Object Viewer User's Guide

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Contents

Welcome

This guide explains how to use the Object Viewer utility. The Object Viewer utility provides diagnostic and performance information about ApplicationObjects. The Object Viewer utility can be accessed from the Integrated Development Environment (IDE) and the Platform Manager in the System Management Console (SMC) suite of utilities.

You can view this document online or you can print it, in part or whole, by using the Adobe Acrobat Reader.

Documentation Conventions

This documentation uses the following conventions:

Convention	Used for
Initial Capitals	Paths and file names.
Bold	Menus, commands, dialog box names, and dialog box options.
`Monospace`	Code samples and display text.

Technical Support

Wonderware Technical Support offers a variety of support options to answer any questions on Wonderware products and their implementation.

Before you contact Technical Support, refer to the relevant section(s) in this documentation for a possible solution to the problem. If you need to contact technical support for help, have the following information ready:

- The type and version of the operating system you are using.

- Details of how to recreate the problem.

- The exact wording of the error messages you saw.

- Any relevant output listing from the Log Viewer or any other diagnostic applications.

- Details of what you did to try to solve the problem(s) and your results.

- If known, the Wonderware Technical Support case number assigned to your problem, if this is an ongoing problem.

Chapter 1

Overview

Object Viewer provides performance and diagnostic information about ApplicationObjects. You an use Object Viewer to show performance parameters, resource consumption, and reliability measurements of objects you select.

In addition to viewing an object's data value, data quality, and the communication status of the object, you can also modify some of the object's attributes for diagnostic testing. Modifications can include adjusting timing parameters and setting objects in an execution or idle mode.

Object Viewer runs with minimal ArchestrA and operating system requirements.

Using Object Viewer you can:

- View the data type, data quality, data value, timestamp, and communication status of ApplicationObject attributes.

- Do diagnostic testing on ApplicationObjects.

- Modify selected ApplicationObject attributes.

Availability

Object Viewer is a common component of any Galaxy application and is available from any workstation in the application with a deployed WinPlatform. You do not need to install the utility on each workstation.

Starting Object Viewer

You can use Object Viewer from any workstation that is part of your Galaxy application.

To start Object Viewer

1   Click **Start**, point to **Wonderware,** and click **System Management Console**.

2   In the console tree, expand the **Platform Manager** to show the list of Galaxies, and then expand a Galaxy to show a list of platforms.

3   Right-click a platform, and then click **Launch Object Viewer**.

You can also start the Object Viewer from the ArchestrA IDE by right-clicking a deployed object and then clicking **View in Object Viewer**.

Navigating In Object Viewer

The main window of the Object Viewer is composed of three areas:

- Console tree on the left

- Details pane on the right

- Watch window at the bottom

Console Tree   Details Pane

Watch Window
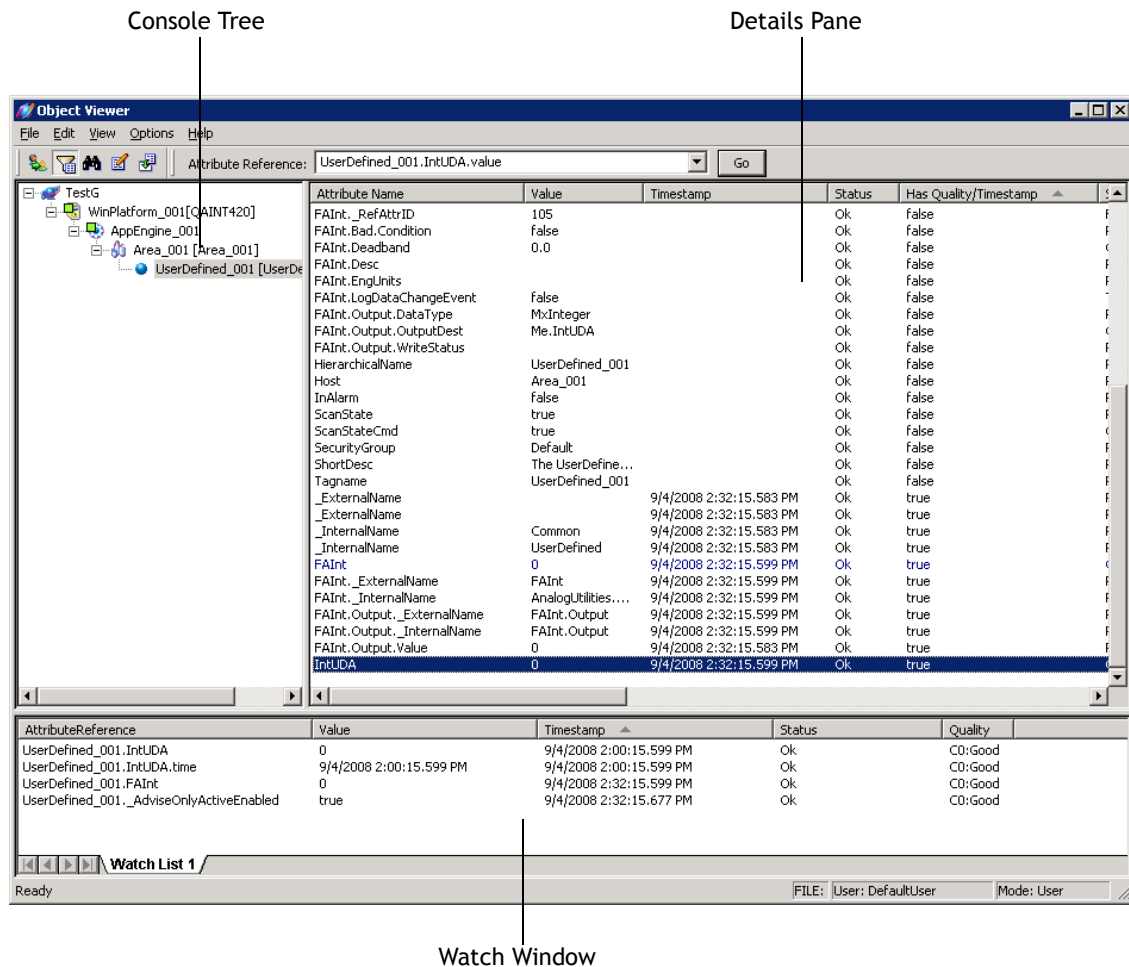
The console tree works like Windows Explorer. Use the plus (**+**) and minus (**-**) signs to expand or hide the nested list items shown in the pane. When you select an object in the console tree, its associated attributes and their properties are shown in the details pane.

Drag a specific set of attributes of interest to a watch window to monitor their **Quality**, **Status**, **Timestamp**, and **Value** as you manipulate them and other attributes that affect their data values. You can save the contents of a watch window to a file for future reference.

Finding Objects

You can use the **Find** dialog box to search for an object in your Galaxy application.

To find an object by name

1   On the **Edit** menu, click **Find Object**.
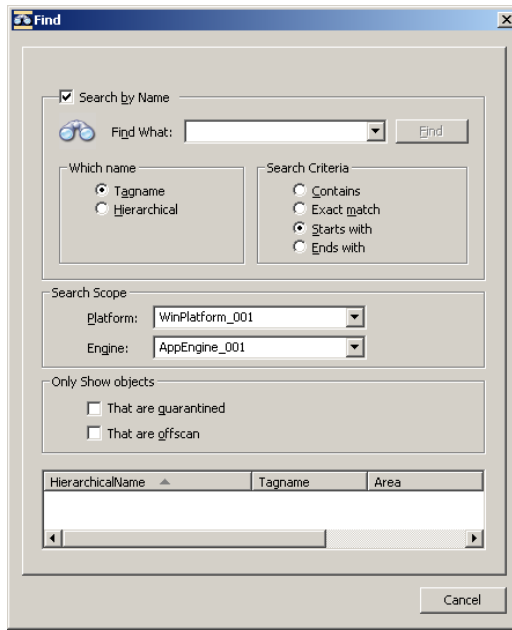
2   Select the **Search by Name** check box.

3   In the **Find What** box, type or select a tag name. The **Find** button becomes active.

4   In the **Which Name** area, select either **Tagname** or **Hierarchical**.

5   In the **Search Criteria** area, click a search option.

6   In the **Search Scope** area, select a platform and an engine.

7   In the **Only Show Objects** area, select the **That Are Quarantined** and **That Are OffScan** check boxes to limit the search scope.

8   Click **Find**.

To find an object without using the name

1   On the **Edit** menu, click **Find Object**.

2   Clear the **Search by Name** check box.

3   In the **Search Scope** area, select a platform and an engine.

4   In the **Only Show Objects** area, select the **That Are Quarantined** and **That Are OffScan** check boxes to limit the search scope.

5   Click **Find**.

Closing Object Viewer

By default, when you close the Object Viewer, your settings are not saved, including the attributes you selected for the **Watch** window. You can choose to save the watch windows you create. For more information about saving watch windows, see Saving a Watch Window on page 19.

To close the Object Viewer

◆   On the **File** menu, click **Exit**.

Chapter 2

Viewing Attributes

Using Object Viewer, you can view the attributes of all ApplicationObjects in your Galaxy application from any workstation used in the application.

Viewing an Object's Attribute Data

All AutomationObjects consist of attributes and common properties such as data type, initial value, and value range. Each object's set of attributes appears in the details pane when you select the object in the console tree.

To view an object's attribute data

1   Start Object Viewer. Object Viewer's main window appears. The object in focus in the IDE or Platform Manager is put into focus in the console tree of the Object Viewer.

2   To view another object's attributes, select the object in the console tree.

Quality

Every readable attribute is assigned a quality property that matches one of four categories.

Quality	Description
Good	Data is good and can be used.
Uncertain	Data is questionable, but can be used.
Initializing	Data is not yet available, but will be soon.
Bad	Data cannot be used.

Status

The status of an ApplicationObject's attribute describes whether a particular Read or Write request succeeded or failed. Possible status conditions include:

Status	Description
OK	Operation completed successfully.
Pending	Request is received, but is not yet complete. A transitory status.
Warning	Operation completed successfully, but with some warning condition. Applies only to Write actions.
Communication Error	Request failed due to an error communicating with the target ApplicationObject.
Configuration Error	Request failed due to an error in configuration.
Operational Error	Request failed due to an operator error.
Software Error	Request failed due to an internal software error.
Security Error	Request failed due to insufficient security access rights.
Other Error	All other errors.

Understanding Failed Requests

When a failure occurs during a request, the details of the error appear in a dialog box, which contains the source of the error and a description of the error.
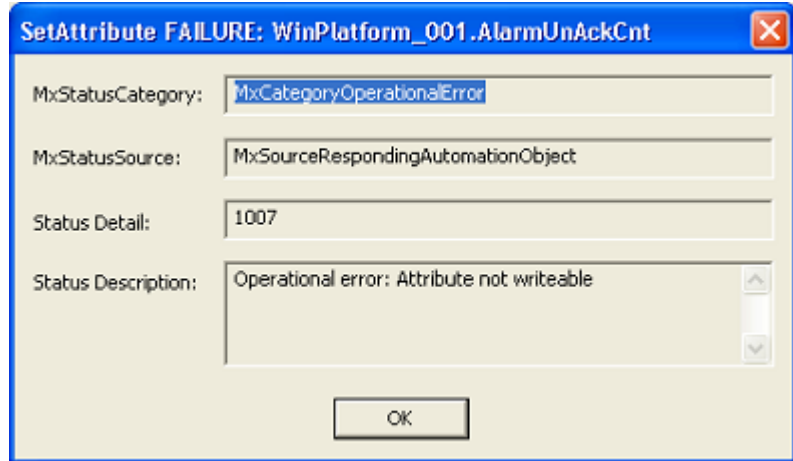
Communication Errors

Communication errors include the following:

Source	Description	Reason
Requesting NMX	Request Timed Out	A message was not processed in a timely manner.
Requesting NMX	Communication Error: Platform communication error	Attempt to get or set an attribute from an ApplicationObject on a remote platform with the network down between the two platforms.
Responding NMX	Communication Error: Engine communication error	Attempt to get or set an attribute from an ApplicationObject on a remote engine that is currently not running, but deployed.
Responding NMX	Communication Error: Engine communication error	Attempt to get or set an attribute from an ApplicationObject on a remote engine, but that remote engine is currently undeployed while the remote platform is deployed.
Responding Automation Object	Index out of range	Attempt to get or set an attribute from an ApplicationObject attribute that is an array, but specified an array index that is out of range.

Configuration Errors

Configuration errors include the following:

Source	Description	Reason
Responding LMX	Invalid Object ID	Attempt to get or set an attribute from an ApplicationObject on a remote engine, but that remote ApplicationObject is currently undeployed while the remote engine is deployed.
Requesting NMX	Invalid Platform ID	Attempt to get or set an attribute from an ApplicationObject on a remote platform, but that remote platform is currently undeployed.
Requesting LMX	Invalid reference	Attempt to get or set an attribute from an ApplicationObject that is not yet configured in the system. A bad reference.
Responding NMX	Invalid Engine ID	Attempt to get or set an attribute from an ApplicationObject on a remote engine, but that remote engine is currently undeployed while the remote platform is deployed.

Operational Errors

Operational errors include the following:

Source	Description	Reason
Responding Automation Object	Attribute not writable	Attempt to set an attribute in an ApplicationObject that cannot be written to.
Responding Automation Object	Write access denied.	Attempt to set an attribute in an ApplicationObject that can be written to, but that the user cannot write to. This can be an operational error (the attribute is read only) or a security error (the current user does not have permission to write to the attribute).
Responding Automation Object	Software error: The data to be set was to the wrong data type.	Attempt to set an attribute in an ApplicationObject can be written to, but with a data type that cannot be written to because it cannot be coerced. For example, trying to write a Boolean value of True to an attribute of type QualifiedStruct or QualifiedEnum.

Sorting Data

You can sort the data shown in the details pane in either ascending or descending order by clicking any column heading. You can show hidden attributes in the details pane by selecting the **Include hidden** command from the **Options** menu. For example, click the **Attribute Name** heading to sort the list by attribute name. Attribute names appear in ascending or descending alphabetical order.

Hidden attribute names include leading underscores and appear at the top of an ascending order list. For example, the following figure shows the _AdviseOnlyActiveEnabled hidden attribute, which indicates whether Advanced Communication Management is active or not.

Attribute Name ▲	Value	Timestamp	Has Quality/Timestamp
__Attr_Name_List_1	<AttrXML/>	9/4/2008 2:53:36.476...	true
_AdviseOnlyActiveEnabled	true		false
_AlarmModeEnum	Enable,Disable,...		false
_Attributes	No Data		false
_Category	ObjectApplication		false
_CategoryEnum	EnginePlatform,...		false
_ExecutionRelativeOrderEnum	None,Before,Af...		false
_ExternalName		9/4/2008 2:53:36.476...	true
_ExternalName		9/4/2008 2:53:36.476...	true
_InheritedAttrListNames	__Attr_Name_L...		false
_InternalName	Common	9/4/2008 2:53:36.476...	true
_InternalName	UserDefined	9/4/2008 2:53:36.476...	true
_Warnings	No Data		false
AlarmInhibit	false		false
AlarmMode	Enable		false
AlarmModeCmd	Enable		false
Area	Area_001_001		false

Viewing Attributes in a Watch Window

You can use the watch window to view an attribute or a group of attributes apart from the entire list of attributes.

The attributes in the watch window are listed by their **AttributeReference**, which shows which object the attribute belongs to.

For example, the AppEngine_001 object contains AlarmOnCnt and AlarmUnAckCnt attributes. When you add it to a watch list, the object's tag name is appended to the reference string.

AttributeReference	Quality	Status	Value	
AppEngine_001.AlarmOnCnt	C0:Good	Ok	0	
AppEngine_001.AlarmUnAckCnt	C0:Good	Ok	0	

◄◄ ◄ ► ►◄ \ **Watch List 1** /

To view selected attributes in a watch list

1 Select an ApplicationObject from the console tree. A list of its attributes appears.

2 Add an attribute to the watch list.

- In the details pane, right-click an attribute to place it on the watch list. Click **Add to Watch**. The attribute in the **AttributeReference** format, along with its data, appears in the watch list.

- Right-click in the watch window and click **Add Attribute Reference**. In the **Add Attribute Reference** dialog box, type the attribute name in the following format: Object Reference.Attribute Reference. For example, enter SystemArea.ScanState to view the ScanState attribute of the SystemArea object.

3 To add a block of attributes to the watch window, hold down the SHIFT key and click the left mouse key while selecting the first and last attribute of the block.

4 To add a random list of attributes to the watch window, hold down the CTRL key and click the left mouse button while selecting attributes.

Adding a Watch Window

By default, a single watch window appears in the Object Viewer. You can add more watch windows to view different groups of attributes or view attributes of different ApplicationObjects.

Note If attributes already appear in the watch window, right-click away from the list of attributes to open the correct shortcut menu.

To add a watch window

1 Right-click in the watch window and click **Add Watch Window**. A new watch window appears with the default tab name, Watch List 2.

2 To rename the new watch window, right-click it and click **Rename Tab**. Type the name of the watch window in the **Rename Tab** dialog box and click **OK**.

3 Add attributes to the watch window or add another watch window.

4 Move from one watch window to another by clicking the tabs.

Saving a Watch Window

You can save a watch window and reuse it each time you start Object Viewer.

To save a watch window

1   Right-click in the **Watch List** and select **Save As** to save the watch list. The **Save As** dialog box appears.

2   Select the folder path to save the watch window, which is an XML file.

3   Click **Save**.

Removing Attributes from Watch Windows

The attributes that you add to watch windows remain until you remove them or until you close Object Viewer. For example, if you are viewing the attributes of an AppEngine and place some of its attributes in a watch window, those attributes remain even when you select another object in the console tree.

Note This action does not delete the attribute from the object. The attribute is viewable in the details pane.

To remove an attribute from a watch window

◆   In the watch window, right-click the attribute you want to remove and click **Remove from Watch**. The attribute is removed from the watch window.

Chapter 3

Modifying Attribute Values

You can modify an attribute's value for diagnostic testing. You must have the proper security permissions to do this and the attribute's value must also be changeable.

Before making modifications to any attribute, you must be familiar with the attributes and their functions. Also, you must understand the effects that changing attribute values can have on your Galaxy application.

Attribute Properties

Before modifying an attribute, check its category shown in the **Category** column to determine whether modification is possible.

When you try to modify an attribute, a dialog box appears that shows the attribute's type and current value. Use this information as a guide for continuing.

Category Property

An attribute's Category property determines if the attribute is writable. The only categories that you can write to are:

- Writeable_U
- Writeable_US
- Writeable_UC
- Writeable_USC
- Writeable_UC_Lockable
- Writeable_USC_Lockable

The letters included in the Writable categories mean the following:

Letter	Description
U	UserSets are OK. You can modify these in the Object Viewer.
S	SupervisorySets are OK. You can modify these only with an application function. You cannot modify them in the Object Viewer.
C	Configtime time sets only. You can modify these only when you are configuring the object. You cannot modify them in the Object Viewer.

Value Property

You can only modify the value property of an attribute shown in the **Value** column. The data type of the attribute shown in the **Type** column indicates the kind of value you can assign to the attribute.

Timestamp Property

You can modify the timestamp of an attribute shown in the **Timestamp** column. The **Has Quality/Timestamp** column shows whether an attribute has a timestamp associated with its value.

| Attribute Name ▲	Value	Timestamp	Has Quality/Timestamp	Quality
ExecutionRelatedObject			false	C0:Good
ExecutionRelativeOrder	None		false	C0:Good
HierarchicalName	UserDefined_0…		false	C0:Good
Host	Area_001_001		false	C0:Good
InAlarm	false		false	C0:Good
IntUDA	0	9/4/2008 2:53:37.195…	true	20:Initi…
IntUDA._AccessModeEnum	Input,InputOut…		false	C0:Good
IntUDA._ExternalName	IntUDA	9/4/2008 2:53:36.476…	true	C0:Good
IntUDA._InternalName	AnalogUtilities.I…	9/4/2008 2:53:36.476…	true	C0:Good

Modifying an Attribute Value

You can only modify attribute values if you have the proper privileges and the attribute is writable. Check the **Category** value in the details pane for the attribute you want to modify. You cannot modify Calculated and SystemWriteable attributes.

Some attribute values affected by the changed attribute are updated only after you select the attribute. For example, an object's ScanStateCmd controls the object's scan state, with True being on scan, False being off scan. The object also has a ScanState attribute that indicates the current scan state of the object.

Assuming ScanStateCmd and ScanState are False, change ScanStateCmd to True. Notice that the object's ScanState attribute value remains False. Select the ScanState attribute. Its value changes to True.

To modify an attribute value

1   Select the object that contains the attribute you want to change.

2   Right-click the attribute and click **Modify**. A **Modify <data type> Value** dialog boxes appears, related to the data type for the selected attribute.
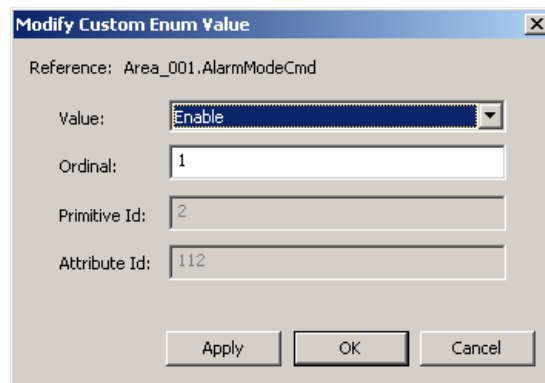
3   Modify the values as needed.

4   Click **Apply** and click **OK**. The new value appears in the **Value** column of the details pane for that attribute.

Modifying an Attribute from the Watch Window

You can change an attribute's value while in a watch window.

Important Attributes in the watch window update immediately. Attributes in the details pane update when you click them.

To modify an attribute from the watch window

1 In the watch window, double-click the attribute. A dialog box related to the attribute's data type appears.

2 If the attribute is writable, enter or select the new value for the attribute.

3 Click **Apply** and click **OK**. The new value appears in the **Value** column of the watch window for that attribute.

Viewing Changes Dynamically

Attribute values shown in the details pane are static. You must click on an attribute in the details pane to update the display.

You may have a configuration in which the Galaxy Repository node was upgraded, but other nodes were not upgraded. If you use ObjectViewer on the upgraded node to view information for attributes from a non-upgraded node, the time stamps should not be considered as valid source times. In this case, the time stamps reflect the time of the local node (the one running ObjectViewer) for the attributes running on the non-upgraded node.

Attribute values shown in the watch window are updated immediately when the attribute's value changes.

For example, objects have two common attributes, ScanStateCmd and ScanState. ScanStateCmd controls the scan state of the object (on scan or off scan). ScanState shows the last known scan state of the object.

If you place the ScanState attribute in a watch window and change the ScanStateCmd attribute in the details pane, the ScanState attribute is updated immediately. Instead, if you place the ScanStateCmd attribute in a watch window, leave the ScanState attribute in the details pane, and then change the value of ScanStateCmd, the ScanState attribute is not updated until you select it in the details pane.

Setting an ApplicationObject On Scan

The on scan state indicates the object's run-time state, which means it is performing its normal processing as part of its execute method.

When setting AppEngines on scan:

- The hosting WinPlatform's status must also be on scan.

- Any object hosted on the AppEngine is automatically set on scan.

To set an ApplicationObject on scan

1 Select the object in the console tree.

2 In the details pane, right-click the **ScanStateCmd** attribute and click **Modify**. The **Modify Boolean Value** dialog box appears.

3 Assuming the current value is **False** (off scan), click **True**, click **Apply**, and then click **OK**.

   Note that the **ScanState** attribute's value in the details pane remains False (off scan).

4 To update the display, click the **ScanStateCmd** attribute.

Setting an ApplicationObject Off Scan

Off scan is the run-time state that indicates that an object is idle and not ready to run.

Because WinPlatforms host AppEngines, you must ensure that all AppEngines hosted by the WinPlatform are off scan before setting the WinPlatform off scan. An error message appears if you try to set a WinPlatform off scan while its hosted AppEngines are still on scan.

Although AppEngines host other objects, it is not necessary for all the objects to be off scan before setting the AppEngine off scan. When you set an AppEngine off scan, all of its hosted objects are automatically set off scan.

To set an ApplicationObject off scan

1   Select the object in the console tree.

2   In the details pane, right-click the **ScanStateCmd** attribute and click **Modify**. The **Modify Boolean Value** dialog box appears.

3   Assuming the current value is **True** (on scan), click the **False** option button, click **Apply** and then click **OK**.

Note that the **ScanState** attribute's value in the details pane remains True (on scan).

4   To update the attribute value to False, select it.

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