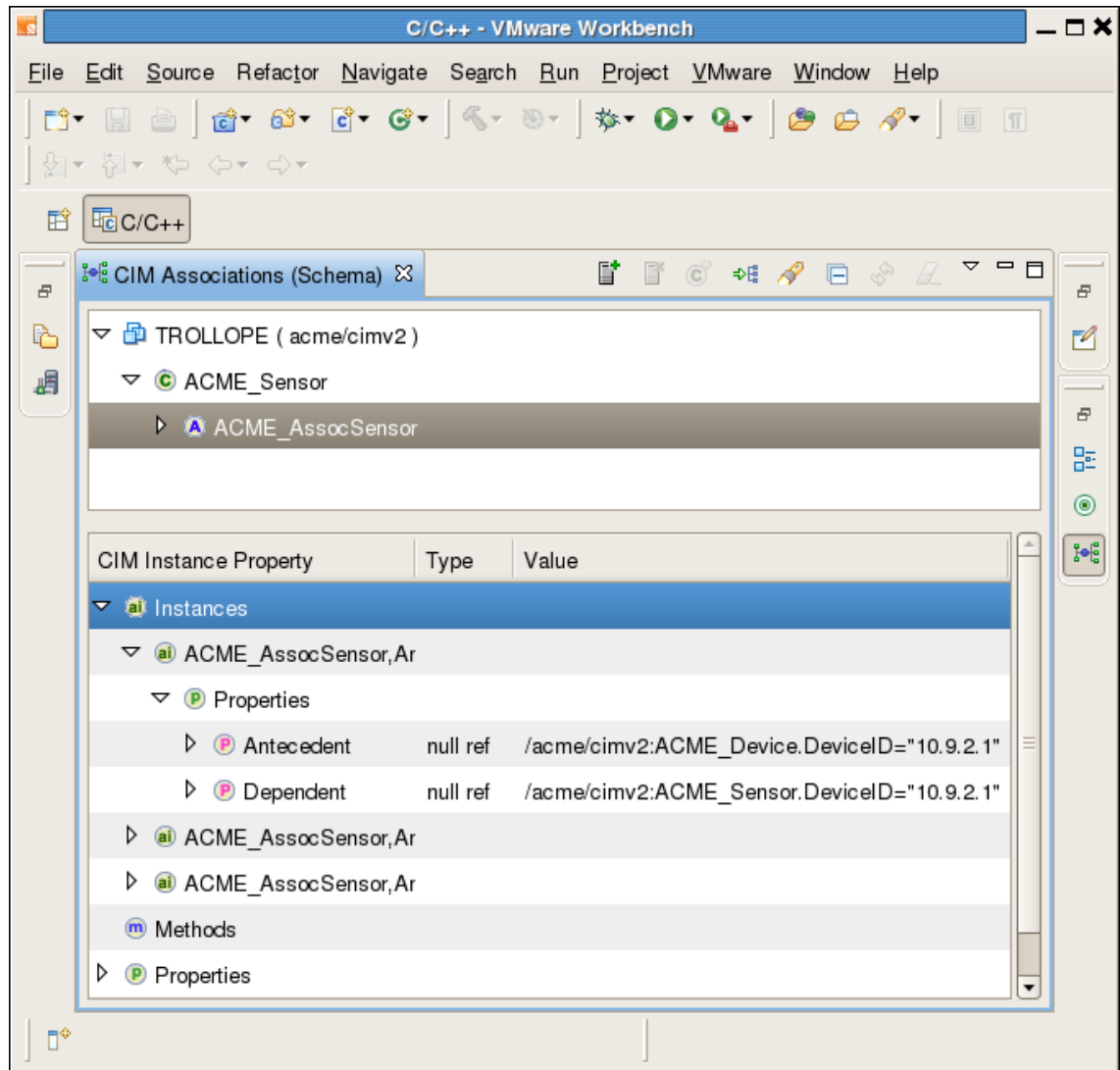
- 1 Select CIM Inheritance from VMware >> CIM Browser as described in [“Displaying the CIM Browser”](#) on page 7.
- 2 Select the class whose association instances you want to enumerate.
- 3 Click the Add in Associations (Schema) icon ().
This displays the class and its association in the CIM Associations (Schema) view.
- 4 Double-click the association.
This displays the instances, properties, and qualifiers below the association.

Figure 14. Instances of an Association

Querying WBEM Operations for a Specific Class

- 1 Select WBEM Operation from VMware >> CIM Browser.

This displays the WBEM Operation view.

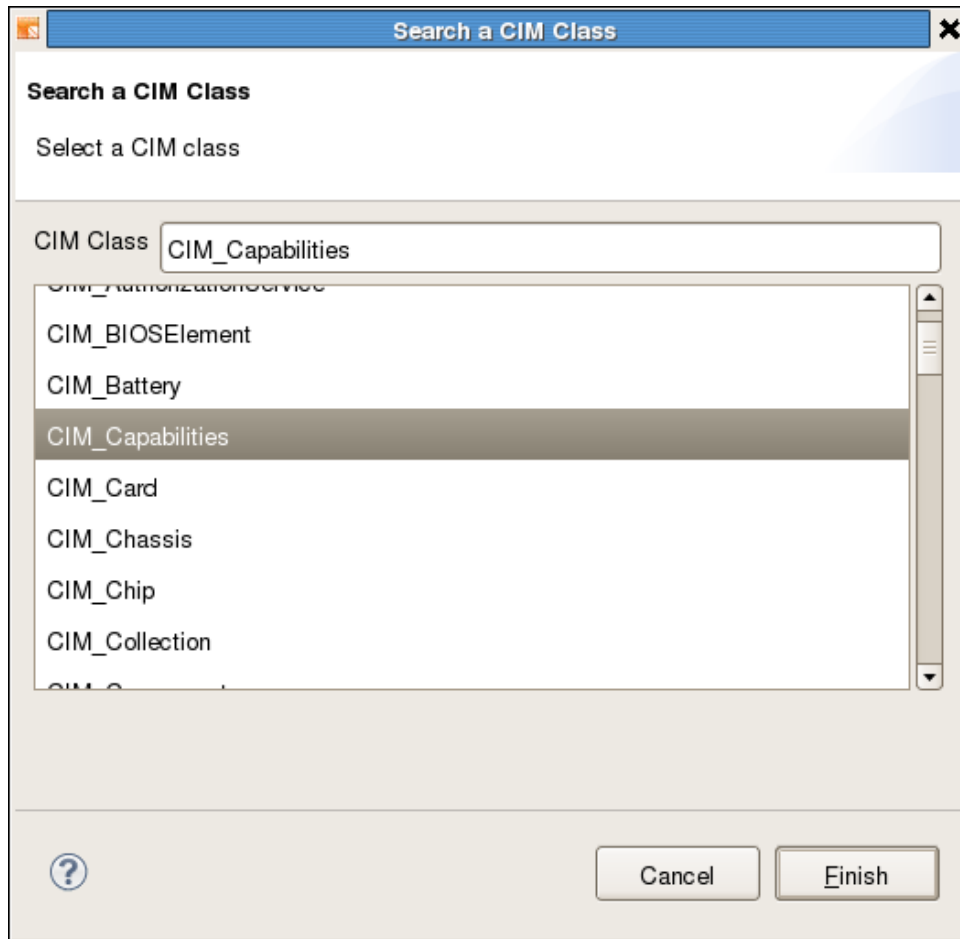
- 2 Select the host.

You can either select the CIM host from the drop-down list or click Add CIM Host to add a host/workspace.

NOTE If you select the CIM host from the list, you should click the Refresh icon (🔄) to make sure the host/namespace has the latest CIM classes. If any classes were added to the host/namespace since the host was added to the view, they will not be included in the WBEM Operation view until you click this icon.

- 3 Select a CIM class.

You can either type the name in the text box, or click Search to open a CIM class name search wizard. The search wizard (Figure 15) contains all CIM classes in the selected CIM host/workspace.

Figure 15. Search Wizard

- 4 Select the WBEM operation from the drop-down list.

The following operations are available:

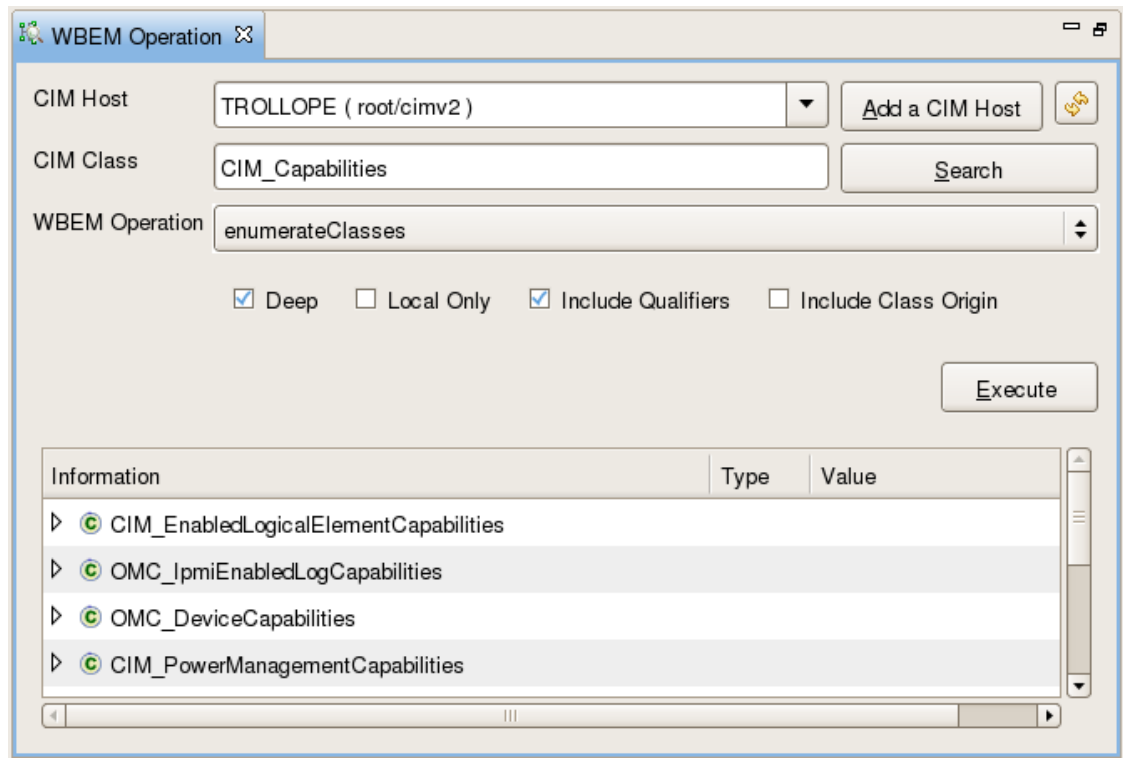
- Enumerate CIM class names
- Enumerate CIM classes
- Enumerate CIM instances
- Enumerate CIM instance names
- Get CIM Class

- 5 Check the desired boxes to indicate the extent of the query.

- Deep – the result contains the specified class and all subclasses.
- Local Only – only elements defined in or overridden in the class are included in the result.
- Include Qualifiers – All qualifiers for each class and its elements are present in the result.
- Include Class Origin – The class origin attribute is the name of the class that first defined the property or method. If checked, the class Origin attribute will be present for each property and method on all returned CIM Classes.

- 6 Click Execute to query the selected WBEM operation for the selected class.

The operation will be executed. The results will be shown in a tree view ([Figure 16](#)).

Figure 16. WBEM Operation View

Searching for Classes in a Browser View

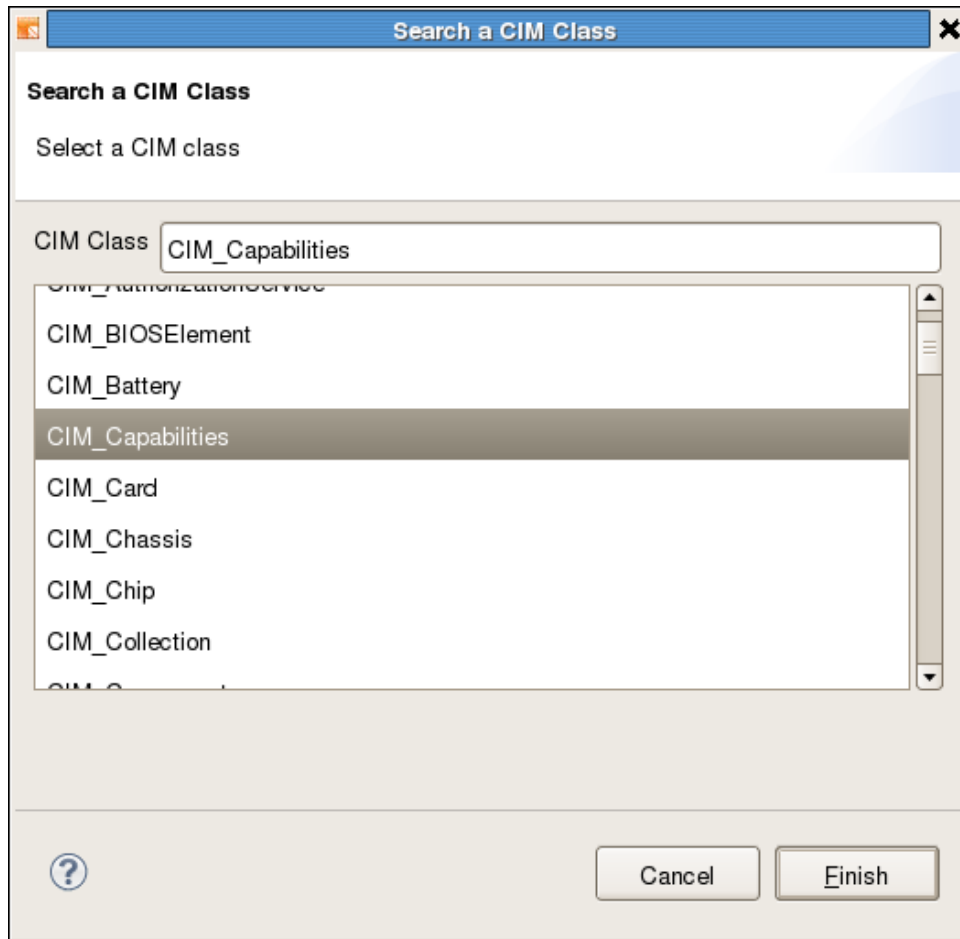
In any of the views, you can click the Search icon (🔍) to search for any class displayed in the view.

NOTE To make sure the host/namespace in the view includes an up-to-date class list, select the host/namespace in the view and click the Refresh icon (🔄).

- 1 Click the Search icon (🔍) to display the Search screen.
- 2 Enter the CIM class name you want to find.

You can either type the name or select a name from the list (Figure 17).

- 3 Click Finish.

Figure 17. Searching for a Class

The class will be found only if the host/namespace includes the class and the class is included in the browser view. If the class is not included in the browser view, you can add it by clicking the Add CIM Class icon (). For more information about adding CIM classes to a view, see [“Adding a Class to a CIM Associations Browser View”](#) on page 21.

Figure 18 shows a successful search for ACME_Device.

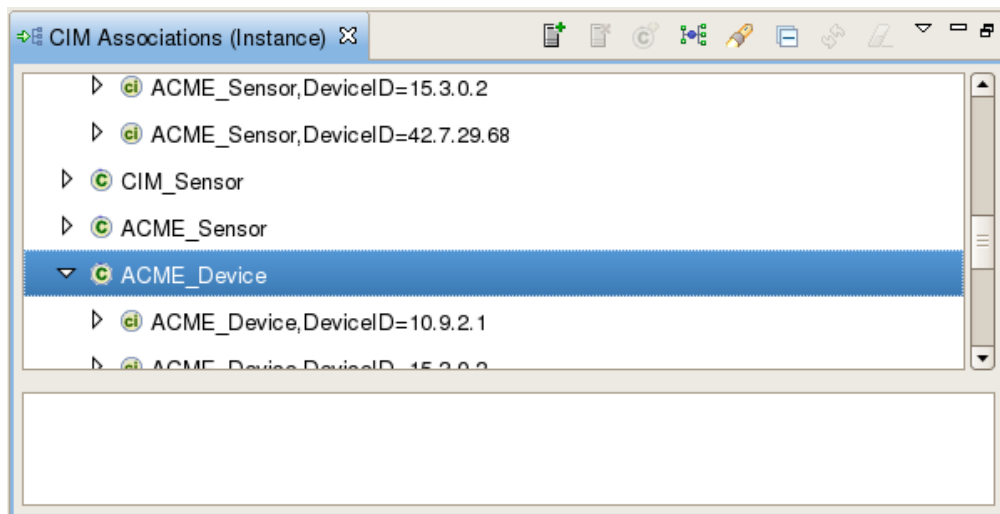
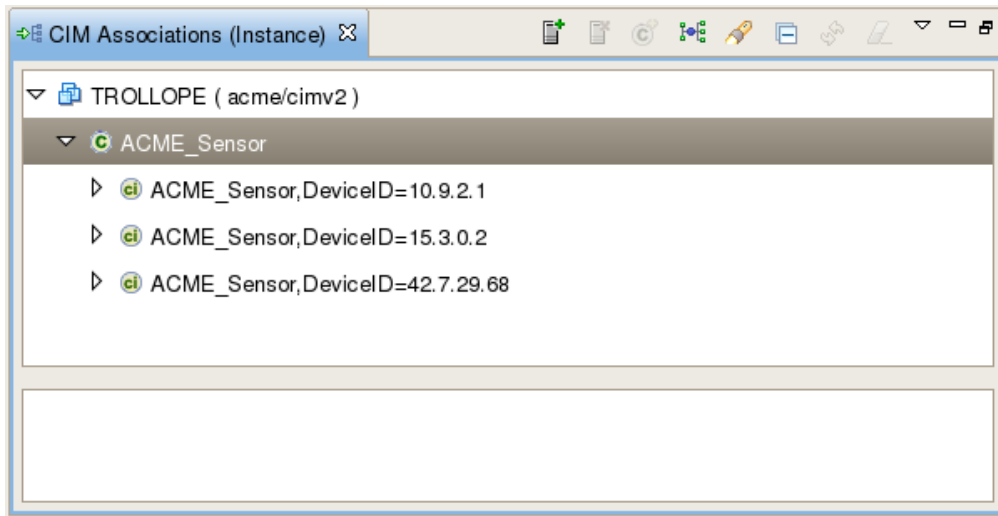

Figure 18. Searching for ACME_Device in the CIM Associations (Instance)


Figure 19 shows a browser view that contains only ACME_Sensor. A search for any other class will yield no results.

Figure 19. Searching for ACME_Device in a View that Does Not Include ACME_Device



Adding a Class to a CIM Associations Browser View

When you add a host/namespace to the CIM Associations (Schema) and CIM Associations (Instance) browser views, you must specify one or more classes belonging to the host/namespace to display in the view. If you search for classes ([“Searching for Classes in a Browser View”](#) on page 19), the search will only encompass those classes in the view. After you add the host/namespace, you can add additional classes to the browser view by clicking the Add CIM Class icon ().

NOTE To make sure the host/namespace includes an up-to-date class list, select the host/namespace in the view and click the Refresh icon ().


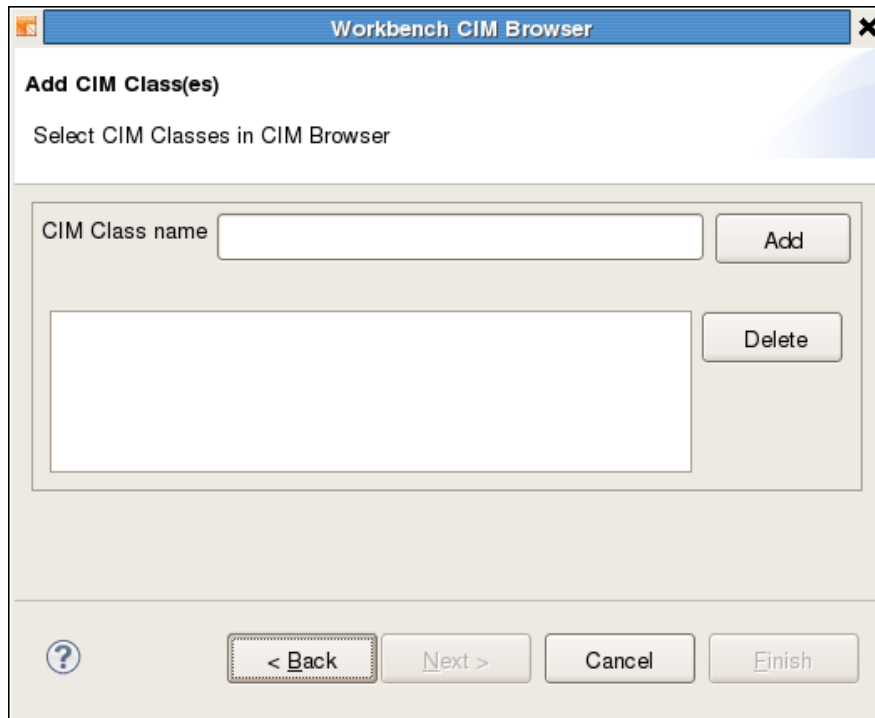
- 1 Select the host/namespace.
- 2 Click the Add CIM Class icon ().
This displays the Add Cim Class(es) window ([Figure 20](#)).
- 3 Type the CIM class in the CIM Class Name field.
- 4 Click Finish.

Figure 20. Add CIM Classes

Refreshing the Host/Namespace

After you have added the host/namespace to the view, any classes, associations, etc., loaded into the host/namespace will not be included in the view. Click the Refresh icon (🔄) to refresh the host/namespace to pick up the new classes.











Appendix: CIM Browser Icons

When you display the VMware CIM Browser, you will see one or more of the icons described in [Table A-1](#).

Table A-1. CIM Browser Icons

Icon	Description
	CIM Inheritance view
	CIM Associations (Instances) view. Select a class in either the CIM Inheritance view or the CIM Associations (Schema) view and click this icon to display any CIM associations instances for the selected class (Figure 9).
	CIM Associations (Schema) view. Select a class in either the CIM Inheritance view or the CIM Associations (Instances) view and click this icon to display the CIM Associations for the selected class (Figure 10).
	WBEM Operation view
	Add a Host. See “Adding a Host/Namespace/Class Target” on page 8.
	Remove a host.
	Add a Class. Selecting a host enables this button. Clicking this button enables you to add a class to the current view. See “Adding a Class to a CIM Associations Browser View” on page 21.
	Search. See “Searching for Classes in a Browser View” on page 19.
	Class
	Association class.
	Indication class
	Get Instances. Select a class in a view and click this icon to display the instances of the class.
	Class instance
	Reference instance of a CIM Class

Table A-1. CIM Browser Icons

Icon	Description
	Association instance
	Property of a CIM class
	Key property of a CIM class
	Methods
	Qualifier of a CIM class
	Parameter of a CIM class method
	Clear classes for selected host/namespace. You can add classes using the Add a Class icon ().
	Error
	Warning

Index

A

- Add CIM Class(es) **9**
- Add in Associations (Instance) **15**
- Add in Associations (Schema) **16**
- associations
 - enumerating instances of **12**
 - viewing **7**

C

- CIM Associations (Instances)
 - displaying association instances **7**
 - enumerating association instances **12**
- CIM Associations (Schema)
 - displaying associations **7**
 - enumerating association instances **13, 14**
- CIM Inheritance
 - displaying CIM class inheritance **7**
 - enumerating association instances **15, 16**
- CIM providers
 - querying with CIM Browser **7**
- CIM Tools plug-in **7**
- class instances, enumerating **11, 17**
- classes
 - adding to a browser view **21**
 - class names, enumerating (WBEM) **18**
 - enumerating (WBEM) **18**
 - refreshing the list **17**
 - searching for **19**
 - viewing **7**

D

- Deep **18**
- displaying methods **11**
- displaying properties **11**
- displaying qualifiers **11**

E

- education resources **5**
- Enumerate CIM class names (WBEM) **18**
- Enumerate CIM classes (WBEM) **18**
- Enumerate CIM instance names (WBEM) **18**
- Enumerate CIM instances (WBEM) **18**
- enumerating instances
 - associations **12**
 - class **11, 17**

G

- Get CIM Class (WBEM) **18**
- Get Instances icon **11**

H

- host/namespace target **8**
- host/namespace/class target, adding **8**

I

- Include Class Origin **18**
- Include Qualifiers **18**
- installation **7**
- instances
 - enumerating **17**
 - enumerating (WBEM) **18**
 - enumerating instance names (WBEM) **18**
 - viewing **7**
- instances, enumerating **11**

K

- knowledge base, accessing **6**

L

- Local Only **18**

M

- methods, displaying **11**

P

- properties, displaying **11**

Q

- qualifiers, displaying **11**

R

- Refresh icon **17**
- resources **5**

S

- searching **19**

T

- technical support resources **5**

U

- user groups, accessing **6**

V

views

- adding classes **21**

- searching for classes **19**

VMware community forums, accessing **6**

VMware Technology Network (VMTN) **6**

W

WBEM operations

- available operations **18**

- menu item **7**

- querying **17**

- refreshing the class list **17**