

Wonderware Historian Administration Guide

Invensys Systems, Inc.

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Contents

Welcome.....	11
Wonderware Historian Documentation Set.....	11
Documentation Conventions.....	12
Technical Support	13
Chapter 1 Getting Started with Administrative Tools	15
About the System Management Console	16
Starting the System Management Console	17
Using the Console Tree	18
Creating Server Groups	19
Registering Wonderware Historian Servers	20
Using the Management Console.....	24
Starting and Stopping Wonderware Historian.....	25
Starting and Stopping Modules.....	27
Configuring General Startup Options.....	29
Shutting Down the Entire Wonderware Historian	30
Configuring Wonderware Historian to AutoStart	32
Viewing Status Information	34
Status Bar Information.....	35
Using the Configuration Editor.....	36
Connecting to the SQL Server	37
Configuration Editor Toolbar Buttons	38
Accessing Properties for an Item	39

Deleting an Item.....	39
Creating a New Item.....	39
Filtering Tags in the Details Pane.....	40
Determining the Configuration Editor Version.....	41
System Management Console Menu Commands.....	42
Closing the System Management Console.....	44
Wonderware Historian Utilities.....	44
Microsoft SQL Server Administrative Tools.....	44
Microsoft SQL Server Management Studio.....	44
SQL Server Configuration Manager.....	46
Administrative Tools for the Windows Operating System.....	46
Chapter 2 Configuring Tags.....	47
Accessing Tag Information.....	48
Configuring Analog Tags.....	48
Editing General Information for an Analog Tag.....	48
Editing Acquisition Information for a Tag.....	51
Editing Storage Information for an Analog Tag.....	53
Editing Limit Information for an Analog Tag.....	56
Editing Summary Information for an Analog Tag.....	60
Adding an Analog Tag.....	62
Configuring Engineering Units.....	63
Configuring Discrete Tags.....	66
Editing General Information for a Discrete Tag.....	66
Editing Storage Information for a Discrete Tag.....	67
Adding a Discrete Tag.....	69
Configuring Message Pairs.....	70
Configuring String Tags.....	73
Editing General Information for a String Tag.....	73
Editing Storage Information for a String Tag.....	74
Adding a String Tag.....	76
Configuring Event Tags.....	78
Copying Tag Definitions.....	78
Deleting a Tag.....	79
Organizing Tags into Groups.....	79
Adding a Group.....	80
Renaming a Group.....	81
Adding a Tag to a Group.....	81
Deleting a Group or Tag Reference.....	82
Pre-allocating Memory for Future Tags.....	82

Chapter 3	Importing and Exporting Configuration Information.....	85
	Importing an InTouch Data Dictionary	85
	Before You Import	86
	Performing a Dictionary Import or Re-Import	91
	Viewing Tags Associated with an InTouch Node	101
	Exporting or Importing Configuration Information with a Text File	103
	Encoding Formats for Configuration Exports.....	104
	Configuration Exporter Error Log.....	104
	Performing a Configuration Export.....	105
	Performing a Configuration Import	112
	Editing the Configuration Text File	115
Chapter 4	Configuring Data Acquisition.....	119
	Accessing Data Acquisition Information.....	120
	Configuring IDASs	120
	Editing General Information for an IDAS	120
	Editing Advanced Information for an IDAS	122
	Adding an IDAS.....	124
	Deleting an IDAS	125
	Configuring I/O Server Types.....	125
	Editing I/O Server Type Properties.....	125
	Adding an I/O Server Type	126
	Deleting an I/O Server Type	127
	Configuring I/O Servers	127
	Editing General Information for an I/O Server	128
	Editing Storage Rule Information for an I/O Server ..	129
	Adding an I/O Server.....	132
	Deleting an I/O Server	132
	Configuring Topics	133
	Editing General Information for a Topic.....	133
	Editing Storage Rules for a Topic.....	134
	Adding a Topic.....	137
	Deleting a Topic.....	138
	Reinitializing I/O Topics	139

Chapter 5 Managing Data Storage 141

Managing the Wonderware Historian Runtime	
Database	142
Changing the Properties for the Runtime Database..	143
Managing the Runtime Database	144
Backing Up the Runtime Database.....	145
Managing a Runtime Database Object	149
Space Management for Event and Summary History	150
Managing Wonderware Historian History Blocks	150
Viewing History Blocks.....	151
Starting a New History Block.....	152
Editing History Block Storage Locations.....	153
Backing Up History Blocks.....	155
Adding History Blocks from Prior Versions to the System	156

Chapter 6 Importing, Inserting, or Updating History Data..... 157

Importing Data from an InTouch History File	158
Performing the InTouch Data Import	160
Importing Data from CSV Files	164
Configuring CSV File Import Folders	166
About Normal CSV File Imports	167
About Fast Load CSV File Imports	167
General File Format for a CSV Import	168
Formatting the CSV File for a Normal Import.....	168
Example CSV Files for a Normal Import.....	170
Formatting the CSV File for a Fast Load Import.....	171
Example CSV Files for a Fast Load Import.....	173
Handling of NULL Values in CSV Files	174
Copying a CSV File into an Import Folder	175
Inserting or Updating Data with Transact-SQL Statements.....	175
INSERT ... VALUES Syntax	176
Using the wwVersion Parameter for INSERTs	178
UPDATE Syntax	181
Guidelines for Importing, Inserting, and Updating History Data	183
Updating Replicated Data	185

Chapter 7 Managing and Configuring Replication 187

Adding a Replication Server	188
Specifying Naming Schemes for Replication	193
Editing Replication Server Properties	197
Deleting a Replication Server	199
Configuring Tags to Be Replicated	199
Adding a Single Tag for Simple Replication	200
Adding Multiple Tags for Simple Replication	201
Editing Simple Replication Tag Properties	202
Deleting a Simple Replication Tag	203
Adding a Replication Schedule	204
Editing Replication Schedule Properties	206
Deleting a Replication Schedule	208
Adding a Replication Group	208
Editing Replication Group Properties	210
Deleting a Replication Group	211
Creating a Replication Group for Multiple Servers ...	212
Adding Summary Tags	213
Adding a Single Summary Tag	213
Finding Source Tags	215
Adding Multiple Summary Tags	218
Creating a Summary Tag Quickly using Default Settings	220
Editing Summary Tag Properties	221
Deleting Replication for a Summary Tag	223
Viewing Source Details for a Summary Tag	224
Viewing the List of Associated Replicated Tags for a Tag	226

Chapter 8 Managing Security 227

Verifying the Authentication Mode for a SQL Server ...	227
Managing Logins	229
Viewing Login Properties	230
Adding a Login	230
Local Times and System Times	234
Managing Users and Roles	235
Viewing All Users and Roles for a Database	235
Adding a New Database User	236
Adding a User to a Role	237

Managing Permissions.....	238
Setting Object Permissions.....	239
Setting Statement Permissions.....	241
Managing Passwords	242
Adding a User to a Windows Operating System Group	244
Changing the Windows Login for Wonderware Historian Services	246
Chapter 9 Viewing or Changing System-Wide Properties	247
Viewing License Information.....	247
Refreshing the License Information.....	250
Editing System Parameters.....	251
Adding a System Parameter.....	251
Committing Configuration Changes	252
Turning Modification Tracking On/Off.....	254
Viewing Database Modifications	254
Viewing the Runtime Database Report	258
Changing the Default Network Protocol.....	259
Chapter 10 Monitoring the System.....	261
Monitoring the General Status of Wonderware Historian.....	261
Viewing the Current System Status	262
Viewing the Status of System Modules.....	264
Viewing System Status Messages	265
Monitoring Data Acquisition	266
Monitoring Replications.....	267
Monitoring Client Connections.....	268
Monitoring System Messages	269
Viewing Errors in the Windows Event Viewer.....	270
Monitoring System Tags from within InTouch HMI Software.....	271
Using Windows Performance Logs and Alerts	272
Chapter 11 Configuring Events	275
Accessing Event Information.....	276
Adding an Event Tag	276
Editing General Information for an Event Tag.....	279

- Configuring Detectors 280
 - Configuring a Specific Value Detector 281
 - Configuring a Schedule Detector 283
 - Configuring a Generic SQL Detector 284
 - Configuring an External Detector 284
- Configuring Actions..... 285
 - Configuring a Deadband Action 285
 - Configuring a Snapshot Action..... 287
 - Configuring a Generic SQL Action 288
 - Configuring an E-mail Action 290
 - Configuring a Summary Action 293
- Using the Tag Finder 297
 - Using the Form Query Tab 297
 - Using the SQL Query Tab..... 298
- Retrieving Logged Event Data 299
- Viewing Summary Information 300
 - Viewing Summary Tag Properties 301
 - Viewing Data for a Summary Tag 301
 - Viewing History for a Summary Operation 302
- Using ActiveEvent..... 303
 - Configuring Security Attributes for ActiveEvent 304
 - ActiveEvent Methods 308
 - Scripting Example: Triggering Events within an InTouch Application..... 313
 - Scripting Example: Triggering Multiple Events within Visual Basic 313

Chapter 12 Browsing the Archestra Model View Using Historian Clients 315

- Model View Representation in the Historian Namespace..... 315
- Model View Replication to the Historian 317
- Replication Configuration using the IDE..... 318
 - Configuring Replication for a WinPlatform 319
 - Configuring Replication for an AppEngine 320
- Enabling Replication at Runtime 321
- Viewing Historized Attributes in the Wonderware Historian Configuration Editor 321
- Browsing the Model Hierarchy in a Historian Client ... 322

Index 325

Welcome

This guide provides information about administering and maintaining installed Wonderware Historian servers. This guide describes the tools to administer the historian, as well as how to configure the system to start storing plant data. This guide also describes administrative tasks such as changing the default security, configuring system-wide parameters, and monitoring the system.

The Wonderware Historian software is tightly integrated with Microsoft products. A working knowledge of both Microsoft SQL Server and Microsoft Windows operating systems is required. You should be familiar with administering Microsoft SQL Server and understand how to use the administrative tools provided with Microsoft Windows operating systems.

For more information on Microsoft SQL Server or the Microsoft Windows operating system, see your Microsoft documentation.

Wonderware Historian Documentation Set

The Wonderware Historian documentation set includes the following guides:

- *Wonderware Historian Installation Guide* (InSQLInstall.pdf). This guide provides information on installing the Wonderware Historian, including hardware and software requirements and migration instructions.
- *Wonderware Historian Concepts Guide* (InSQLConcepts.pdf). This guide provides an overview of the entire Wonderware Historian system and describes each of the subsystems in detail.

- *Wonderware Historian Administration Guide* (InSQLAdmin.pdf). This guide describes how to administer and maintain an installed Wonderware Historian, such as configuring data acquisition and storage, managing security, and monitoring the system.
- *Wonderware Historian Database Reference* (InSQLDatabase.pdf). This guide provides documentation for all of the Wonderware Historian database entities, such as tables, views, and stored procedures.
- *Wonderware Historian Glossary* (InSQLGlossary.pdf). This guide provides definitions for terms used throughout the documentation set.

In addition, the *Wonderware® ArchedrA License Manager Guide* (License.pdf) describes the ArchedrA License Manager and how to use it to install, maintain, and delete licenses and license servers on local and remote computers.

A PDF file for each of these guides is available on the Wonderware Historian installation CD. You can easily print information from the PDF files. The Wonderware Historian documentation is also provided as an online help file, which can be accessed from the System Management Console management tool.

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.

The screen shots and instructions in this document use Windows Server 2008 SP2 and Microsoft SQL Server 2008 SP1. If you are using an earlier version of Windows or SQL Server, you may need to adjust the procedures slightly.

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

Getting Started with Administrative Tools

Administering the Wonderware® Historian (formally known as IndustrialSQL Server™) includes controlling system startup and shutdown, database configuration management, security, performance monitoring, error log control, and disk administration.

Administrative tools that you can use with the historian are:

- System Management Console
- Wonderware Historian Database Export/Import Utility
- InTouch History Importer
- Microsoft SQL Server administrative tools
- Windows administrative tools

About the System Management Console

Use the System Management Console to start and stop the Wonderware Historian software, monitor the system, and make configuration changes. The System Management Console is a saved Microsoft Management Console (MMC) file, which has an .msc extension. Microsoft Management Console is a container application that can host one or more third-party applications called "snap-ins."

The snap-in for the historian includes a main console tree to add one or more servers that can be administered. The console tree functions like Windows Explorer or the folder view in Internet Explorer. The snap-in also includes areas for monitoring and controlling each historian in the console tree, as well as for configuring each server.

The System Management Console can be installed on a different computer than the historians you want to administer. You can perform all monitoring and administrative tasks from a single computer anywhere on your network.

Some of the general functionality of the System Management Console is provided by the MMC container. See the Microsoft Management Console documentation for information such as:

- An overview of MMC.
- Opening, closing, and saving console files (.msc).
- Using the MMC menu bars and toolbars.
- Navigating in the console tree.
- Changing how columns appear in the details pane.

Note The System Management Console is different from regular consoles in that you can alter the position of the first column. Also, when you shut down the console and restart it, any changes to the column layout are not persistent.

- Adding additional snap-ins to a console file.

Starting the System Management Console

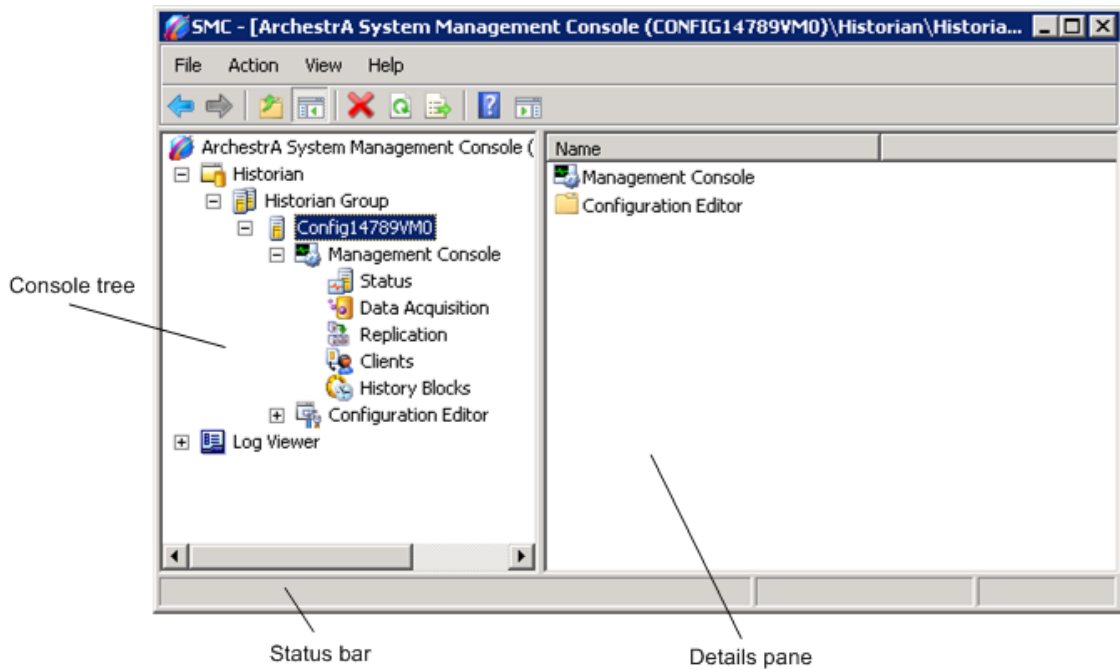
To start the System Management Console

- On the Windows **Start** menu, point to **Programs**, **Wonderware**, Wonderware Historian, and then click the **System Management Console** icon.



The System Management Console starts.

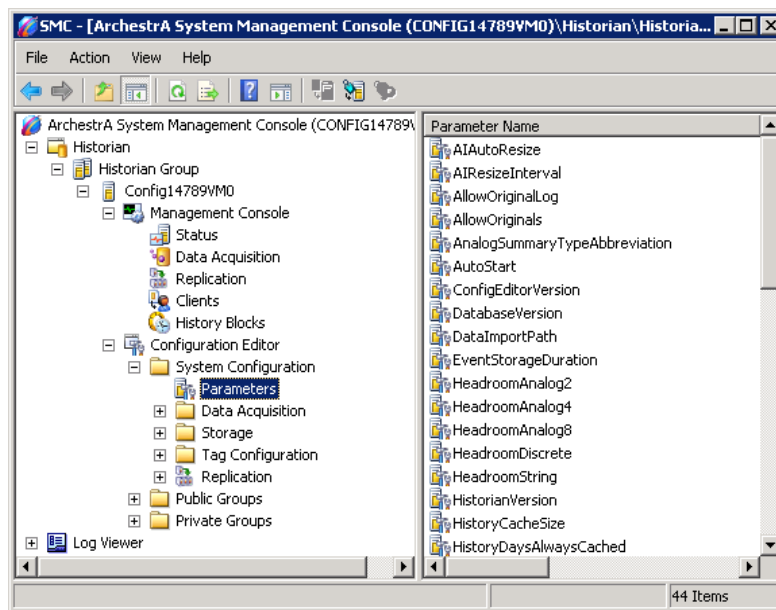
The System Management Console window consists of two main areas: the console tree and the details pane.



The console tree (also called the scope pane) contains all items available within the console. For the Wonderware Historian software, this includes the registered servers, the Management Console, and the Configuration Editor. Additional ArchestrA consoles, such as the Log Viewer, may appear in the ArchestrA System Management Console.

If the System Management Console is installed on the same computer as the historian, the server is automatically registered and appears under the default **Historian Group** item in the console tree. However, if the System Management Console is installed on a remote computer, you must register a historian. For more information, see "Registering Wonderware Historian Servers" on page 20.

The details pane (also called the results pane) shows the relevant data pertaining to the item currently selected in the console tree.



If you double-click on an item in the details pane, a **Properties** dialog box appears, if applicable.

For some of the tree items, you can export all associated information shown in the details pane to a text file. Exported items include **History Blocks** and anything under the **Configuration Editor** item. You can save a particular sub-range of rows by first highlighting them with the mouse. To export, right-click the parent item in the console tree pane and then click **Export List**. You can open the file using any text editor and then print the data.

Using the Console Tree

Before you can use the System Management Console to administer a Wonderware Historian, the historian server must be registered within the application. You can add and register any server that you can connect to on the network. Also, if you are administering many servers, you can organize them into groups in the console tree.

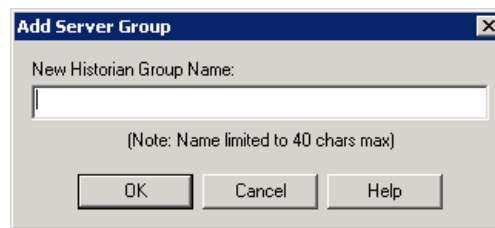
Creating Server Groups

In the System Management Console, you can organize multiple Wonderware Historian instances into groups. A default group, called "Historian Group," is created for you. You can add servers to this existing group, delete or rename the group, and add other groups.

Adding a Server Group

To add a server group

- 1 In the System Management Console tree, right-click on **Historian** and then click **New Historian Group**. The **Add Server Group** dialog box appears.



- 2 In the **New Historian Group Name** box, type the name of the group. The group name must contain no more than 40 characters.
- 3 Click **OK**.

Renaming a Server Group

To rename a server group

- 1 In the System Management Console tree, right-click on the server group and then click **Rename**.
- 2 In the box that appears, type a new name for the server group. The group name must contain no more than 40 characters.

Deleting a Server Group

WARNING! When you delete a server group, you delete all server registrations within that group.

To delete a server group

- In the System Management Console tree, right-click on the server group and then click **Delete**.

Registering Wonderware Historian Servers

Before you can administer a Wonderware Historian using the System Management Console, you must first register it within the console. When you register a server, you are giving the System Management Console a logical name and login IDs to connect to both:

- The Wonderware Historian Configuration Manager.
- The Microsoft SQL Server database.

You can register and administer multiple historians from within a single instance of the console. When registering a server, a list of your previously registered servers is available for selection.

To be able to administer the historian (for example, start and stop the server), you must provide a Windows security login that has administrative rights on the historian server computer. You also must be logged in as a Historian administrator, with the aaAdministrators database role enabled. If you are using the console remotely of the historian server, you do not need to be an administrator on the computer on which you are using the console on.

If you do not supply the login when you register the server, you are prompted to supply it when you attempt to execute an administrative command. If the login you supply does not have administrative permissions, the Management Console is set to read-only mode.

The SQL Server login you use must have the "aaAdministrators" database role to make changes to the historian system configuration, as it is stored in the Runtime database. By default, Windows accounts that are members of the local Windows "aaAdministrator" group are assigned this role. If you do not log in with the SQL Server administrative permissions, functionality is restricted. You must have aaPowerUsers capability enabled to make tag-level changes.

All registration information associated with a particular server name is stored in the Windows registry on the computer running the System Management Console, not in the console file (.MSC). In addition, all registration information is stored according to the current user. This has the following implications:

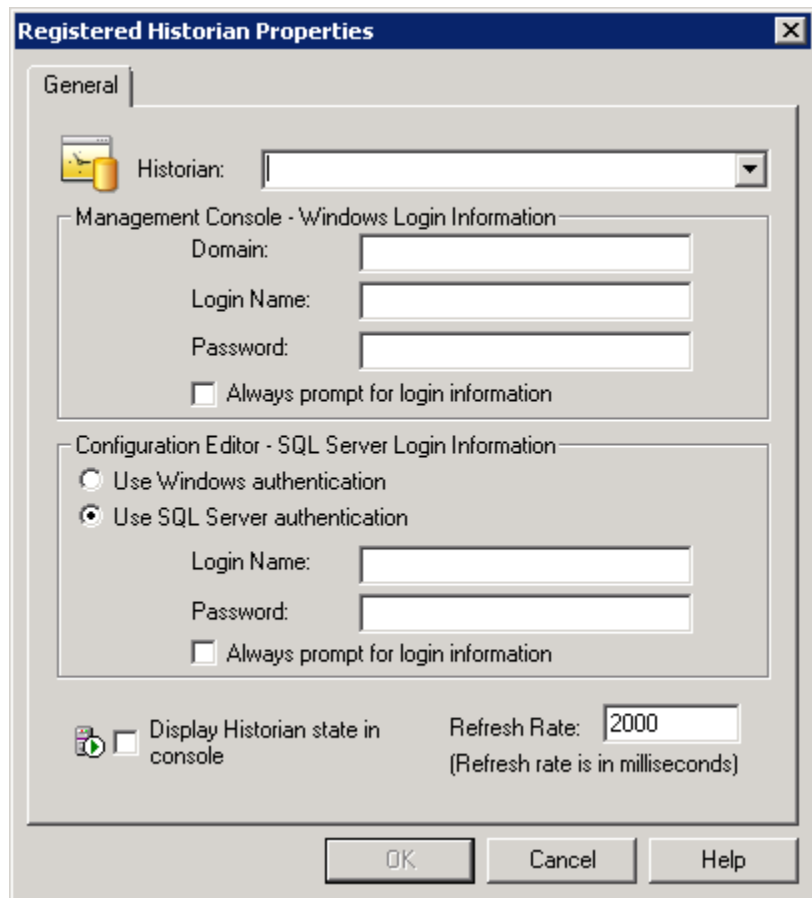
- If you register the same historian in multiple console files (.MSC), and you then edit the status or configuration for the historian in one .MSC file, the status and configuration is reflected in the other .MSC files in which that historian appears.

- If you copy a saved .MSC file from one computer to another, the registration properties for a particular historian are not copied with the .MSC file.
- The same historian can have different registration properties for each user who logs on to the System Management Console computer, even though all users may be using the same .MSC file.

Registering a Wonderware Historian Server

To register a server

- 1 In the System Management Console tree, right-click on the server (or group) and then click **New Historian Registration**. The **Registered Historian Properties** dialog box appears.



The image shows the "Registered Historian Properties" dialog box with the "General" tab selected. It contains the following fields and options:

- Historian:** A dropdown menu.
- Management Console - Windows Login Information:**
 - Domain: [Text Box]
 - Login Name: [Text Box]
 - Password: [Text Box]
 - Always prompt for login information
- Configuration Editor - SQL Server Login Information:**
 - Use Windows authentication
 - Use SQL Server authentication
 - Login Name: [Text Box]
 - Password: [Text Box]
 - Always prompt for login information
- Display Historian state in console
- Refresh Rate: [Text Box] 2000 (Refresh rate is in milliseconds)

Buttons: OK, Cancel, Help

- 2 In the **Historian** box, either type the name of a new server to register or select a previously registered server from the list. If you select a previously registered server, all options saved for that server appear in the dialog box. If you edit these options and click **OK**, the new settings are saved.

- 3 In the **Management Console - Windows Login Information** area, enter the Windows login information that the Management Console uses to connect to the Configuration Manager. The Configuration Manager runs as a Windows service on the historian computer.

Domain

Name of the Windows domain in which the login is validated. A domain is a group of computers that share a central database for security authentication.

Login Name

Valid login name for Windows.

Password

Valid login password for Windows.

Always prompt for login information

If selected, stored login information is not used and, instead, a login prompt appears each time access is required.

- 4 In the **Configuration Editor - SQL Server Login Information** area, configure the login that the Configuration Editor uses to authenticate to the associated Microsoft SQL Server.

Note Use the correct case for login IDs and passwords if your database is case-sensitive.

To use a valid Windows login, click **Use Windows authentication**. The login that you specified in step 3 is used. Also, make sure that the current Windows user is a valid user on the Wonderware Historian computer and that the user account is assigned to the proper Runtime database roles.

To use a valid SQL Server login, click **Use SQL Server authentication**. The following options become available:

Login Name

Valid login ID for the SQL Server.

Password

Valid login password for the SQL Server.

Always prompt for login information

If selected, stored login information is not used and, instead, a login prompt appears each time access is required.

- 5 Click **Display Historian state in console** to show Wonderware Historian information in the status window of the System Management Console.
- 6 In the **Refresh Rate** box, type the rate at which the status, client connections, and data acquisition information are refreshed in the details pane. You can specify a value of 0 or between 500 ms and 86,400,000 ms. If you set this rate to 0, the server status is checked one time when the console opens. After that, you need to manually refresh the details pane.
- 7 Click **OK**.

Editing Registration Properties

To edit registration properties for a server

- 1 In the System Management Console tree, right-click on the server, and then click **Edit Historian Registration Properties**. The **Registered Historian Properties** dialog box appears.
For information on the options in this dialog box, see "Registering a Wonderware Historian Server" on page 21.
- 2 Edit the properties and then click **OK**.

Deleting a Registered Server

Deleting a registered server simply removes it from the System Management Console list. All registration options are stored along with the server name in case you want to register it again later.

To delete a registered server

- 1 In the System Management Console tree, right-click on the server and then click **Delete**. You are prompted to confirm the deletion.
- 2 Click **Yes**.

Moving a Registered Server to a Different Group

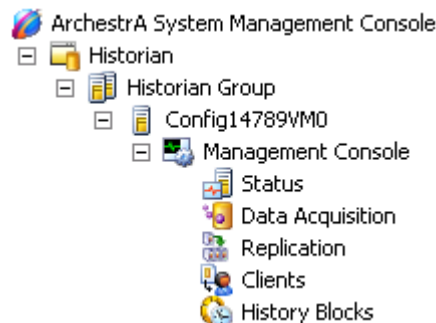
Moving a server to a different group within the console requires deleting it and then registering it again under the target group.

To move a registered server to a different server group

- 1 In the console tree, delete the server you want to move. For more information, see "Deleting a Registered Server" on page 23.
- 2 Right-click on the group to which you want to move the server, and then click **New Historian Registration**. The **Registered Historian Properties** dialog box appears.
- 3 In the **Historian** box, select the server you just deleted from the list.
- 4 Click **OK**.

Using the Management Console

You can use the Management Console portion of the main console tree to start and stop the Wonderware Historian, as well as perform some system-level tasks, such as monitoring the status of the server, creating new history blocks, and resetting error counts.



If you have multiple historian servers registered in the console, make sure that you select the server you want to manage before you right-click in the tree to select a short-cut menu command.

Starting and Stopping Wonderware Historian

Some of the functions performed during the start sequence are:

- Start the associated Microsoft SQL Server database, if not already running.
- Verify start information stored in the SQL Server and the registry.
- Start each historian process.
- Create a new history block on disk to store data.
- Start communication with the data sources (IDASs).
- Begin storing data.

Starting the Wonderware Historian

You cannot start the system if there is insufficient space in the circular storage location (less than 50 percent of the minimum threshold).

For the historian to start, TCP/IP must be enabled for the SQL Server. The following error message appears if TCP/IP is not enabled: "Fatal initialization error - unable to start. (Failed to open connection to configuration database)." By default, SQL Server Express and Developer Edition do not have TCP/IP enabled.

To start the historian

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Right-click on **Management Console** and then click **Start Historian**. The standard login screen appears.



- 3 Enter the domain and the login name and password. The domain can be “.” to identify the local computer.
- 4 Click **OK**.

Stopping the Wonderware Historian

When you stop the historian, it stops storing new data. However, it still functions as a data provider to clients. Modules such as retrieval, indexing, and the OLE DB provider are left running.

To stop the historian

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Right-click on **Management Console** and then click **Stop Historian**. The standard login screen appears.



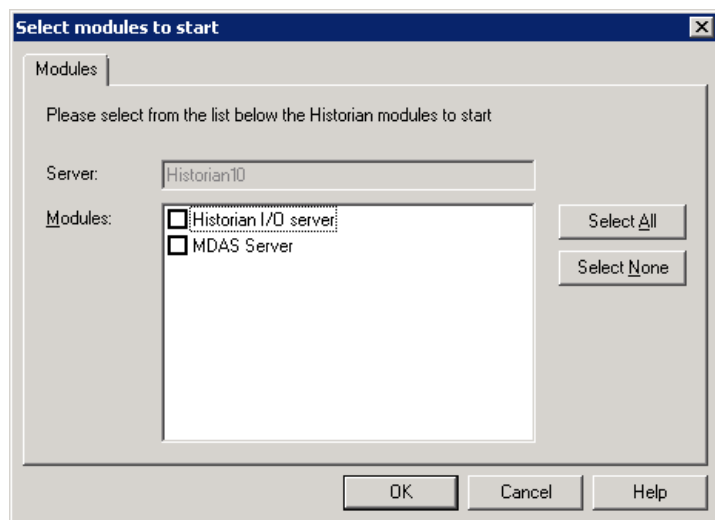
- 3 Enter the domain (if necessary) and the login name and password. You can optionally select to not stop IDASs configured for store-and-forward.
- 4 Click **OK**.

Starting and Stopping Modules

Some of the components that make up the Wonderware Historian can be stopped and started individually without affecting data acquisition, storage, and retrieval. These modules include the event subsystem and the Wonderware Historian I/O Server (aahIOSvrSVC).

To start a module

- 1 In the console tree, expand a server group and then expand a server.
- 2 Right-click on **Management Console**, point to **All Tasks**, and then click **Start Module**. The **Select Modules to Start** dialog box appears.



The **Server** box shows the name of the Wonderware Historian to which the options apply.

- 3 In the **Modules** window, click to select the optional modules to start or stop. (Only those modules that are currently stopped appear in the **Modules** window.)

For more information about the event system, see Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

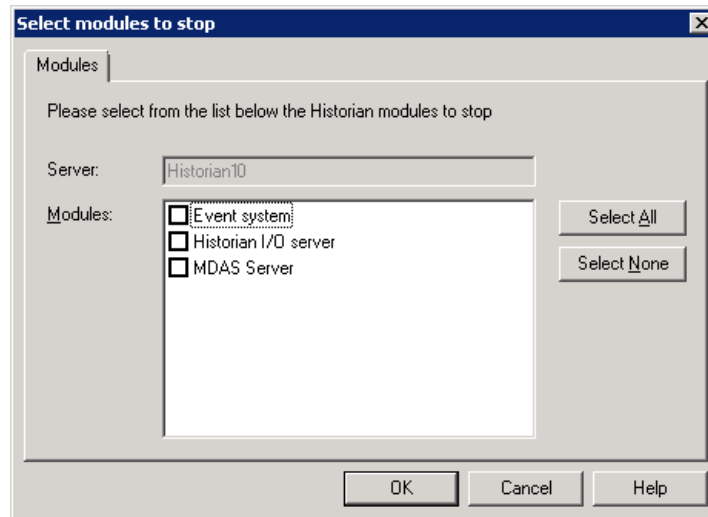
For more information about the Wonderware Historian I/O Server (aahIOSvrSVC), see "Wonderware Historian I/O Server" in Chapter 6, "Data Retrieval Subsystem," in your *Wonderware Historian Concepts Guide*.

To select all of the modules, click **Select All**. To cancel the selection of all of the modules, click **Select None**.

- 4 Click **OK**.

To stop a module

- 1 In the console tree, expand a server group and then expand a server.
- 2 Right-click on **Management Console**, point to **All Tasks**, and then click **Stop Module**. The **Select Modules to Stop** dialog box appears.



The **Server** box shows the name of the Wonderware Historian to which the options apply.

- 3 In the **Modules** window, click to select the optional modules to start or stop. (Only those modules that are currently started appear in the **Modules** list.)

For more information about the event system, see Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

For more information about the Wonderware Historian I/O Server (aahIOSvrSVC), see "Wonderware Historian I/O Server" in Chapter 6, "Data Retrieval Subsystem," in your *Wonderware Historian Concepts Guide*.

To select all of the modules, click **Select All**. To cancel the selection of all of the modules, click **Select None**.

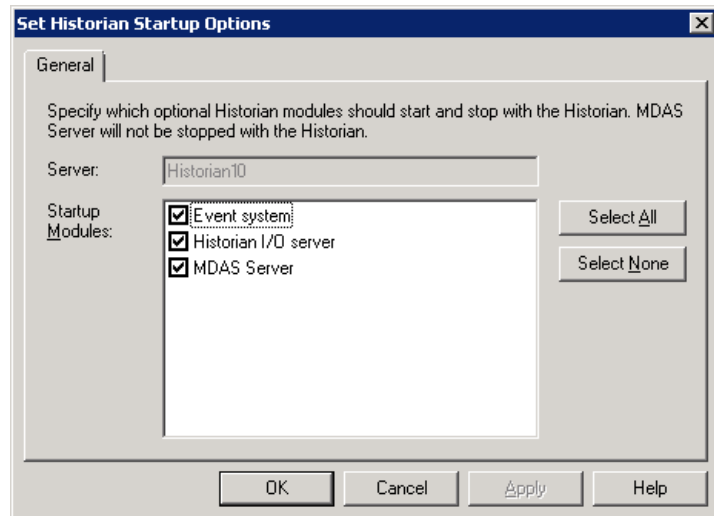
- 4 Click **OK**.

Configuring General Startup Options

You can configure the Wonderware Historian to automatically start when the computer starts. In addition, you can configure the optional modules to automatically start when the main historian subsystems start. These modules can be stopped and started individually without affecting data acquisition, storage, and retrieval.

To configure general startup options

- 1 In the console tree, expand a server group and then expand a server.
- 2 Right-click on **Management Console**, point to **All Tasks**, and then click **Server Startup Options**. The standard login screen appears.
- 3 Enter the domain, ID, and password in the dialog box and click **OK**. The **Set Historian Startup Options** dialog box appears.



The **Server** box shows the node name of the computer hosting Wonderware Historian to which the options apply.

- 4 To automatically start one or more optional modules when the Wonderware Historian starts, click to select the modules in the **Startup Modules** window.

To select all modules, click **Select All**. To cancel the selection of all modules, click **Select None**.

For more information about the event system, see Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

For more information about the Wonderware Historian I/O Server (aahIOSvrSVC), see "Wonderware Historian I/O Server" in Chapter 6, "Data Retrieval Subsystem," in your *Wonderware Historian Concepts Guide*.

- 5 Click **OK**.

Shutting Down the Entire Wonderware Historian

During a normal start and stop of the Wonderware Historian, the Configuration Manager service, the retrieval service, and the OLE DB provider are not shut down and they continue to run. A complete shutdown stops the entire system, including these services. Also, the Configuration Manager service is disabled so that it cannot be restarted.

Note The Configuration Manager service is different than the Configuration Editor portion of the System Management Console management tool.

To shut down the entire system

- 1 In the console tree, expand a server group and then expand a server.
- 2 Right-click on **Management Console**, point to **All Tasks**, and then click **Shutdown (and disable) Historian**.
- 3 Enter the domain, ID, and password in the dialog box and click **OK**.
- 4 You are prompted to verify the shutdown.
- 5 Click **OK**.

When the shutdown is complete, "Disconnected" appears for the system status.

Item	Value
System time	4/2/2002 12:26:07 PM
Time of last start	3/29/2002 9:13:35 PM
Elapsed time since last start	
Time of last stop	4/2/2002 12:25:32 PM
Time of last reconfiguration	3/29/2002 9:07:49 PM
Configuration status	Normal
System status	Disconnected
License status	Valid
Total number of fans in database	97

To start the system again, you first need to start the Configuration Manager service and then restart the historian.

To start the entire system

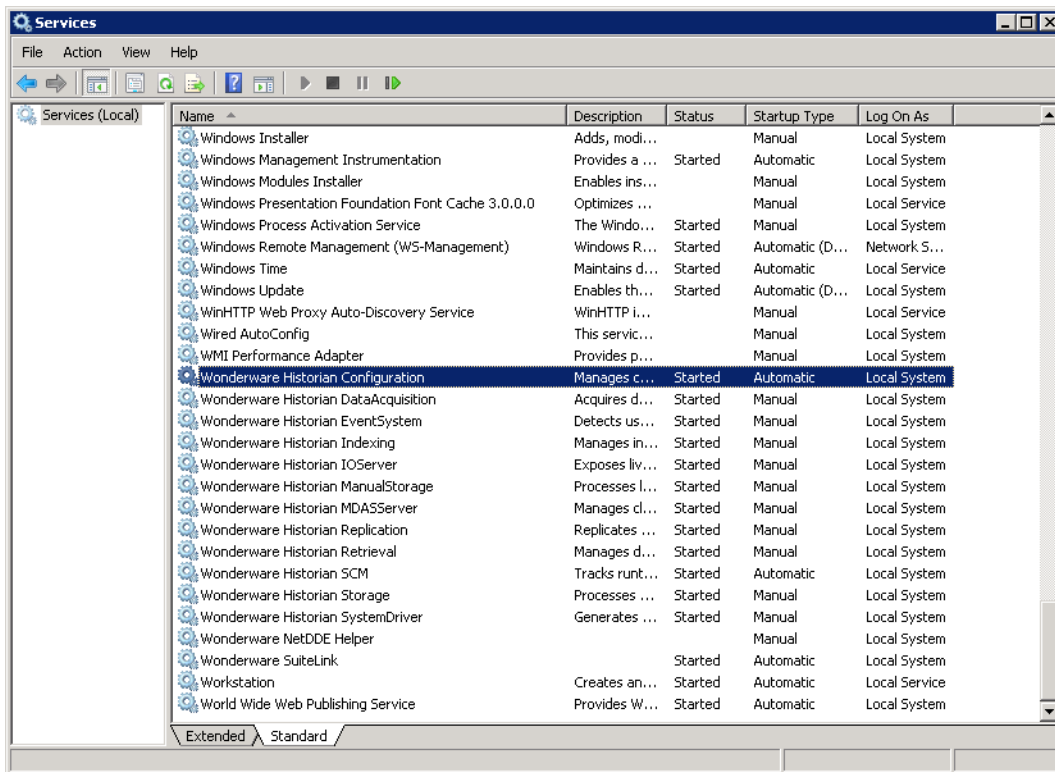
- 1 In the console tree, expand a server group and then expand a server.
- 2 Right-click on **Management Console**, point to **All Tasks**, and then click **Enable (allow to run) Historian**. A confirmation dialog box appears.
- 3 Click **OK**.
- 4 Right-click on **Management Console** and then click **Start Historian**. The standard login screen appears.
- 5 Enter the domain (if necessary) and the login name and password.
- 6 Click **OK**.

Configuring Wonderware Historian to AutoStart

You can configure Wonderware Historian to start automatically when the computer on which it is running starts up. Configure the Wonderware Historian Configuration Service to autostart and then configure a system parameter to allow the Wonderware Historian Configuration Service to autostart the rest of the historian system.

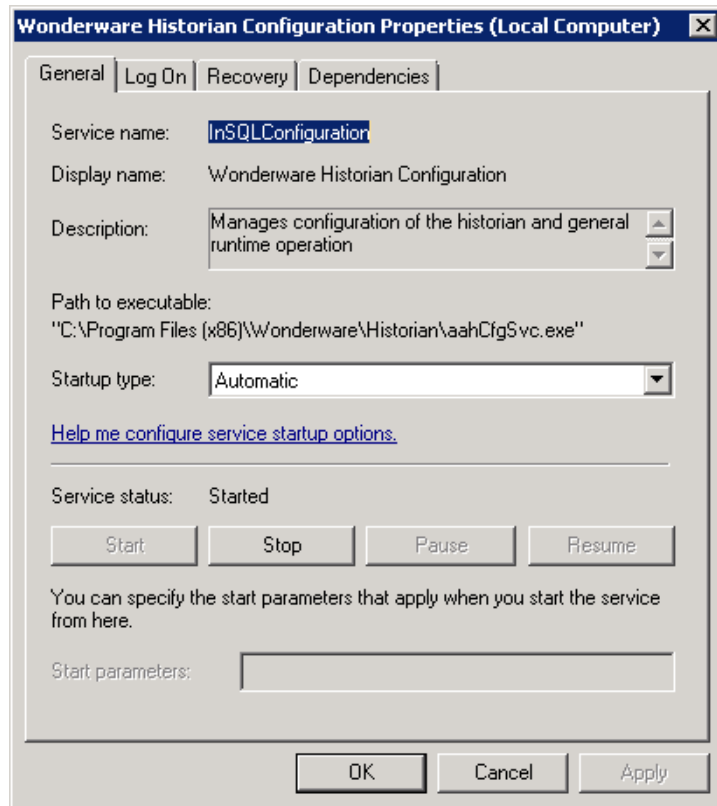
To configure the historian to autostart

- 1 On the Windows **Start** menu, point to **Programs**, point to **Administrative Tools**, and then click **Services**. The **Services** console appears.



- 2 In the console tree, click **Services**.

- 3 In the details pane, right-click on the Wonderware Historian Configuration service and click **Properties**. The **Wonderware Historian Configuration Properties** dialog box appears.

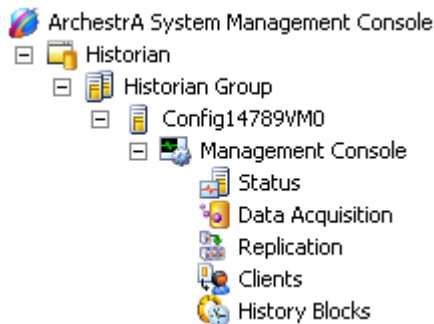


- 4 In the **Startup type** list, click **Automatic**.
- 5 Click **OK**.
- 6 Close the Services console. The Wonderware Historian Configuration service starts automatically when the computer starts.
- 7 Using the System Management Console, set the value of the AutoStart system parameter to 1. For information on setting the value of a system parameter, see "Editing System Parameters" on page 251.

For more information on system parameters, see "System Parameters" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

Viewing Status Information

Using the Management Console, you can monitor five main areas of the system: general system status, data acquisition, client connections, history blocks, and legacy error messages. These items appear in the console tree.



- If you click **Status**, the details pane shows the overall status for the Wonderware Historian, such as whether the server is running, the number of system errors, and the time since the last startup.
- If you click **Data Acquisition**, the details pane shows each data source (IOServer\topic or MDAS client) that is supplying the historian with data.
- If you click **Replication**, the details pane shows a list of servers to which this Historian is replicating data. On the server actually receiving the data, there will be a corresponding entry under its **Data Acquisition** node.

For more information on tag replication, see Chapter 9, "Replication Subsystem," in your *Wonderware Historian Concepts Guide*.

- If you click **Clients**, the details pane shows the status of all clients that are currently connected to the historian.
- If you click **History Blocks**, the details pane shows a list of all of the history blocks stored on the historian computer.

For more information on administering history blocks, see Chapter 5, "Managing Data Storage."

For more information on monitoring the general status, data acquisition, client connections, and the system message log, see Chapter 10, "Monitoring the System."

If you have multiple historian servers registered in the console, make sure that you select the server you want to manage before you right-click in the tree to select a short-cut menu command.

Status Bar Information

The status bar appears at the bottom of the console window. The status bar shows the total number of objects for selected items in the console tree.

Tree Item	Count
Data Acquisition	Number of data sources.
Clients	Number of Wonderware Historian clients.
History Blocks	Number of history blocks.
ArchestrA Logger	Number of log files.

The status bar also shows any errors pertaining to the state of the connection to the Configuration Manager on the historian computer. These errors appear only if you select the historian in the tree or any item below it.

Note If you click on a log file in the console tree, the status bar shows the path and file name of the log file, the number of displayed lines, and the total number of lines. For more information on monitoring log files, see "Monitoring System Messages" on page 269.

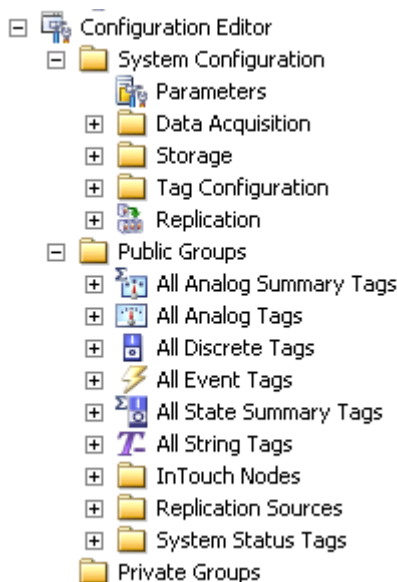
For example:

The screenshot shows the SMC (ArchestrA System Management Console) Log Viewer window. The window title is "SMC - [ArchestrA System Management Console (CONFIG14789VM0)\Log Viewer\Default Group\Local]". The window contains a tree view on the left and a log viewer on the right. The log viewer displays a list of log entries with columns for No., Date, Time, Process ID, Thread ID, Log Flag, Component, and Message. The status bar at the bottom shows "Connected".

No.	Date	Time	Process ID	Thread ID	Log Flag	Component	Message
7040	10/23/2009	12:26:07 PM	4380	4204	Info	aaHCFgSvc	Attempting to open pipe (\\.\pipe\CON
7041	10/23/2009	12:26:07 PM	4380	4204	Info	aaHStoreSvc	Client on pipe connected (\\.\pipe\CO
7042	10/23/2009	12:26:07 PM	4380	4204	Info	aaHCFgSvc	Successfully opened pipe (\\.\pipe\CO
7043	10/23/2009	12:26:07 PM	3800	6136	Info	aaHMDASCommo...	: Storage initialized to NoStorage [Stor
7044	10/23/2009	12:26:07 PM	4180	2728	Info	aaHMDAS	Real-time transmission thread ready [5
7045	10/23/2009	12:26:09 PM	4380	4204	Info	aaHCFgSvc	Attempting to open pipe (\\.\pipe\CON
7046	10/23/2009	12:26:09 PM	4380	4204	Info	aaHStoreSvc	Client on pipe connected (\\.\pipe\CO
7047	10/23/2009	12:26:09 PM	4380	4204	Info	aaHCFgSvc	Successfully opened pipe (\\.\pipe\CO
7048	10/23/2009	12:26:21 PM	4380	4204	Info	aaHCFgSvc	Driver started (Data acquisition on \\C
7049	10/23/2009	12:27:00 PM	4380	4204	Info	aaHManStSvc	Manual/late data processor started [C
7050	10/23/2009	12:27:00 PM	4380	4204	Info	aaHManStSvc	CSV File processor started [CONFIG14
7051	10/23/2009	12:27:00 PM	4380	4204	Info	aaHManStSvc	Storeforward processor started [CONF
7052	10/23/2009	12:27:00 PM	4380	4204	Info	aaHManStSvc	Fast CSV file import processor started
7053	10/23/2009	12:27:40 PM	5488	2124	Info	aaHIDASvc (local)	Could not start Wonderware NetDDE F
7054	10/23/2009	1:25:11 PM	4380	4204	Info	aaHCFgSvc	Remaining disk space on circular drive (
7055	10/23/2009	1:25:40 PM	5488	3580	Info	aaHIDASvc (local)	CONFIG14789VM0_2: Sending SuiteLin
7056	10/23/2009	1:25:42 PM	4380	4204	Info	aaHIDASvc	Sending SuiteLink time synchronization
7057	10/23/2009	2:21:02 PM	4380	4204	Warning	aaHCFgSvc	User supplied invalid credentials, acces
7058	10/23/2009	2:25:11 PM	4380	4204	Info	aaHCFgSvc	Remaining disk space on circular drive (
7059	10/23/2009	2:25:41 PM	5488	3580	Info	aaHIDASvc (local)	CONFIG14789VM0_2: Sending SuiteLin
7060	10/23/2009	2:25:42 PM	4380	4204	Info	aaHIDASvc	Sending SuiteLink time synchronization
7061	10/23/2009	3:22:41 PM	4380	4204	Warning	aaHCFgSvc	User supplied invalid credentials, acces
7062	10/23/2009	3:24:41 PM	4380	4204	Warning	aaHCFgSvc	User supplied invalid credentials, acces
7063	10/23/2009	3:25:10 PM	4380	4204	Info	aaHCFgSvc	Remaining disk space on circular drive (
7064	10/23/2009	3:25:43 PM	5488	3580	Info	aaHIDASvc (local)	CONFIG14789VM0_2: Sending SuiteLin
7065	10/23/2009	3:25:45 PM	4380	4204	Info	aaHIDASvc	Sending SuiteLink time synchronization

Using the Configuration Editor

Use the Configuration Editor portion of the console tree to configure the Wonderware Historian.

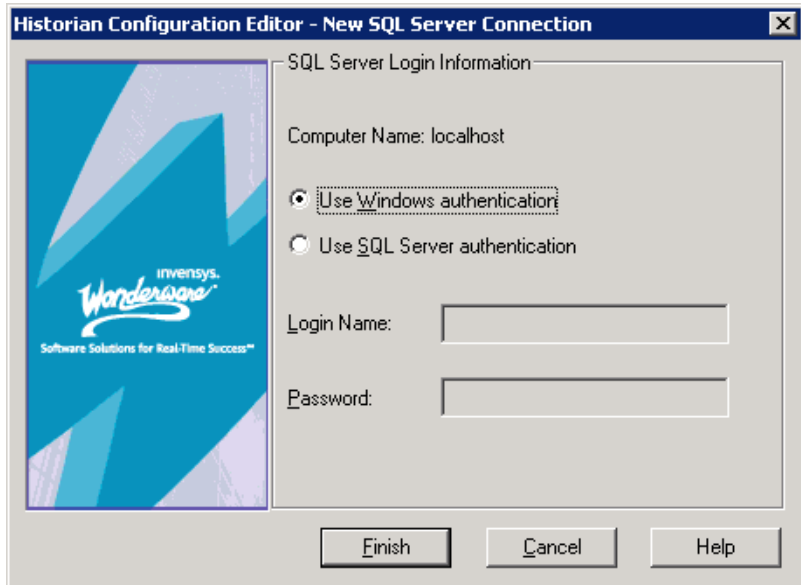


For example, the Configuration Editor allows you to:

- Import a tag data dictionary from an InTouch application. For more information, see "Importing an InTouch Data Dictionary" on page 85.
- Add, edit, and delete tags. For more information, see Chapter 2, "Configuring Tags."
- Configure data acquisition, such as I/O Servers, topics, and tags. For more information, see Chapter 4, "Configuring Data Acquisition."
- Add, edit, and delete event definitions. For more information, see Chapter 11, "Configuring Events."
- Configure paths to storage locations. For more information, see Chapter 5, "Managing Data Storage."
- Administer system-wide properties, such as modification tracking. For more information, see Chapter 9, "Viewing or Changing System-Wide Properties."
- Configure replication servers, groups, and tags. For more information, see Chapter 7, "Managing and Configuring Replication."
- Create groups in the public and private folders. For more information, see "Creating Server Groups" on page 19.

Connecting to the SQL Server

The Configuration Editor requires a valid Windows or SQL Server logon account to connect to the Wonderware Historian. You can specify this account when you register a server. If you did not configure the account upon registration, or if you selected to display a logon prompt, you need to provide a logon account as soon as you click the Configuration Editor item in the console tree.














For more information on SQL Server logins, see "SQL Server Security" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

When a connection is established, the Configuration Editor must evaluate the user permissions. If SQL Server authentication is used, the user is a member of the aaAdministrators or aaPowerUsers group, and full permissions are available. In all other cases, read-only permissions are applied.

Configuration Editor Toolbar Buttons

Toolbar buttons specific to the Configuration Editor are:

Button	Description
	Add a new item under the currently selected item in the console tree.
	Open a Properties dialog box for the currently selected item in the details pane.
	Delete the currently selected item.
	Start the wizard to add an analog tag.
	Start the wizard to add a discrete tag.
	Start the wizard to add an event tag.
	Start the wizard to add a string tag.
	Commit database changes to the system. For more information, see "Dynamic Configuration" in Chapter 3, "Configuration Subsystem," in your <i>Wonderware Historian Concepts Guide</i> .
	Start the Tag Importer wizard. For more information, see Chapter 3, "Importing and Exporting Configuration Information."
	Open a dialog box to search for database modifications. For more information, see "Modification Tracking" in Chapter 2, "System-Level Functionality," in your <i>Wonderware Historian Concepts Guide</i> .
	Open the Tag Finder dialog box to search for tags to add to a tag grouping in the console tree. For more information, see "Using the Tag Finder" on page 297.

MMC toolbars are not moveable or re-dockable.

Accessing Properties for an Item

To open the **Properties** dialog box for an item in the details pane, do any of the following:

- Double-click the item.
- Right-click on the item and click **Properties**.
- Select the item and click the **Properties** button.
- Select the item and click **Properties** on the **Action** menu.



Deleting an Item

To delete an item in the details pane, select the item and then perform any of the following:

- Click the **Delete** button.
- On the **Action** menu, click **Delete**.
- Press the **Delete** key on your keyboard.
- Right-click on the item and click **Delete**.



Note The delete option is not always available. For example, you cannot delete a topic if it still has tags associated with it.

Creating a New Item

To create a new item, select the console tree item under which you want to create the new item (for example, **Analog Tags**), and then perform any of the following:

- Right-click the console tree item and then click **New <Item Name>**.
- Click the **New Item** button.



Note Some of the items have special "New" toolbar buttons. For more information, see "Configuration Editor Toolbar Buttons" on page 38.

- On the **Action** menu, click **New <Item Name>**.

Note Not all console tree items support the addition of new sub-items.

Filtering Tags in the Details Pane

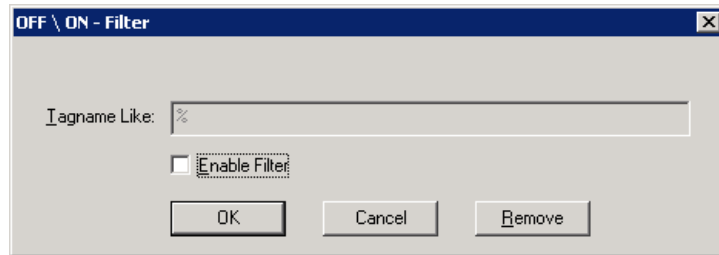
When you select certain items in the console tree, a list of associated tags appears in the details pane. For example, if you click the **All Analog Tags** item in the **Public Groups** folder, a list of all analog tags in the system appears. If you click a specific message pair in the **Messages** folder, a list of tags that use that message pair appears.

You can apply simple filtering to any list of tags that appears in the details pane. Also, you can configure a different filter for each tag list. A particular filter will remain associated with a list until you remove the filter.

Applying a Filter

To apply a filter

- 1 Right-click in the tag list in the details pane and click **Filter**. The **<item name> - Filter** dialog box appears.



- 2 Select the **Enable Filter** check box.
- 3 In the **Tagname Like** box, type the filter string. The maximum length of the filter string is 100 alphanumeric characters.

When filtering tags, use the percentage sign (%) as a wildcard character for any portion of the filter. For example, "SysDate%" or "SysPerf%ThreadCount."

Case sensitivity for the filter depends on the SQL Server settings. If the SQL Server is case-sensitive, then the filter is case-sensitive; if the SQL Server is case-insensitive, then the filter is case-insensitive. Also, the string you use is not validated.

- 4 Click **OK**.

The details pane refreshes automatically. The word "Filtered" appears in the bottom right corner of the details pane along with the number of tags that matches the filter string.

The filter remains in effect until you disable it or remove it, even if you close the System Management Console without saving your changes to the .msc file.

Disabling or Removing a Filter

Disabling the filter allows you to turn the filtering off without completely removing the last filter string you applied.

To disable the current filter

- 1 Right-click in the tag list in the details pane and click **Filter**. The **<item name> - Filter** dialog box appears.
- 2 Click to clear the **Enable Filter** check box.
- 3 Click **OK**. Notice that the filter string remains in the **Tagname Like** box.

To remove a filter

- 1 Right-click in the tag list in the details pane and click **Filter**. The **<item name> - Filter** dialog box appears.
- 2 Click **Remove**.

Determining the Configuration Editor Version

The version of the Configuration Editor that you are using must be the same version as the Wonderware Historian that you want to manage.

To determine the Configuration Editor version

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Click **Configuration Editor**.
- 3 On the **Help** menu, click **About Wonderware Historian Configuration Editor**. The **About Wonderware Historian Configuration Editor** dialog box appears, showing the current version.
- 4 Click **OK**.

System Management Console Menu Commands

The following commands appear on both the **Action** menu and on the shortcut menu that can be accessed by right-clicking an item in the console tree. The appearance of certain menu commands depends on which item is selected from the tree. Also, the same menu command may appear for multiple tree items.

This table does not describe standard menu commands such as **Copy** and **Delete**.

Command	Description
New Historian Group	Add a new server group to the console tree.
New Historian Registration	Register an Wonderware Historian for use with the console.
Edit Historian Registration Properties	Change the registration properties for the selected historian.
Start Historian/Stop Historian	Start or stop the historian.
Start Module/Stop Module	Start or stop individual modules that are a part of the historian.
Server Startup Options	Configure optional modules to start when the historian starts.
Reset Error Counts	Reset the number of errors and warnings back to 0.
Start New History Block	Start a new set of files on disk to store history data.
Rescan History Blocks	Perform a full refresh of history block information.
View License Information	View licensing details for the historian.
Refresh License Information	Update the licensing information.
Reinitialize Topic/All Topics	Disconnect and then reconnect to one or more topics.
Load Messages	Change the language in which system messages appear. This command only appears if you have existing error logs from versions prior to the IndustrialSQL Server version 9.0 historian.
Track Modifications	Show a list of modifications to the system.
Commit Pending Changes	Commit changes to the system configuration.
Import Tags	Import tag definitions from an InTouch application into the historian.

Command	Description
New IDAS	Add a new IDAS.
New I/O Server Type	Add a new I/O Server type.
New I/O Server	Add a new I/O Server.
New Topic	Add a new topic.
New Analog Tag	Add a new analog tag.
New Discrete Tag	Add a new discrete tag.
New String Tag	Adding a new string tag.
New Event Tag	Add a new event tag.
New Message	Add a new message.
New Engineering Unit	Add a new engineering unit.
New Tag	Add a new tag for the type you select in the console tree.
New Group	Add a new tag grouping in the Public Groups or Private Groups area of the console tree.
Add Tags to Group	Access the Tag Finder dialog box to search for tags to add to a tag group.
Filter	Apply a filter to the list of tags in the details pane.
Add Replication Schedule	Add a new replication schedule.
Create Replication Groups	Add new replication groups.
New Replication Server	Add a new replication server.
Add Single Tag	Add a single tag for replication.
Add Multiple Tag	Add multiple tags for replication.

Closing the System Management Console

If you made any changes to the System Management Console, such as making server registration changes or adding tag groups, you are prompted to save those changes when you close the console.

Wonderware Historian Utilities

The Wonderware Historian Database Export/Import Utility (aahDBDump.exe) is a stand-alone utility to export or import Wonderware Historian Server configuration information using a text file. For more information, see Chapter 3, "Importing and Exporting Configuration Information."

The InTouch History Importer (ITHistImporter.exe) is a stand-alone utility to import existing InTouch history data into the historian history blocks. For more information, see Chapter 6, "Importing, Inserting, or Updating History Data."

Microsoft SQL Server Administrative Tools

The Microsoft SQL Server administrative tools, such as Microsoft SQL Server Management Studio, are installed along with the server. Use these tools to start and stop the embedded Microsoft SQL Server and administer the Runtime database, including configuring security and performing database backups.

For more information on using these tools, see your Microsoft SQL Server documentation.

Microsoft SQL Server Management Studio

As an administrator, you will probably spend the majority of your time interacting with Microsoft SQL Server through the Microsoft SQL Server Management Studio, in which you can manage the Microsoft SQL Server areas of Wonderware Historian.

Using Microsoft SQL Server Management Studio, you can perform the following database functions (including the Runtime database):

- Register servers
- Manage backups
- Manage databases
- Manage devices

- Manage logins and permissions
- Manage replication
- Manage objects, such as tables, views, stored procedures, triggers, indexes, rules, defaults, and user-defined data types
- Schedule tasks
- Drag-and-drop objects from one server to another or within a server
- Generate SQL scripts

To start Microsoft SQL Server Management Studio, on the **Start** menu of the Windows Taskbar, point to the **Microsoft SQL Server** program group, and then click **SQL Server Management Studio**.

Registering a Server in Microsoft SQL Server Management Studio

The first time the Microsoft SQL Server Management Studio starts, the Local server node is added by default. To manage a remote server using Microsoft SQL Server Management Studio, you must first register it. When you register a server, you are giving the Microsoft SQL Server Management Studio a logical name and user account to log on to the Microsoft SQL Server database.

The instructions for registering a server vary depending on which version of Microsoft SQL Server you are using. See your Microsoft documentation for information on how to start the registration wizard.

Navigating in Microsoft SQL Server Management Studio

You must be connected to a server to manage it in Microsoft SQL Server Management Studio.

After you connect to the server, you can view the entire console tree associated with the server, including all of the devices and databases. You can expand folders just as you do in Windows Explorer.

SQL Server Configuration Manager

One of the ways to start the Microsoft SQL Server is to use the SQL Server Configuration Manager. This application is loaded as part of the Microsoft SQL Server installation. The System Management Console, used to start the Wonderware Historian, also starts the Microsoft SQL Server.

To start the Microsoft SQL Server

- 1 On the **Start** menu, point to the Microsoft SQL Server program group, then open the **Configuration Tools** folder, and click **SQL Server Configuration Manager**. The **SQL Server Configuration Manager** window appears.
- 2 In the **Server** list, click the default server name for Microsoft SQL Server. The services appear in the details pane.
- 3 Right-click the service you want to start and select **Start** to start the service. The status of the service appears at the bottom of the window.

Administrative Tools for the Windows Operating System

The Windows operating system includes a number of administrative tools that you can use to manage files on disk, monitor system events, and monitor system performance. For more information, see your Windows documentation.

Chapter 2

Configuring Tags

A tag is a variable in Wonderware Historian that represents a parameter or plant data point. For a tag, real-time or historical data is stored by the historian storage subsystem, and then retrieved, or read back, by the retrieval subsystem.

Each tag in the system is identified by a unique name. You can configure the following types of tags:

- Analog
- Discrete
- String
- Event
- Analog summary
- State summary

Note Analog summary and state summary tags are discussed in Chapter 7, "Managing and Configuring Replication."

Configuration information for each type of tag is stored in the historian, as well as the history for tags over time. Event tags do not store values, but rather definitions for events to be detected by the system and the subsequent actions to be triggered.

Using the Configuration Editor, you can view or edit information for existing tag definitions, create definitions for new tags, or delete existing tags.

For more information about tags, see "About Tags" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

Note If you already have tags defined for an InTouch application, you can import the definitions using the Tag Importer. For more information, see Chapter 3, "Importing and Exporting Configuration Information."

Accessing Tag Information

To access tag information

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **Analog Tags**.

Configuring Analog Tags

You can configure general information, acquisition details, storage details, limit information, and summary setup information for a selected analog tag, as well as add new analog tags to the system.

Editing General Information for an Analog Tag

To edit general information for an analog tag

- 1 In the System Management Console, expand a server group, and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **Analog Tags**.

- In the details pane, double-click on the analog tag you want to edit. The **Properties** dialog box appears.

The screenshot shows the 'ReactLevel Properties' dialog box with the following fields and options:

- Name:** ReactLevel
- Description:** Reactor level
- Engineering Unit:** m3
- Min Value:** 0 in EU
- Max Value:** 3000 in EU
- Interpolation Type:** Linear, Stair Step, System Default
- Current Editor:** Historian, InTouch
- Created By:** sa On 8\13\2009
- Rollover Value:** 0

Buttons at the bottom: OK, Cancel, Apply, Help.

- In the **Description** box, type a description of the tag.
- In the **Engineering Unit** list, select the unit of measure. Examples are mph, grams, and pounds.
For information on adding an engineering unit to the system, see "Configuring Engineering Units" on page 63.
- In the **Min Value** box, type the minimum value of the tag, measured in engineering units.
- In the **Max Value** box, type the maximum value of the tag, measured in engineering units.

- 9 In the **Current Editor** group, specify which application or editing environment controls the tag definition. Tags imported from the InTouch HMI software use InTouch as the current editor. If modifications are made to an imported tag in the historian Configuration Editor, then the current editor for the tag is changed to Wonderware Historian. If a re-import is performed, any modifications made using the Configuration Editor are preserved. You can manually maintain InTouch as the current editor for re-importing; however, all changes made to the tag using the Configuration Editor are lost during the re-import. Tags (attributes) that are initially configured using Wonderware Application Server use the Archestra Integrated Development Environment (IDE) as the current editor. If you modify an Application Server tag using the historian Configuration Editor, then the current editor for the tag is changed to Wonderware Historian. However, the next time you redeploy the engine, the changes are not preserved.
- 10 In the **Interpolation Type** group, type the analog value to use as the last point of the retrieval cycle.

For more information, see "Interpolated Retrieval" in Chapter 7, "Data Retrieval Options," in your *Wonderware Historian Concepts Guide*.

- **Linear**

The system will calculate a new value at the given cycle time using linear interpolation.

- **Stair Step**

The last known point is returned with the given cycle time.

- **System Default**

The settings of both the `InterpolationTypeReal` and `InterpolationTypeInteger` system parameters are used.

11 In the **Rollover Value** box, type the rollover value if this tag is a counter-type tag. (A typical example is for a flowmeter measuring flow or an integer counter, such as those used on a packing line.) The rollover value is the first value that causes the counter to "roll over." This rollover value is used by the "counter" retrieval mode. For example, a counter that counts from 0 to 9999, the counter rolls over back to 0 for the 10,000th value it receives. Therefore, set the rollover value to 10,000.

For more information, see "Counter Retrieval" in Chapter 7, "Data Retrieval Options," in your *Wonderware Historian Concepts Guide*.

12 Click **OK**.

Editing Acquisition Information for a Tag

The **Acquisition** tab contains basically the same configuration information for analog, discrete, and string tags. However, the tabs for string and discrete tags do not include the **Raw Type** group or **Scaling** group.

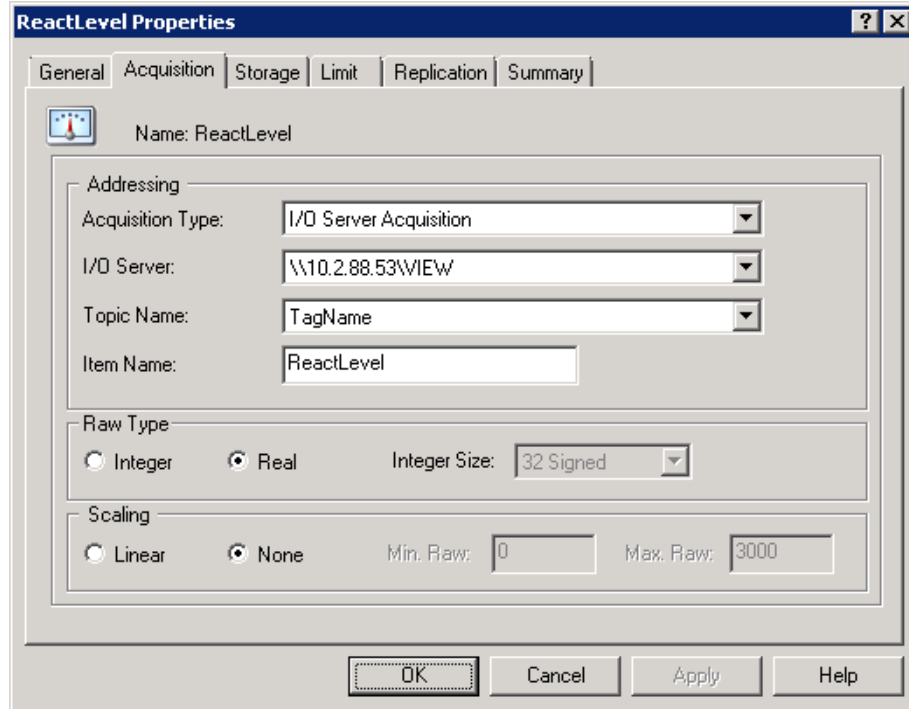
For information on data acquisition, see Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

If you change the configuration, then the changes are applied only to data with timestamps that are equal to or greater than the timestamp of the configuration change.

To edit acquisition information for a tag

- 1** In the System Management Console, expand a server group and then expand a server.
- 2** Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3** Select the type of tag for which you want to edit the acquisition properties.

- 4 In the details pane, double-click on the tag to edit. The **Properties** dialog box appears.



- 5 Click the **Acquisition** tab.
- 6 In the **Acquisition Type** list, select the method by which the tag's value is acquired. If the tag value is acquired from an I/O Server, specify the name of the I/O Server, topic, and item.
- 7 In the **I/O Server** list, select the application name of the I/O Server. This name is usually the same as the executable file name. The list includes all I/O Servers defined in the system.
- 8 In the **Topic Name** list, select the name of the topic. The list includes all topics defined for the selected I/O Server.
- 9 In the **Item Name** box, type the address string of the tag.
- 10 If you are editing a discrete or string tag, click **OK**. Otherwise, continue with the next step.

- 11 In the **Raw Type** group, select the numeric type for the raw value as it is acquired.
 - **Integer**

Integer value. If you select this option, a list appears in which you can select the integer size, in bits, and whether it is signed or unsigned.
 - **Real**

Floating (decimal) point tagname. The floating point value may be between $-3.4e^{38}$ and $+3.4e^{38}$. All floating point calculations are performed with 64-bit resolution, but the result is stored as a 32-bit number.
- 12 In the **Scaling** group, select the type of algorithm used to scale raw values to engineering units. For linear scaling, the result is calculated using linear interpolation between the end points. The following options are required for linear scaling.
 - Min Raw**

The minimum value of the raw acquired value.
 - Max Raw**

The maximum value of the raw acquired value.
- 13 Click **OK**.

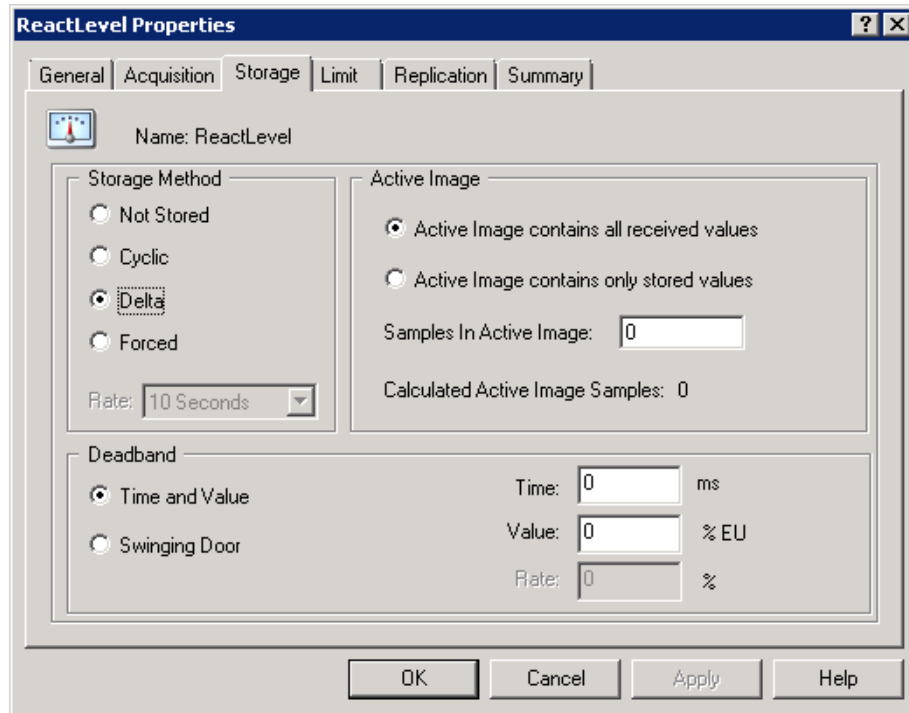
Editing Storage Information for an Analog Tag

For more information on storage, see Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

If you change the configuration, then the changes are applied only to data with timestamps that are equal to or greater than the timestamp of the configuration change.

To edit storage information for an analog tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **Analog Tags**.
- 4 In the details pane, double-click on the analog tag to edit. The **Properties** dialog box appears.

5 Click the **Storage** tab.

- 6 In the **Storage Method** area, select the way in which values for the tag will be stored.

Rate

The rate at which the tag is stored if the storage type is cyclic.

- 7 In the **Active Image** area, configure the options for the active image.

Active Image contains all received/only stored values

Use to specify the behavior of retrieval for data in active image. You can either retrieve from all acquired data values that are currently in the active image, or only the data values that are configured to be stored on disk. Data on disk may be a subset of that in the active image, depending on the storage rate for the tag.

Samples In Active Image

The number of samples that the active image holds for the tag. 0 indicates that the active image is using the default of 65 values. The higher the number of samples, the higher the load on memory resources.

Calculated Active Image Samples

The number of values required in the active image to hold data for 1 min (+15%), as calculated by the system. This value is updated only if the AIAutoResize system parameter is set to 1 and the number of required samples is greater than 65. This value is written to the SamplesInActiveImage column of the Tag table at system startup.

- 8 In the **Deadband** area, configure details for how the tag value is stored. The availability of options in this group depends on which storage method you selected.

Time and Value

A time deadband is the minimum time, in milliseconds, between stored values for a single tag. Any value changes that occur within the time deadband are not stored. The time deadband applies to delta storage only. A time deadband of 0 indicates that the system will store the value of the tag each time it changes. In the **Time** box, type the time to use for this deadband.

A value deadband is the percentage of the difference between the minimum and maximum engineering units for the tag. Any data values that change less than the specified deadband are not stored. The value deadband applies to delta storage only. A value of 0 indicates that a value deadband will not be applied. In the **Value** box, type the value to use for this deadband.

Swinging Door

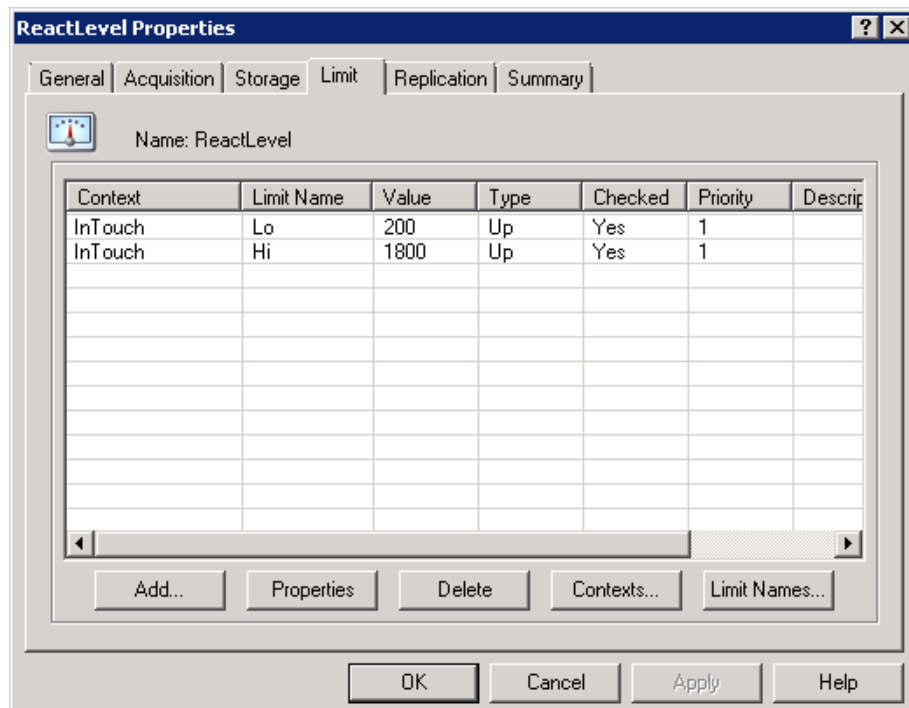
A swinging door deadband is the percentage of deviation in the full-scale value range for an analog tag. The swinging door (rate) deadband applies to delta storage only. Time and/or value deadbands can be used in addition to the swinging door deadband. Any value greater than 0 can be used for the deadband. A value of 0 indicates that a swinging door deadband will not be applied. In the **Rate** box, type the rate to use for this deadband.

- 9 Click **OK**.

Editing Limit Information for an Analog Tag

To edit limit information for an analog tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **Analog Tags**.
- 4 In the details pane, double-click on the analog tag to edit. The **Properties** dialog box appears.



- 5 Click the **Limit** tab. The following information about limits for the tag appears:

Context

The description of the context.

Limit Name

The name for the limit.

Value

The value that is used as a specific limit for a tag. In theory, a tag can have an infinite number of limits defined.

Type

The type of limit; that is, whether it is a rising (up) or falling (down) limit.

Checked

Used to specify whether a tag imported from InTouch is configured for automatic limit checking. Only checked limits are imported.

Priority

The priority for the limit. Priorities can range from 1 to over 2 billion, with 1 being the highest priority.

Description

The description of the limit.

- 6 To add a limit, click **Add**. The **Limit Properties** dialog box appears. For more information, see "Configuring Limits" on page 58.
- 7 To view properties for a limit, click **Properties**. The **Limit Properties** dialog box appears. For more information, see "Configuring Limits" on page 58.
- 8 To delete a limit, select the limit in the window and then click **Delete**.
- 9 To view or add context definitions, click **Contexts**. For more information, see "Configuring Context Definitions" on page 59.
- 10 To view or add a limit names, click **Limit Names**. For more information, see "Configuring Limit Names" on page 60.
- 11 Click **OK**.

Configuring Limits

Before you add a new limit, you must first add a limit name and a context. For more information, see "Configuring Limit Names" on page 60 and "Configuring Context Definitions" on page 59.

To add a limit or view properties for a limit

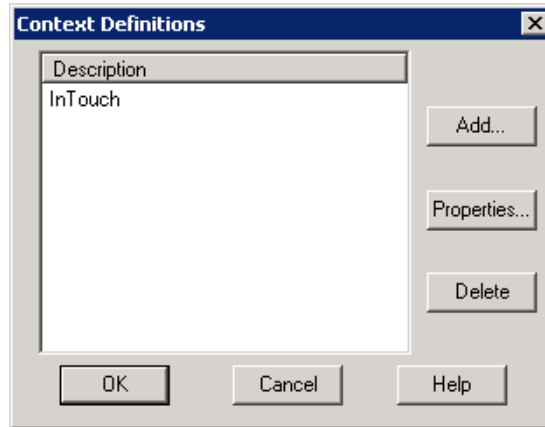
- 1 On the **Limit** tab of the analog tag **Properties** dialog box, click **Add** or **Properties**. The **Limit Properties** dialog box appears.

- 2 In the **Context** list, select the description of the context.
- 3 In the **Limit Name** list, select the name for the limit.
- 4 In the **Value** box, type the value that is used as a specific limit for a tag. In theory, a tag can have an infinite number of limits defined.
- 5 In the **Type** list, select the type of limit; that is, whether it is a rising (up) or falling (down) limit.
- 6 In the **Priority** box, type the priority for the limit. Priorities can range from 1 to over 2 billion, with 1 being the highest priority.
- 7 Select the **Checked** check box to enable automatic limit checking.
- 8 In the **Description** box, type the description of the limit.
- 9 Click **OK**.

Configuring Context Definitions

To add or view context definitions

- 1 On the **Limit** tab of the analog tag **Properties** dialog box, click **Contexts**. The **Context Definitions** dialog box appears.



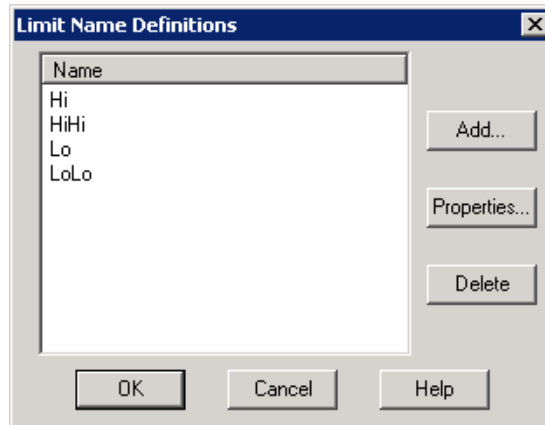
All defined contexts are listed in the window.

- 2 To add a context, click **Add** and then type the name of the new context in the dialog box that appears. Click **OK**.
- 3 To change the context name, select a context in the window, and then click **Properties**. Type the new name in the dialog box that appears. Click **OK**.
- 4 To delete a context, select the context in the window and then click **Delete**.
- 5 Click **OK**.

Configuring Limit Names

To add or view limit names

- 1 On the **Limit** tab of the analog tag **Properties** dialog box, click **Limit Names**. The **Limit Name Definitions** dialog box appears.



All defined limits are listed in the window.

- 2 To add a limit name, click **Add** and then type the name of the new limit. Click **OK**.
- 3 To change the limit name, click **Properties** and then type in a new name. Click **OK**.
- 4 To delete a limit, select the limit in the window and then click **Delete**.
- 5 Click **OK**.

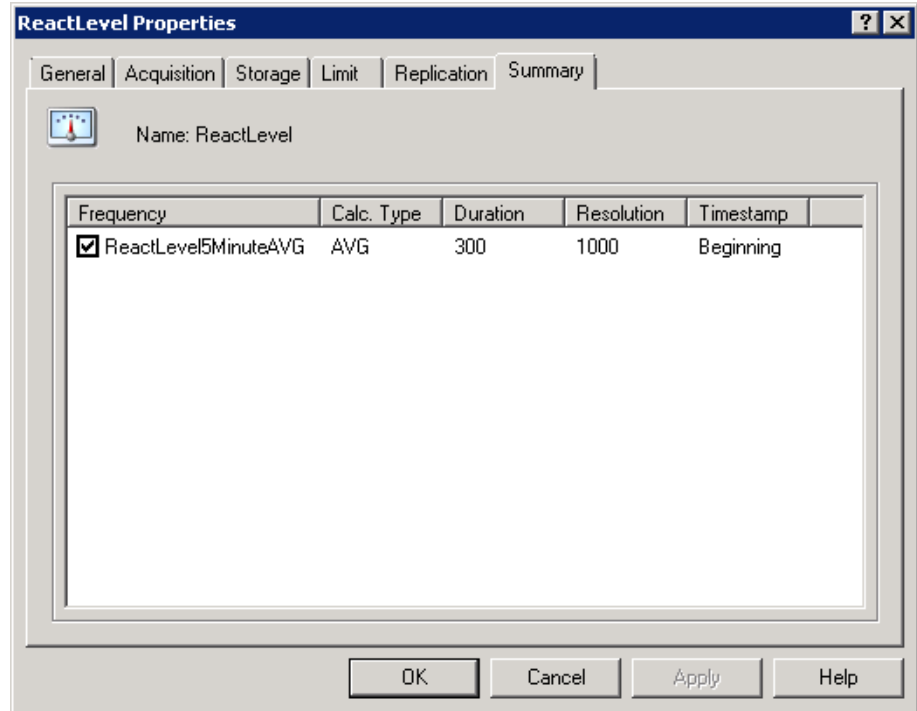
Editing Summary Information for an Analog Tag

Summaries are aggregation operations that can be set up to be automatically performed for analog tags.

To edit summary information for a tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **Analog Tags**.

- 4 In the details pane, double-click on the analog tag you want to edit. The **Properties** dialog box appears.



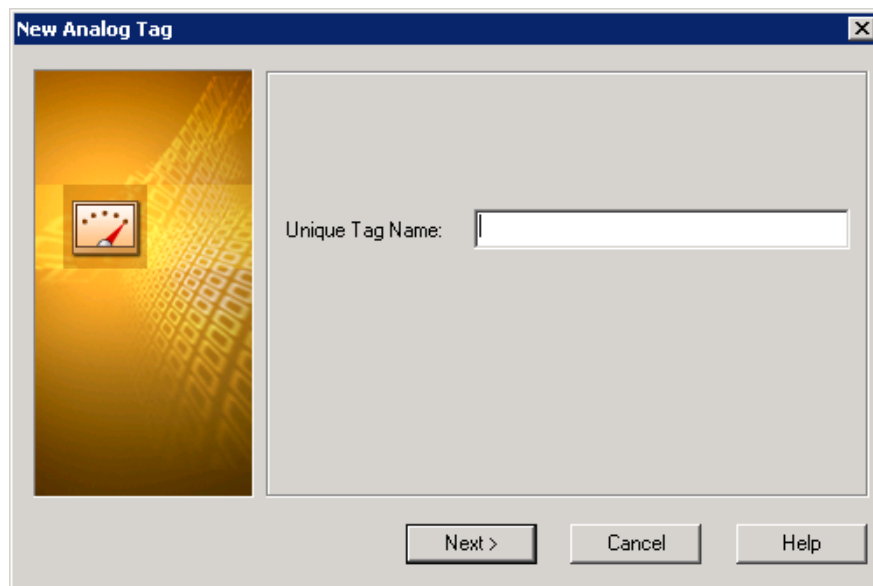
- 5 Click the **Summary** tab.
A check mark appears in the **Frequency** column of the summary operation in which the selected analog tag is included.
- 6 To remove the selected analog tag from an operation, clear the checkbox in the **Frequency** column.
- 7 To add the analog tag to any summary operation, select the check box in the **Frequency** column for the desired operation.
- 8 Click **OK**.

Adding an Analog Tag

Be sure that you do not exceed your licensed tag count by adding another tag.

To add an analog tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Right-click **Analog Tags**, and then click **New Tag**. The **New Analog Tag** wizard appears.



- 4 Type a unique name for the analog tag and click **Next**. For information on allowable tag names, see "Naming Conventions for Tags" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

You are prompted to define general, acquisition, and storage information for the tag.

For more information on configuring general properties, see "Editing General Information for an Analog Tag" on page 48.

For more information on configuring acquisition, see "Editing Acquisition Information for a Tag" on page 51.

For more information on configuring storage, see "Editing Storage Information for an Analog Tag" on page 53.

- 5 When you are done defining the new analog tag, click **Finish**.

Configuring Engineering Units

An engineering unit is the unit of measure for an analog tag. Examples of engineering unit types are CPS, pounds, or degrees.

Viewing Defined Engineering Units

Engineering units are configured for a single server. Any defined engineering unit can be used when adding or editing an analog tag.

To view defined engineering units

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Expand **Engineering Units** to view all currently-defined engineering units.

If you select an engineering unit in the tree, a list of tags that make use of that engineering unit appears in the details pane.

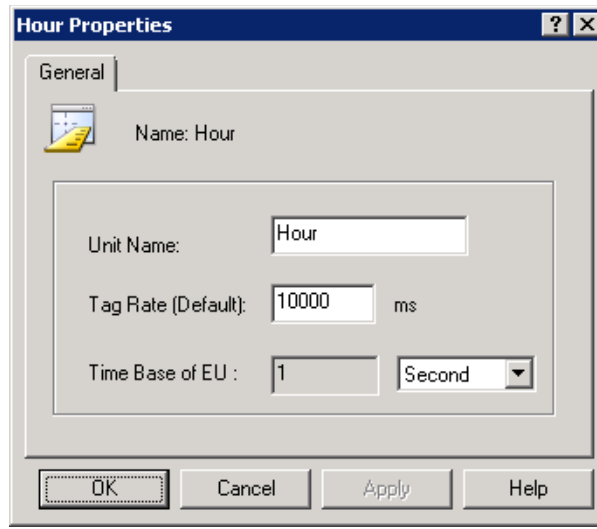
Editing an Engineering Unit

If you make changes to an engineering unit, the changes are applied to all tags in the system that are currently using that engineering unit.

To edit an engineering unit

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **Engineering Units**.

- 4 In the details pane, double-click on the engineering unit to edit. The **Properties** dialog box appears.



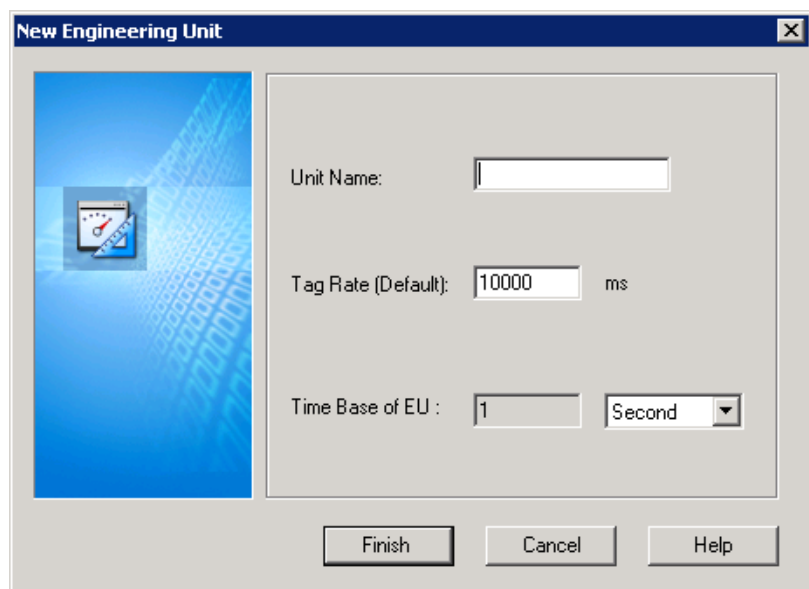
- 5 In the **Unit Name** box, type a name for the unit of measure. Examples are mph, grams, and pounds.
- 6 (Optional) In the **Tag Rate** box, type the default rate, in milliseconds, at which tags are cyclically stored, based on engineering units. Although the system does not make use of this engineering unit based tag rate, you can reference this value in custom SQL scripts. The value you enter for this tag rate does not affect the default storage rate set for the tag.
- 7 In the **Time Base of EU** box, type the factor to be applied when integrating a rate with the units $[\text{EngUnits}/\text{TimeUnit}]$ to a quantity with units $[\text{EngUnits}]$. This factor is called the integral divisor. The default value of 1 assumes a time unit of seconds and ensures that a rate of $[\text{Unit}/\text{second}]$ is correctly integrated to $[\text{Unit}]$. For a time unit of minutes, set the integral divisor value to 60; for a unit of hours, set the integral divisor value to 3600. The integral divisor is applied similarly to rates or quantities that are not expressed in terms of a time unit. For example, to convert watts to watt-hours, the integral divisor is $1/3600$. To convert watts to kilowatt-hours, the integral divisor is $1/3600000$.
- 8 Click **OK**.

Adding an Engineering Unit

After you add an engineering unit, you can configure both existing and new analog tags to use the new engineering unit.

To add an engineering unit

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Right-click **Engineering Units**, and then click **New Engineering Unit**. The **New Engineering Unit** wizard appears.



The screenshot shows the 'New Engineering Unit' dialog box. It features a title bar with the text 'New Engineering Unit' and a close button. The main area is divided into two sections. The left section contains a blue graphic with a gauge icon. The right section contains three input fields: 'Unit Name:' with an empty text box, 'Tag Rate (Default):' with a text box containing '10000' and 'ms' to its right, and 'Time Base of EU :' with a text box containing '1' and a dropdown menu showing 'Second'. At the bottom are three buttons: 'Finish', 'Cancel', and 'Help'.

- 4 Type the name and optional cyclic storage rate for the engineering unit.
For more information, see "Editing an Engineering Unit" on page 63.
- 5 Click **Finish**.

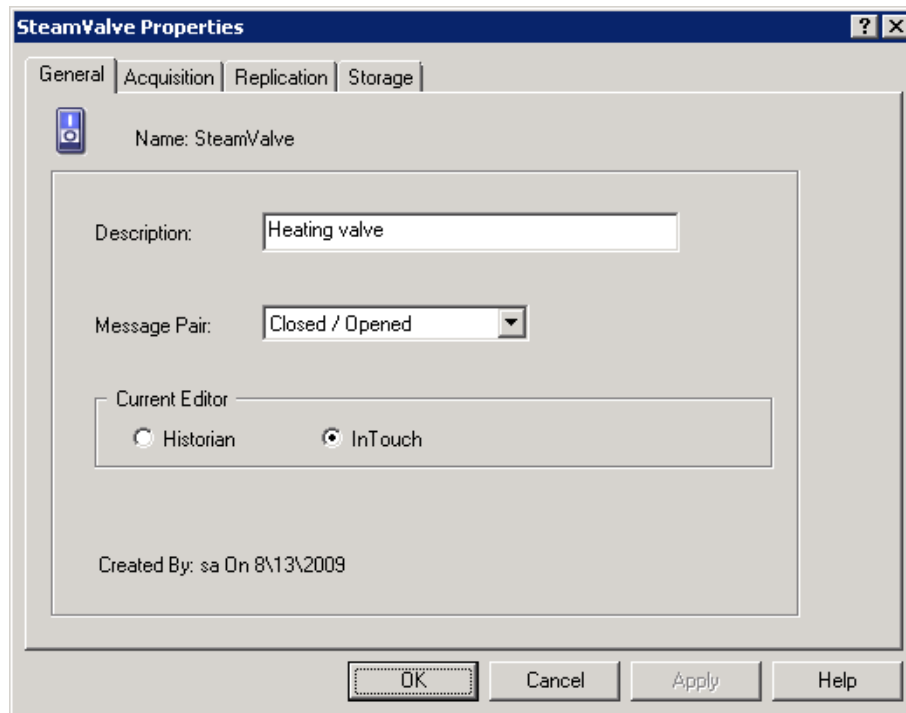
Configuring Discrete Tags

You can configure general information and acquisition details for a selected discrete tag, as well as add new discrete tags to the system.

Editing General Information for a Discrete Tag

To edit general information for a discrete tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **Discrete Tags**.
- 4 In the details pane, double-click on the discrete tag to edit. The **Properties** dialog box appears.



- 5 Click the **General** tab.
- 6 In the **Description** box, type a description of the tag.
- 7 In the **Message Pair** list, select the message pair to associate with the FALSE/TRUE states of the discrete tag.

For information on adding a message pair to the system, see "Configuring Message Pairs" on page 70.

- 8 In the **Current Editor** group, specify which application or editing environment controls the tag definition. Tags imported from the InTouch HMI software use InTouch as the current editor. If modifications are made to an imported tag in the historian Configuration Editor, then the current editor for the tag is changed to Wonderware Historian. If a re-import is performed, any modifications made using the Configuration Editor are preserved. You can manually maintain InTouch as the current editor for re-importing; however, all changes made to the tag using the Configuration Editor are lost during the re-import. Tags (attributes) that are initially configured using Wonderware Application Server use the ArcestrA Integrated Development Environment (IDE) as the current editor. If you modify an Application Server tag using the historian Configuration Editor, then the current editor for the tag is changed to Wonderware Historian. However, the next time you redeploy the engine, the changes are not preserved.
- 9 Click **OK**.

Editing Storage Information for a Discrete Tag

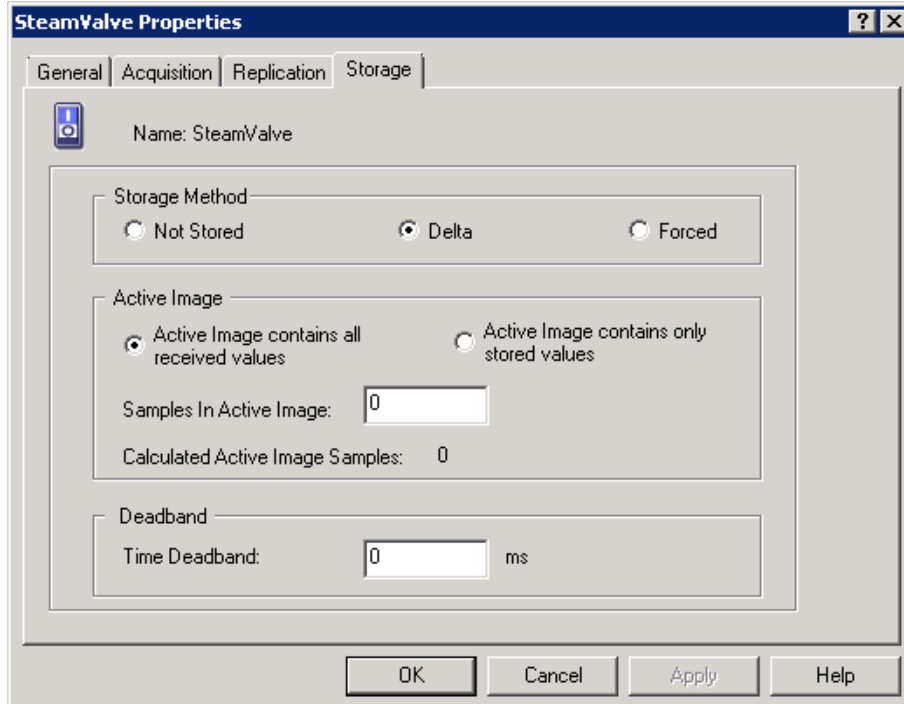
For more information on storage, see Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

If you change the configuration, then the changes are applied only to data with timestamps that are equal to or greater than the timestamp of the configuration change.

To edit storage information for a discrete tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **Discrete Tags**.

- 4 In the details pane, double-click on the discrete tag to edit. The **Properties** dialog box appears.



- 5 Click the **Storage** tab.
- 6 In the **Storage Method** area, select the way in which values for the tag are stored.
- 7 In the **Active Image** area, configure the options for the active image.

Active Image contains all received/only stored values

Used to specify the behavior of retrieval for data in active image. You can either retrieve from all acquired data values that are currently in the active image, or only the data values that are configured to be stored on disk. Data on disk may be a subset of that in the active image, depending on the storage rate for the tag.

Samples In Active Image

The number of samples that the active image holds for the tag. 0 indicates that the active image is using the default of 65 values. The higher the number of samples, the higher the load on memory resources.

Calculated Active Image Samples

The number of values required in the active image to hold data for 1 min (+15%), as calculated by the system. This value is updated only if the AIAutoResize system parameter is set to 1 and the number of required samples is greater than 65. This value is written to the SamplesInActiveImage column of the Tag table at system startup.

- 8 In the **Deadband** group, configure details for how the tag value are stored. The availability of this group depends on which storage method you select.

Time Deadband

A time deadband is the minimum time, in milliseconds, between stored values for a single tag. Any value changes that occur within the time deadband are not stored. The time deadband applies to delta storage only. A time deadband of 0 indicates that the system will store the value of the tag each time it changes.

- 9 Click **OK**.

Adding a Discrete Tag

Be sure that you do not exceed your licensed tag count by adding another tag.

To add a discrete tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Right-click **Discrete Tags**, and then click **New Tag**. The **New Discrete Tag** wizard appears.
- 4 Type a unique name for the discrete tag and click **Next**. For information on allowable tag names, see "Naming Conventions for Tags" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

- 5 You are then prompted to define general, acquisition, and storage information for the tag.

For more information on configuring general properties, see "Editing General Information for a Discrete Tag" on page 66.

For more information on configuring acquisition, see "Editing Acquisition Information for a Tag" on page 51.

For more information on configuring storage, see "Editing Storage Information for a Discrete Tag" on page 67.

- 6 When you are finished defining the new discrete tag, click **Finish**.

Configuring Message Pairs

A message pair consists of the messages associated with the FALSE or TRUE state of the discrete tag. A discrete tag set to 0 is in the FALSE, or OFF, state. A discrete tag set to 1 is in the TRUE, or ON, state.

Viewing the Current Message Pairs for a Server

Message pairs are configured for a single server. Any defined message pair can be used when defining or editing a discrete tag.

To view all message pairs

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **Messages** to view all currently-defined message pairs in the details pane.

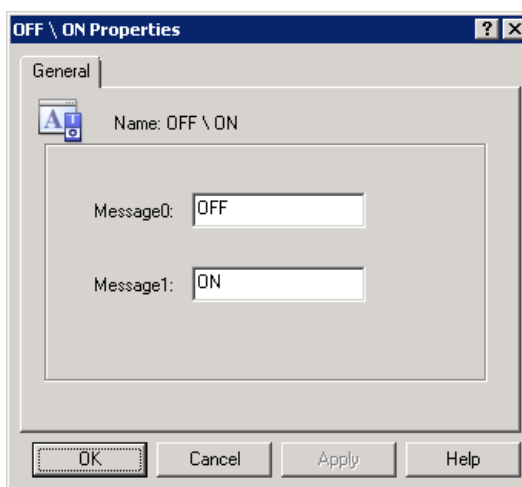
If you expand **Messages** and then select a message in the console tree, a list of tags that make use of that message appears in the details pane.

Editing a Message Pair

If you make changes to a message pair, that change is applied to all tags in the system that are currently using that message pair.

To edit a message pair

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **Messages**.
- 4 In the details pane, double-click on the message to edit. The **Properties** dialog box appears.



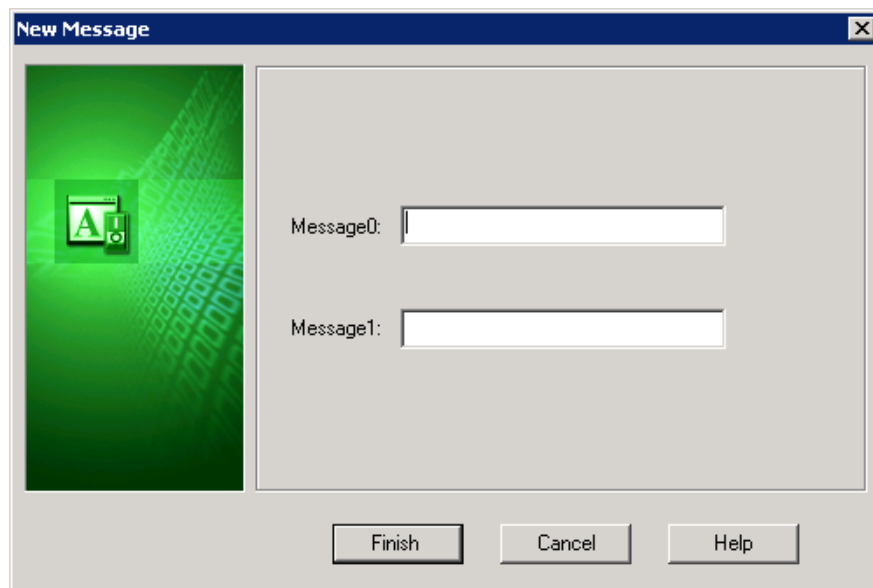
- 5 In the **Message0** box, type the message associated with the FALSE state of the discrete tag. The maximum number of characters is 64. A discrete tag set to 0 is in the FALSE state.
- 6 In the **Message1** box, type the message associated with the TRUE state of the discrete tag. The maximum number of characters is 64. A discrete tag set to 1 is in the TRUE state.
- 7 Click **OK**.

Adding a Message Pair

If you add a message pair, you can configure both existing and new discrete tags to use the new message pair.

To add a message pair

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Right-click **Messages**, and then click **New Message**. The **New Message** wizard appears.



- 4 In the **Message0** box, type the message associated with the FALSE state of the discrete tag. The maximum number of characters is 64. A discrete tag set to 0 is in the FALSE state.
- 5 In the **Message1** box, type the message associated with the TRUE state of the discrete tag. The maximum number of characters is 64. A discrete tag set to 1 is in the TRUE state.
- 6 Click **Finish**.

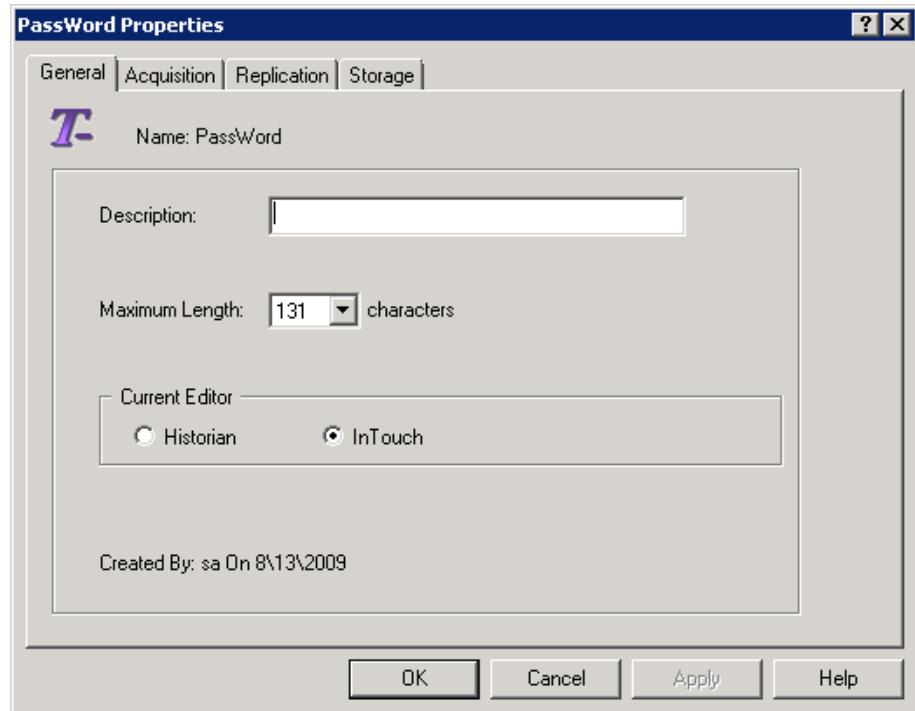
Configuring String Tags

You can configure general information and acquisition details for a selected string tag, as well as add new string tags to the system.

Editing General Information for a String Tag

To edit general information for a string tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **String Tags**.
- 4 In the details pane, double-click on the string tag to edit. The **Properties** dialog box appears.



- 5 In the **Description** box, type a description of the tag.
- 6 In the **Maximum Length** list, select the maximum number of characters for the string.

- 7 In the **Current Editor** group, specify which application or editing environment controls the tag definition. Tags imported from the InTouch HMI software use InTouch as the current editor. If modifications are made to an imported tag in the historian Configuration Editor, then the current editor for the tag is changed to Wonderware Historian. If a re-import is performed, any modifications made using the Configuration Editor are preserved. You can manually maintain InTouch as the current editor for re-importing; however, all changes made to the tag using the Configuration Editor are lost during the re-import. Tags (attributes) that are initially configured using Wonderware Application Server use the ArchestrA Integrated Development Environment (IDE) as the current editor. If you modify an Application Server tag using the historian Configuration Editor, then the current editor for the tag is changed to Wonderware Historian. However, the next time you redeploy the engine, the changes are not preserved.
- 8 Click **OK**.

Editing Storage Information for a String Tag

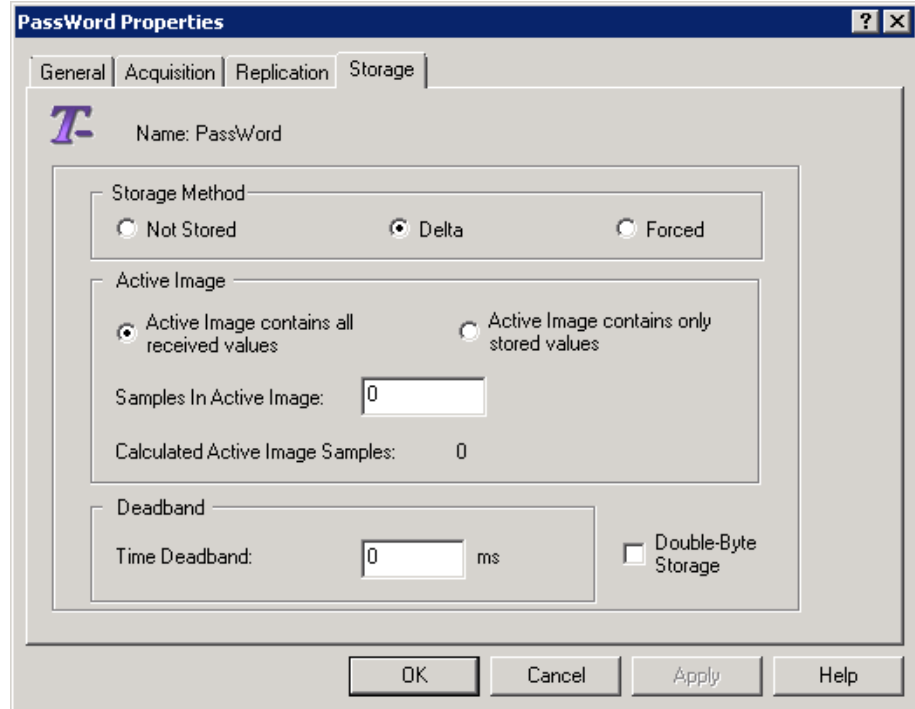
For more information on storage, see Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

If you change the configuration, then the changes are applied only to data with timestamps that are equal to or greater than the timestamp of the configuration change.

To edit storage information for a string tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select **String Tags**.

- In the details pane, double-click on the string tag to edit. The **Properties** dialog box appears.



- In the **Storage Method** group, select the way in which values for the tag are stored.
- In the **Active Image** group, configure the options for the active image.

Active Image contains all received/only stored values

Used to specify the behavior of retrieval for data in active image. You can either retrieve from all acquired data values that are currently in the active image, or only the data values that are configured to be stored on disk. Data on disk may be a subset of that in the active image, depending on the storage rate for the tag.

Samples In Active Image

The number of samples that the active image holds for the tag. 0 indicates that the active image is using the default of 65 values. The higher the number of samples, the higher the load on memory resources.

Calculated Active Image Samples

The number of values required in the active image to hold data for 1 min (+15%), as calculated by the system. This value is updated only if the AIAutoResize system parameter is set to 1 and the number of required samples is greater than 65. This value is written to the SamplesInActiveImage column of the Tag table at system startup.

- 7 In the **Deadband** group, configure details for how the tag value is stored. The availability of this group depends on which storage method you select.

Time Deadband

A time deadband is the minimum time, in milliseconds, between stored values for a single tag. Any value changes that occur within the time deadband are not stored. The time deadband applies to delta storage only. A time deadband of 0 indicates that the system will store the value of the tag each time it changes.

- 8 In the **Double-Byte Storage** check box, select to specify whether or not to store the string as a double-byte string.
- 9 Click **OK**.

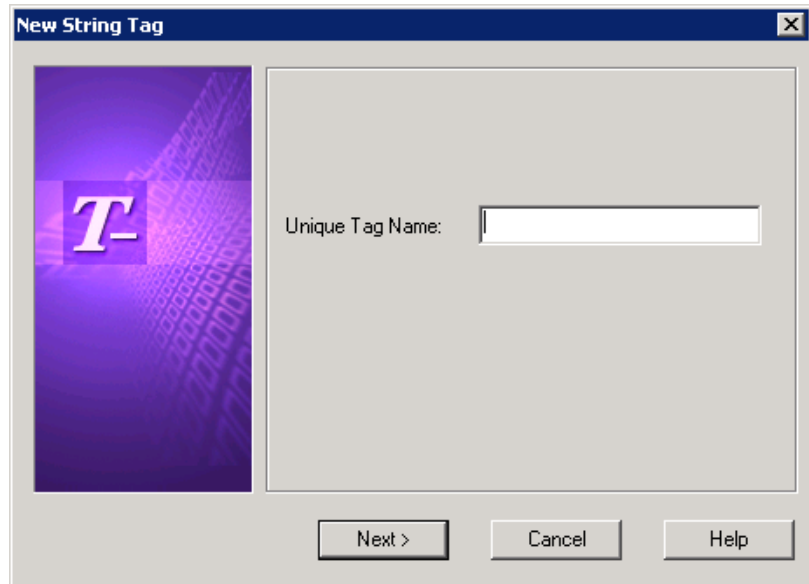
Adding a String Tag

Be sure that you do not exceed your licensed tag count by adding another tag.

To add a string tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.

- 3 Right-click **String Tags**, and then click **New Tag**. The **New String Tag** wizard appears.



- 4 Type a unique name for the string tag and click **Next**. For information on allowable tag names, see "Naming Conventions for Tags" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.
- 5 You are then prompted to define general, acquisition, and storage information for the tag.
For more information on configuring general properties, see "Editing General Information for a String Tag" on page 73.
For more information on configuring acquisition, see "Editing Acquisition Information for a Tag" on page 51.
For more information on configuring storage, see "Editing Storage Information for a String Tag" on page 74.
- 6 Click **Finish**.

Configuring Event Tags

Event tags are a special tag type and are configured differently than analog, discrete, and string tags. For information on configuring event tags, see Chapter 11, "Configuring Events."

Copying Tag Definitions

You can use an existing tag definition as the basis for additional tag definitions.

To copy a tag definition

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select the appropriate tag type folder (for example, **Analog Tags**) so that the list of available tags appears in the details pane.
- 4 Perform any of the following:
 - Right-click on the tag to copy in the details pane and click **Copy**. Then, right-click on the tag type folder and click **Paste**.
 - Select the tag to copy and then drag it onto the tag type folder.

The new tag wizard appears with the definition options of the copied tag set as defaults. The name of the new tag is the name of the copied tag, appended with a number. For example, "MyTag2."

- 5 Use the wizard to change any of the options for the new tag.

For information on configuring analog tags, see "Adding an Analog Tag" on page 62.

For information on configuring discrete tags, see "Adding a Discrete Tag" on page 69.

For information on configuring string tags, see "Adding a String Tag" on page 76.

For information on configuring event tags, see "Adding an Event Tag" on page 276.

Deleting a Tag

To delete a tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select the tag in the details pane and perform any of the following:



- Click the **Delete** button on the toolbar.
- On the **Action** menu, click **Delete**.
- Right-click on the tag and then click **Delete**.

Organizing Tags into Groups

In the System Management Console, tags are organized into two main groups:

- Public groups

The **Public Groups** folder contains all objects that are visible to all clients. If you have administrative permissions, you can create, rename, and delete groups in the **Public Groups** folder. You cannot change the following default groups: All Analog Tags, All Discrete Tags, All String Tags, All Event Tags, InTouch Nodes, System Status Tags.

- Private groups

The **Private Groups** folder contains all objects that are visible to the user that is currently logged on. Users can create, rename, and delete groups in their **Private Groups** folder.

The console tree shortcut menu contains commands for adding groups in the hierarchy and adding tags to them. Open the shortcut menu by right-clicking on the item in the console tree. Add a group just as you add a new folder in the Windows Explorer. For example, create the "BoilerTags" group under the existing "Private Groups" group.

When you add tags to a new group, the original reference still appears in the default system group under **Tag Configuration** in the console tree. Any tag can belong to any number of groups, and any group can contain any number of tags.

Adding a Group

To add a group

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, and then expand **Public Groups**.
- 3 Select the folder under which you want to create a group.
- 4 Perform any of the following:
 - On the **Action** menu, click **New Group**.
 - Right-click and then click **New Group**.
 - Click the **Add** button on the toolbar.



The **New Group** dialog box appears.



- 5 In the **Group Name** box, type a name for the new group. The group name can be up to 255 characters and must be unique.
- 6 Click **Finish**.

Renaming a Group

You can rename any group that you have created in the console tree, except for public folders or tag references.

To rename a group

- 1 Select the group in the console tree.
- 2 Press F2 on your keyboard.



- 3 Type a new name for the folder and press **Enter**.

Adding a Tag to a Group

If you are a member of the aaUsers group, you can only add tags to a private group.

To add a tag to a group

- 1 Select the group to which you want to add a tag.
- 2 Do any of the following:
 - Drag the tag from the details pane into the folder.
 - Right-click and then click **Add Tags to Group**. The **Tag Finder** dialog box appears, in which you can search for and select tags to add.
 - Click the **Tag Finder** button on the toolbar to open the Tag Finder.



For more information on the Tag Finder, see "Using the Tag Finder" on page 297.

Deleting a Group or Tag Reference

To delete a tag from the Wonderware Historian, you must select the tag in the appropriate folder under **Tag Configuration**. After a tag is deleted, all references to it anywhere in the public or private folders are also deleted. For more information, see "Deleting a Tag" on page 79.

When you delete a private group, the group folder and all references to tags are deleted. The tags themselves are not deleted, and the original reference still appears in the default system group. You cannot delete public folders or the tag references contained in them.

To delete a group or tag reference

- 1 In the System Management Console, expand a server group, and then expand a server.
- 2 Expand **Configuration Editor**, and then expand **Public Groups** or **Private Groups**.
- 3 Select the group in the console tree.
- 4 Delete the item by doing one of the following:
 - On the **Action** menu, click **Delete**.
 - Right-click on the group or tag, and then click **Delete**.
 - Click the **Delete** toolbar button.



Pre-allocating Memory for Future Tags

To facilitate the addition of analog, discrete, and string tags to your system, you can pre-allocate memory before you actually add the tag definitions and start storing values. Pre-allocating memory allows you to dynamically add tags to the system at a later date with minimal performance impact. A good time to pre-allocate memory is when the system is not busy handling client requests.

Memory is allocated using system parameters. For a list of these "headroom" system parameters, see "System Parameters" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

To pre-allocate memory for future tags

- 1 Edit the appropriate headroom system parameter(s) to specify the number of tags that you will later add. For more information, see "Editing System Parameters" on page 251.
- 2 Commit the parameter changes to the system. For more information, see "Committing Configuration Changes" on page 252.

When you commit the headroom parameter changes to the system, a new history block is created. However, when you later add the tag definitions to the system, a history block is not created unless you add more tags than you pre-allocated.

The system maintains the value of the headroom system parameters. For example, if you pre-allocate ten 2-byte analog tags, and then add five 2-byte analog tag definitions to the database, the system automatically decreases the internal value of the available HeadroomAnalog2 tags when the new tag definitions are committed to the system. The headroom counts are then reset to the system parameter values after a new block is triggered, either by the system or by you.

Tag count validation for licensing purposes does not apply to pre-allocated tag memory; the tag count is verified only when the tag definitions are committed.

Important Headroom tags are a very powerful feature, allowing you to start acquiring values for new tags within seconds instead of a few minutes. However, use caution in allocating headroom tags, as they increase the memory allocation and demand on the system.

Chapter 3

Importing and Exporting Configuration Information

For the Wonderware Historian, configuration information includes all of the definitions for entities within the system, such as tags, I/O Servers, and summary operations.

You can import information from an InTouch data dictionary (Tagname.x) using the Tag Importer wizard available from within the System Management Console application.

Also, you can export all of the configuration information from a historian to a text file. This allows for making bulk additions or modifications using third-party tools, such as Microsoft Excel. The modified text file can be imported into the same or a different historian.

Importing an InTouch Data Dictionary

You can import an InTouch tagname database, also called the data dictionary, and use it to configure most of the Wonderware Historian. Importing a tagname database eliminates the need to manually configure I/O Server and tag definitions for both the InTouch HMI software and the historian. Information in the tagname database is automatically mapped to the appropriate tables within the historian Runtime database as part of the import process.

You can import tagname databases from multiple InTouch nodes, but you can only import one application from each node. Tagname databases from InTouch HMI software 6.0 or later can be imported.

To perform an import, you must have administrative permissions for the historian Runtime and Holding databases, (for example, be a member of the sysadmin or wwAdministrators roles or be in the Runtime and Holding db_owner roles).

However, to perform a delta import, you must be importing from an InTouch 7.1 or later tagname database. For more information, see "Re-importing" on page 89.

After you configure your system by importing I/O Server and tag definitions and then commit the changes, the historian acquires data for these tags. After the history data is being stored in the Runtime database, it can be manipulated using any SQL method for retrieving data supported by the historian. Functions specific to the historian, such as setting the resolution for a query, can be applied to the data, and the data can be retrieved from client applications, including InTouch HMI software.

InTouch user-defined tags are supported in the public namespace. For more information on user-defined tags, see the *InTouch HMI Data Management Guide*.

Before You Import

Using the tag importer functionality from within the System Management Console, you can import topic and other configuration data from one or more InTouch nodes. There are several factors that contribute to effectively importing tags from multiple InTouch nodes into the Wonderware Historian database.

- Determining import order
- Duplicate Tags or addresses
- Import limitations for Topic Names
- Editing machine names
- Re-importing
- Importing information for DDE I/O Servers
- Holding database

The AllowOriginals system parameter needs to be set to 1 before importing .lgh original data.

Be sure to close InTouch WindowMaker before importing the Tagname.x file.

Note Copying or moving an InTouch application in edited mode from one node to another node causes the application to be locked.

Although you can import from multiple InTouch nodes, only one application from each InTouch node may be imported. That is, you cannot import an InTouch node with the same computer name as one you have already imported. However, you can import a Tagname.x from a repository and then edit the node name location. If you delete the application from the historian, you can import a different application from the same InTouch node.

When you delete an application from the historian, all tag information, annotations, snapshots, and summaries are deleted. Although the stored history data is not deleted from the history blocks, it is no longer accessible. If you perform a re-import, the existing history data already in the historian is accessible again.

Determining Import Order

If you are importing from more than one InTouch node, the following scenarios can exist:

- You have more than one InTouch node retrieving values from the same I/O tag, which is receiving values from the same point on a factory device.
- You have an InTouch node retrieving values from an I/O tag on another InTouch node, which is receiving its data value from a point on a factory device.
- All of your InTouch nodes are retrieving values from I/O tags on a dedicated InTouch node, which is receiving its data values from a point on a factory device. In this case, the dedicated InTouch node is set up to function as a "tag server."

When you import tagname dictionaries from multiple InTouch nodes, avoid importing duplicate I/O tags. To maximize the efficiency of importing data, first import the InTouch node that is functioning as the tag server or that contains the highest number of tags that have direct access to the data points from the factory floor devices.

As you import multiple nodes, always import a node with more tags having direct access, before importing a node having fewer tags with direct access.

Duplicate Tags or Tag Addresses

If the Tag Importer encounters a tag that already exists in the Wonderware Historian database, it can optionally add a string to the beginning or end of the tag name to make it unique within the historian. During the import, you can select:

- Whether or not you want a string to be added.
- The string to add.
- The placement of the string, either at the beginning or the end of the tag name.
- Whether to add a string to all tag names from that node, regardless if they are duplicates or not, or to only add a string when a duplicate tag is detected.

If, by adding a string, you create a duplicate tag during the importing process, the Tag Importer does not import that tag. For example, you choose to prefix all tags from a particular node with the letter "B," and you are importing a tag named "TestTag." However, a tag named "BTestTag" already exists in the historian. The Tag Importer does not import potential duplicate tags. To solve the problem of potential duplicate tags, change the names of these tags in InTouch HMI software to avoid the duplication and then try importing a second time.

If the Tag Importer encounters a duplicate address (consisting of the application, topic, and item) for one or more tags, the information is still imported. However, if you are using DDE and have duplicate addresses, only the first tag (per tagname order) actually receives data. This is a DDE limitation.

Import Limitations for Topic Names

If the InTouch application you are importing contains topic names that are longer than 50 characters, the application is not imported.

Editing Computer Names

During an import, you are prompted to verify the InTouch computer name and the path to the InTouch application.

Normally, you should not change these default values. However, you need to change the InTouch computer name if you are importing multiple applications from the same InTouch computer. For example, perhaps you have a dedicated "application repository" computer on which you develop all of your InTouch applications. You then publish these applications to the actual production computers on which they will run. In this case, you can import all of the InTouch applications from the repository computer, but during the import process you need to change the InTouch computer name to the corresponding production computer name. The import wizard checks for duplicate InTouch nodes, but not until after you have the opportunity to rename the InTouch computer.

You cannot change the InTouch computer name and the path to the InTouch application during a re-import. However, you can manually edit this information in the InTouchNode table using SQL Server Query Analyzer (or any other query tool) before the re-import. When the re-import is performed, the new information will be used.

Re-importing

A re-import imports all of the tagname dictionary information, regardless of whether or not the information changed. No special configuration is required for re-importing an InTouch data dictionary. You may only perform a re-import for the same InTouch node. The steps for performing a re-import are basically the same as an initial import, with a few differences. For instructions on importing, see "Performing a Dictionary Import or Re-Import" on page 91.

Note Back up the Runtime database before you perform a re-import.

If you are re-importing and you do not choose to re-import all topics, only the tags for the topics you select are updated in the Wonderware Historian. All other topics remain unchanged.

You can also just re-import those tags that changed for a particular InTouch node since the last import. This is called "delta re-import," as opposed to the full re-import. A delta re-import is usually faster than a full re-import because only those tags that have changed since the last import are updated in the historian.

However, the delta re-import procedure does not provide the flexibility of the full re-import procedure. You cannot import a *subset* of the changed tags, nor can you edit the cyclic storage rate. For these capabilities, perform a full re-import. For example, if you initially imported Topic A but not Topic B, a full re-import is required to add Topic B to the historian database.

Any existing uniqueness settings and cyclic storage parameters (specified during the original import) will be retained for the delta re-import.

Note Delta re-import is only supported for InTouch HMI software 7.1 and later.

Importing Information for DDE I/O Servers

If you are importing configuration information for remote I/O Servers that use DDE, you must first configure shares for these I/O Servers and then import the tagname database into Wonderware Historian. You do not need to configure shares for local DDE Servers.

When you import I/O Server configuration information from InTouch HMI software, the default protocol for all I/O Servers is set to SuiteLink™. If you imported a DDE I/O Server(s), use the System Management Console to change the default protocol back to DDE for the server(s).

Note DDE is not supported if the historian is running on the Windows Server 2003, Windows Server 2008, or Windows Vista operating system.

Holding Database

The Holding database temporarily stores topic and configuration data that has been imported from an InTouch node. When you import data from InTouch HMI software, the data is first mapped to table structures in the Holding database. Then, the data is moved into the Runtime database.

Performing a Dictionary Import or Re-Import

The Tag Importer allows you to select an InTouch tagname database (Tagname.x) and import all information from an InTouch application into the Wonderware Historian Runtime database.

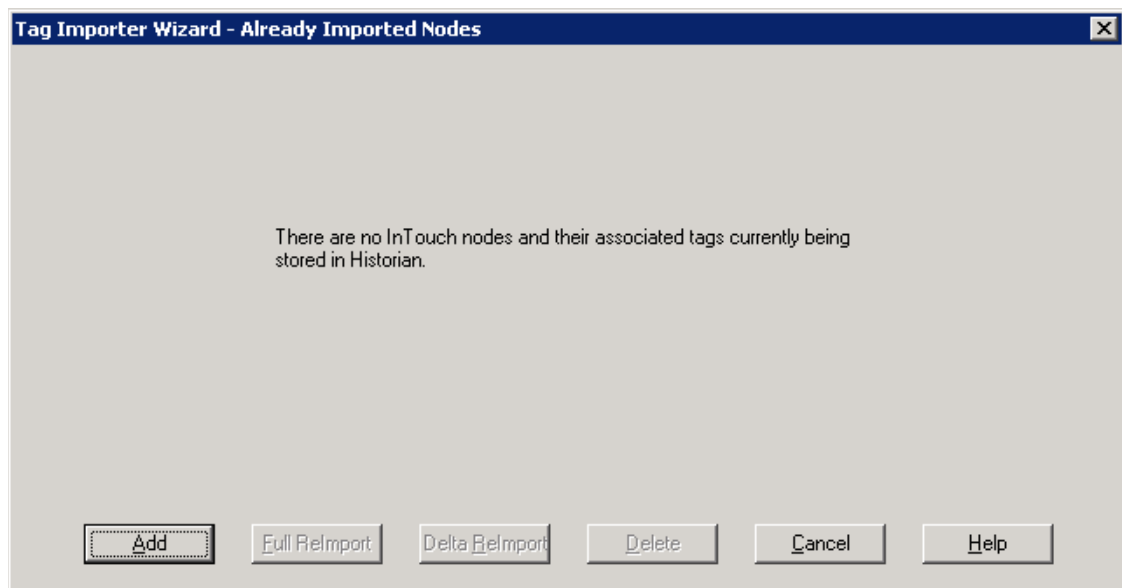
To import from a Tagname.x file

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Click **Configuration Editor**.
- 3 Start the Tag Importer wizard by doing any of the following:
 - Right-click on **Configuration Editor**, and then click **Import Tags**.
 - On the **Action** menu, click **Import Tags**.
 - Select the **Import Tags** button on the toolbar.



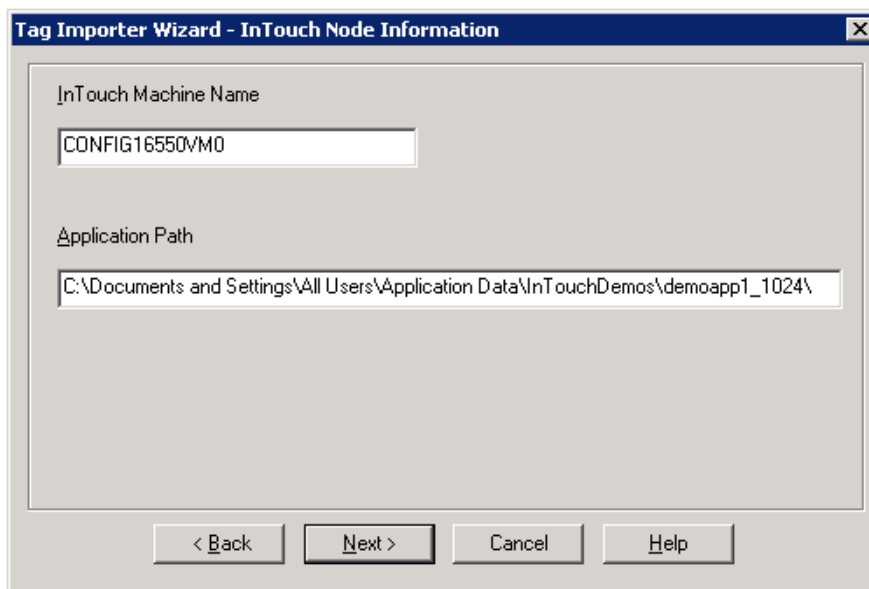
- 4 The **Welcome** dialog box appears. Click **Next** to start the import.

The **Imported InTouch Nodes** dialog box appears. If there are no imported nodes currently in the Wonderware Historian, only the **Add**, **Cancel**, and **Help** buttons are available in the dialog box, and the dialog box only contains informational text.



- 5 Do any of the following:
 - To import an InTouch node and its associated tags, click **Add**. In the **Select Tagname.x** dialog box that appears, browse for the Tagname.x file (InTouch HMI software version 6.0 or later) that you want to import and then click **Open**. If you are importing for the first time, you are prompted to verify the import.
 - To re-import a node, select the desired node and click **Full ReImport**. For more information, see "Re-importing" on page 89.
 - To re-import only those tags that changed for a node, select the desired node and click **Delta ReImport**.
 - To delete a node and all its associated tags, select the desired node and click **Delete**. A warning box appears so that you can confirm the deletion.

After a script runs, the **InTouch Node Information** dialog box appears.

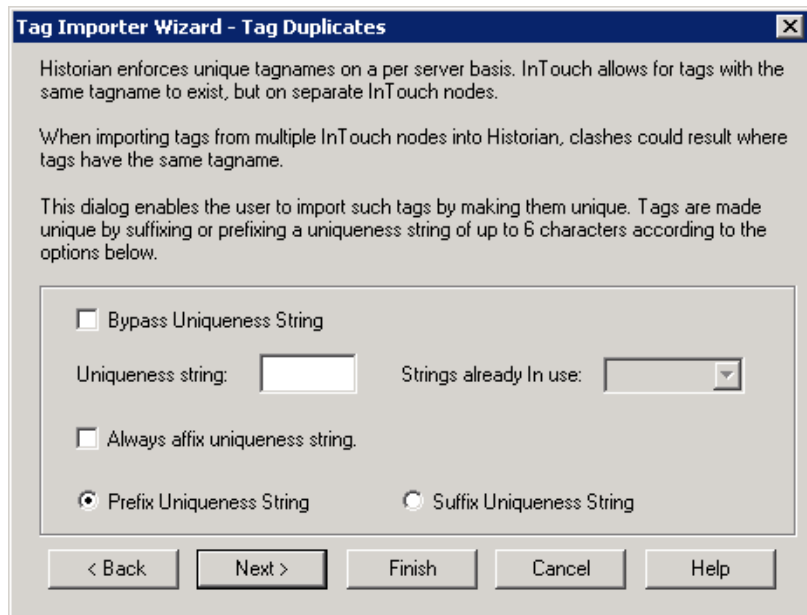


- 6 Verify the InTouch machine name and the path to the InTouch application.

Options in this dialog box are unavailable during a re-import.

The current InTouch machine name and the path to the current InTouch application are shown as defaults. For more information on changing the default machine name, "Editing Computer Names" on page 89.

- 7 Click **Next**. The **Tag Duplicates** dialog box appears.



- 8 Configure how the Tag Importer handles duplicate tags. Options in this dialog box are unavailable if you are re-importing.

Bypass Uniqueness String

Select to not append a uniqueness string to any duplicate tag names. The Tag Importer does not import these duplicate tag names.

Uniqueness String

The characters to add to the tag name to make it unique, if the Tag Importer determines that it is a duplicate. You can use up to 6 characters for the uniqueness string. You cannot leave the uniqueness string blank, and you cannot use a string that you used before. For information on allowable tag names, see "Naming Conventions for Tags" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

Strings already in use

The strings that are already appended to tagnames in the system.

Always affix uniqueness string

Used to append the uniqueness string to all imported tagnames from the selected node, regardless of whether they are duplicates. However, if affixing a string creates a duplicate tagname, the Tag Importer will not import that tag.

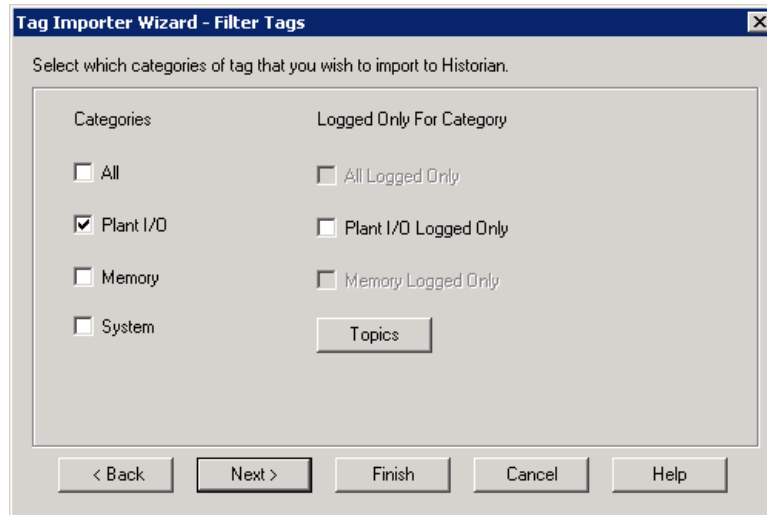
Prefix Uniqueness String

Select to append the string to the beginning of the tagname.

Suffix Uniqueness String

Select to append the string to the end of the tagname.

- 9 Click **Next**. The **Filter Tags** dialog box appears.



- 10 Check the category or categories for the tags that you want to import:

All

Import all tag information from the data dictionary. If you select this option, all tag information from the other categories is automatically included.

Plant I/O

Import only tags receiving data from I/O Servers, including I/O discrete, I/O integer, I/O real, and I/O message tags.

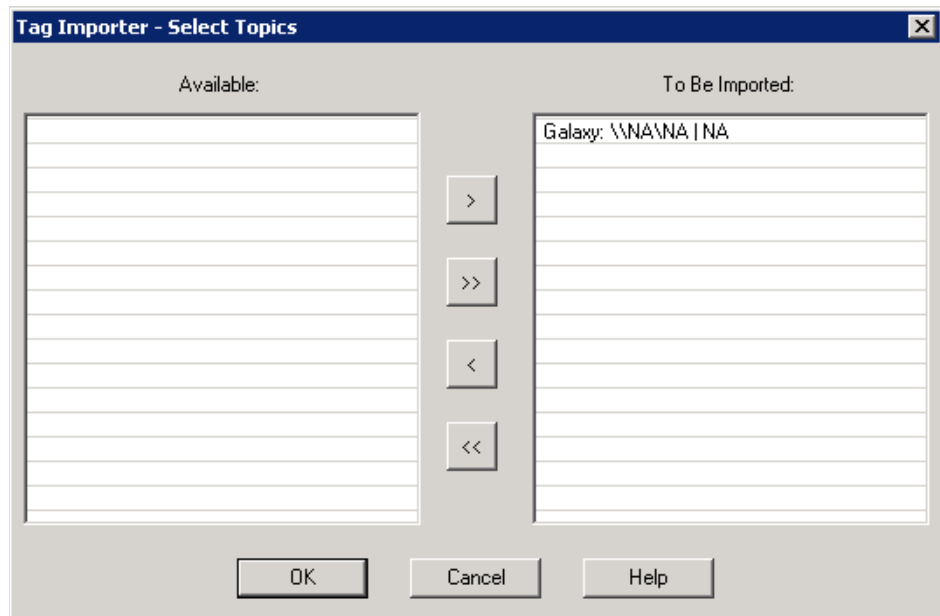
Memory

Import only InTouch memory tags, including memory discrete, memory integer, memory real, and memory message.

System

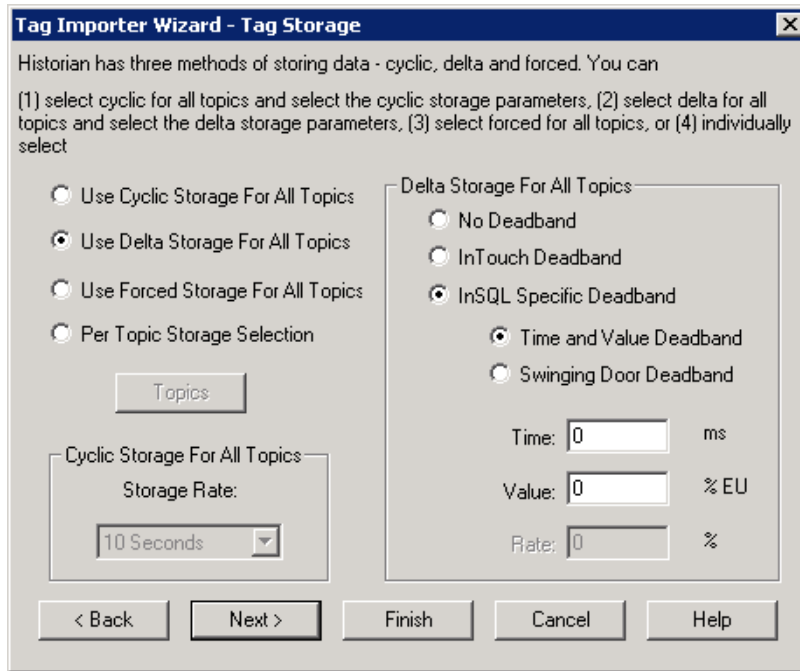
Import only InTouch system tags (\$<name>).

- 11 In the **Logged Only For Category** group, select whether to include only those tags that were configured in the InTouch HMI software to be logged, or all the tags for that category. These options are available if you selected **All**, **Plant I/O**, or **Memory** tags.
- 12 If you selected **All** tags or **Plant I/O** tags, you can individually specify which plant I/O topics you want to import. To do this, click **Topics**. The **Select Topics** dialog box appears.



- 13 Using the right and left arrow buttons, move the topics that you want to import into the **To Be Imported** window. Click **OK**.

14 Click **Next**. The **Tag Storage** dialog box appears.



For more information on storage, see Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

- 15 To use cyclic storage, select **Use Cyclic Storage For All Topics**. The **Cyclic Storage For All Topics** area becomes available. In the **Storage Rate** list, select the desired rate. The cyclic storage rate is the time interval between consecutive stored values.
- 16 To use delta storage, select **Use Delta Storage For All Topics**. The **Delta Storage For All Topics** area becomes available. Select from the following options:

No Deadband

All changed values for a tag are stored.

InTouch Deadband

The time interval for storing a tag, as it was defined in the InTouch HMI software.

Wonderware Historian Specific Deadband

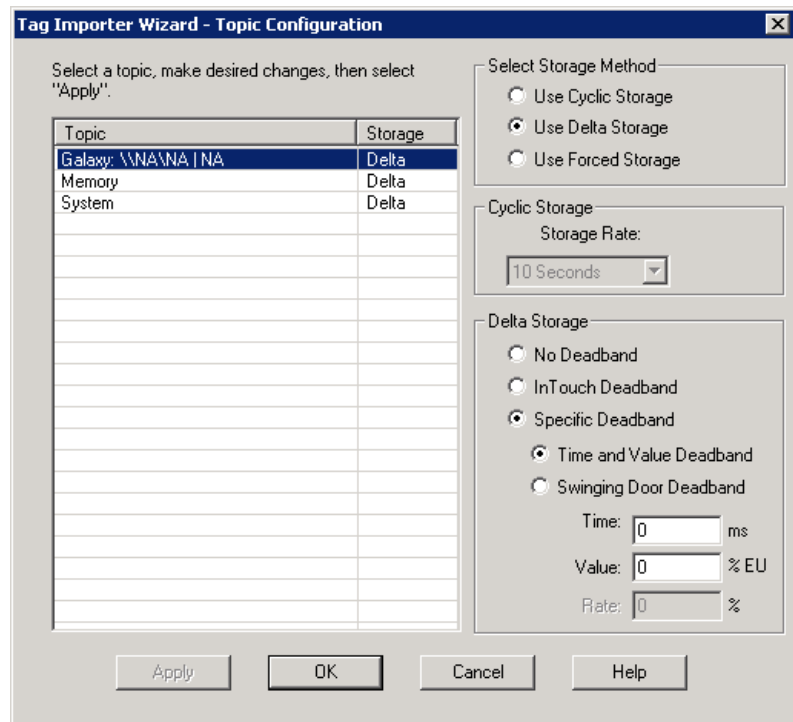
Allows you to specify a time and value deadband or a swinging door deadband.

A time deadband is the minimum time, in milliseconds, between stored values for a single tag. Any value changes that occur within the time deadband are not stored. The time deadband applies to delta storage only. A time deadband of 0 indicates that the system will store the value of the tag each time it changes.

A value deadband is the percentage of the difference between the minimum and maximum engineering units for the tag. Any data values that change less than the specified deadband are not stored. The value deadband applies to delta storage only. A value of 0 indicates that a value deadband will not be applied.

A swinging door deadband is the percentage of deviation in the full-scale value range for an analog tag. The swinging door (rate) deadband applies to delta storage only. Time and/or value deadbands can be used in addition to the swinging door deadband. Any value greater than 0 can be used for the deadband. A value of 0 indicates that a swinging door deadband will not be applied.

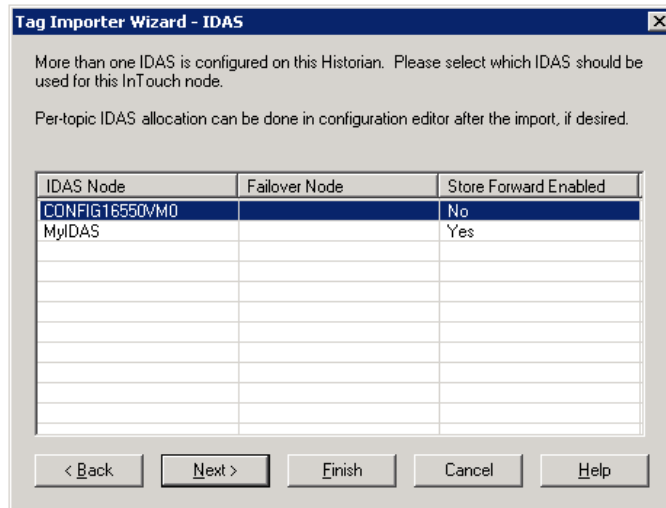
- 17 To use forced storage, select **Use Forced Storage For All Topics**.
- 18 To assign the storage paradigm on a per-topic basis, select **Per Topic Storage Selection** and then click the **Topics** button. The **Topic Configuration** dialog box appears.



- 19 Configure the storage method for a topic. These options are similar to that of the **Tag Storage** dialog box. Click **Apply** to apply the new storage method.

Note If you do not click **Apply**, the storage rule options revert back to their previous settings.

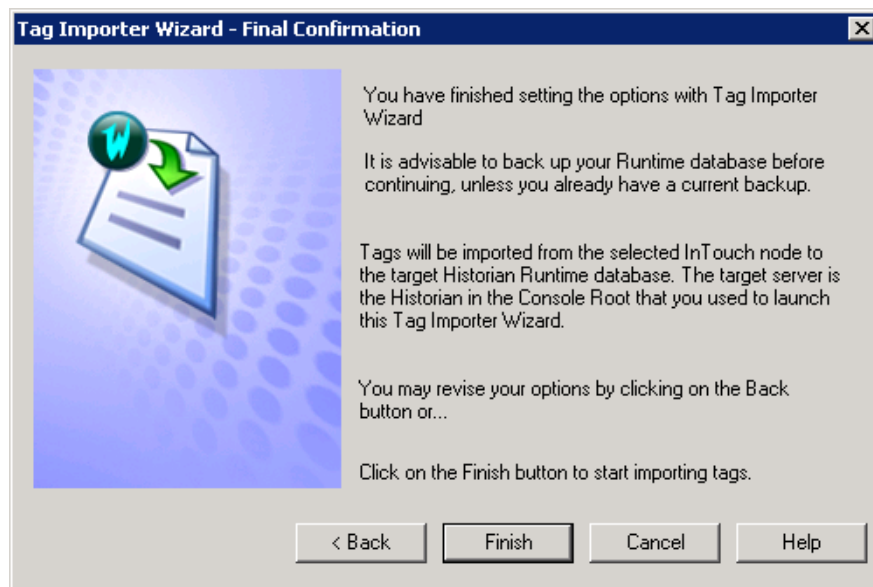
- 20 Click **OK** to return to the **Tag Storage** dialog box.
- 21 Click **OK**. If you have more than one IDAS on the computer from which you are importing, the **IDAS** dialog box appears.



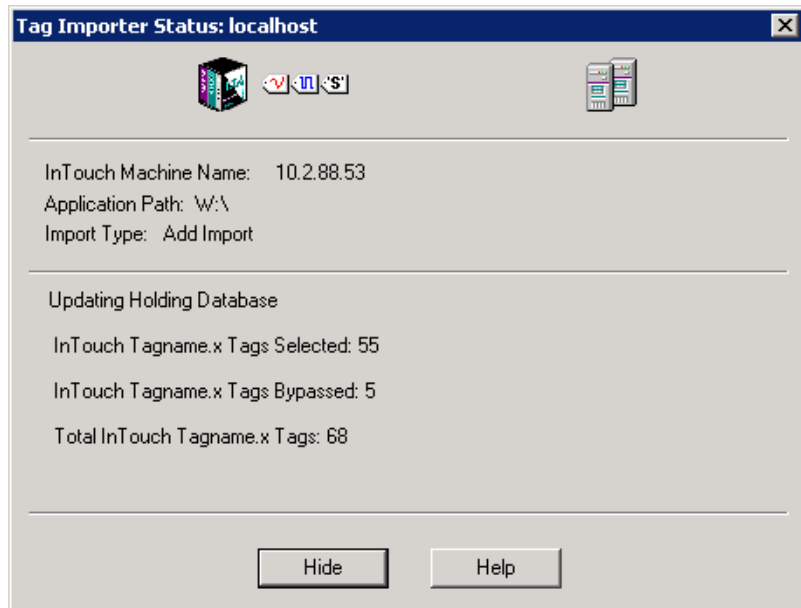
- 22 Select the IDAS that supplies the data values for the InTouch node.

For information on IDASs, including failover and store-and-forward options, see "About IDASs" in Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

- 23 Click **Finish** to start the import options. The **Final Confirmation** dialog box appears.



24 Click **Finish**. The **Tag Importer Status** dialog box appears.



25 If you click **Hide**, the dialog box closes, and the import process continues. The dialog box reappears when the import is complete.

Note For a re-import, only the tags for the topics you select are updated in the historian. Topics from the previous import remain unchanged.

26 When the import is complete, click **OK**.

27 Commit the changes to the system.

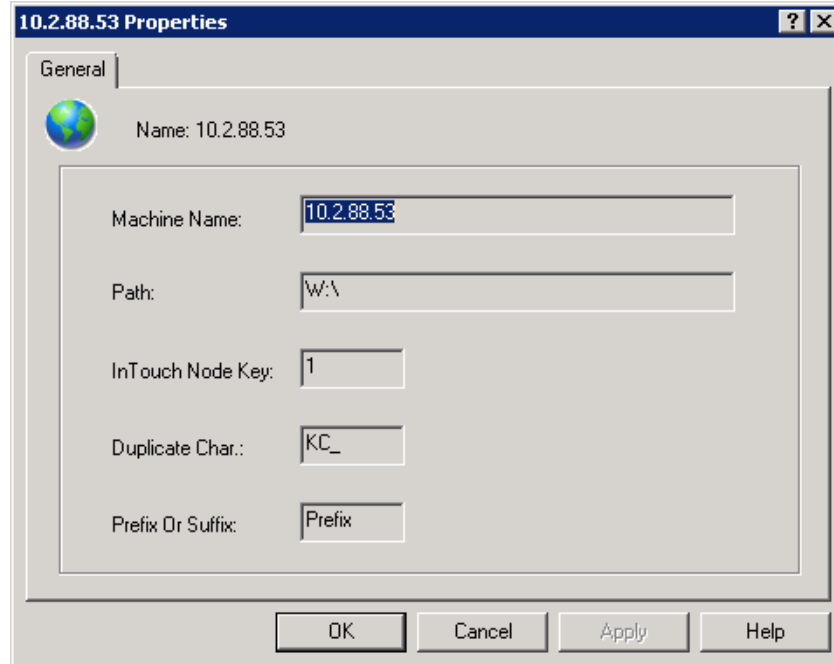
Viewing Properties for an Imported InTouch Node

In the System Management Console, you can view details for all imported InTouch nodes, as well as a list of tags associated with each node.

To view properties for an imported InTouch node

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Storage**.
- 3 Expand **Imported Nodes**.

- 4 Right-click on an InTouch node, and then click **Properties**. The **InTouch Node Properties** dialog box appears.



- 5 The read-only properties are as follows:

Machine Name

The name of the computer on which the InTouch application resides.

Path

The UNC path to the InTouch Tagname.X file.

InTouch Node Key

The unique numerical identifier for the named InTouch node.

Duplicate Char.

The string that was added to a tag name as a prefix or suffix to make it unique.

Prefix or Suffix

Used to indicate whether unique tags were created by prefixing or suffixing the unique string for the node.

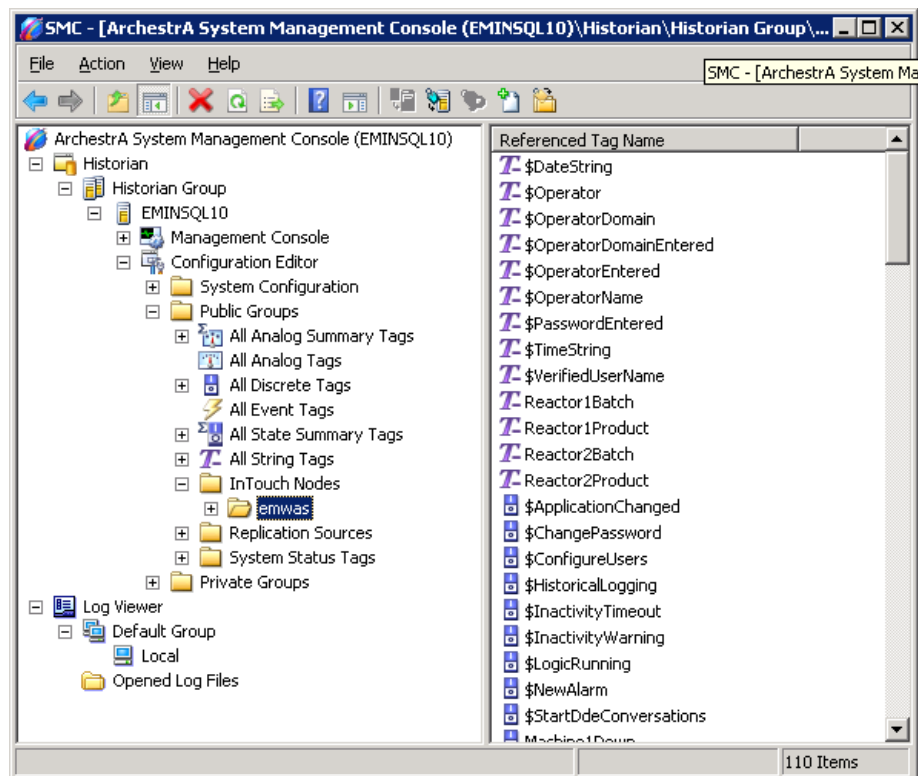
- 6 Click **OK**.

Viewing Tags Associated with an InTouch Node

In the **Public Groups** folder of the System Management Console tree, you can view a list of tags that have been imported from an InTouch node. You can also view the list of tags under the **System Configuration** folder, but with more details.

To view a list of tags in the public group








- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **Public Groups**, and then expand **InTouch Nodes**.
- 3 Select the InTouch node for which you want to view a list of tags.
- 4 The tag list appears in the details pane.



- 5 You can right-click on any tag to access the **Properties** dialog box for that tag.

To view a list of tags under the system configuration

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Storage**.
- 3 Expand **Imported Nodes**.
- 4 Select the InTouch node for which you want to view a list of tags.
- 5 The tag list appears in the details pane.

10.2.88.53		
Historian Tag Name	InTouch Tag Name	InTouch Tag Type
 KC_\$AccessLevel	\$AccessLevel	Memory Integer
 KC_\$AlarmPrinterNoPaper	\$AlarmPrinterNoPaper	Memory Discrete
 KC_\$AlarmPrinterOffline	\$AlarmPrinterOffline	Memory Discrete
 KC_\$ApplicationChanged	\$ApplicationChanged	Memory Real
 KC_\$ApplicationVersion	\$ApplicationVersion	Memory Real
 KC_\$ChangePassword	\$ChangePassword	Memory Discrete
 KC_\$ConfigureUsers	\$ConfigureUsers	Memory Discrete

The columns shown are:

Wonderware Historian Tag Name

The unique name of the tag within the Wonderware Historian system.

InTouch Tag Name

The original tag name in an InTouch application. The tag name may be different than the Wonderware Historian tag name if a new name was generated to ensure uniqueness.

InTouch Tag Type

The type of tag in an InTouch application. For more information about InTouch tag types, see your InTouch documentation.

Exporting or Importing Configuration Information with a Text File

The Wonderware Historian Database Configuration Export/Import Utility (aahDBDump.exe) is a stand-alone utility to export or import Wonderware Historian configuration information with a text file. Exporting and importing data are two independent operations.

The Wonderware Historian Database Configuration Export/Import Utility is useful when you want to make bulk modifications to the configuration, instead of using the Wonderware Historian Configuration Editor to edit a single database entity at a time. You would simply export the text file, make the modifications, and then import the changes back to the historian. The utility is also useful for transferring configuration information from one historian to another.

You can export/import the configuration information for one or more of the following entities. For some of the entities, the utility supports additional filtering.

- IDASs
- IOServers
- Topics
- Engineering units
- Messages
- Analog tags
- Discrete tags
- String tags
- Event tags
- Snapshot tags
- Summary operations
- Summary tag lists
- System parameters
- Replication servers
- Replication groups
- Replication schedules
- Replication tag entities

The Wonderware Historian Database Configuration Export/Import Utility does not export:

- InTouch node information. If you import tag definitions using the Tag Importer, and then export the database configuration, the node information is not included. If, after exporting, you rebuild the Wonderware Historian database, or want to import the database configuration into a different Wonderware Historian, you must first reimport the tag definitions for the InTouch application before you import the database configuration.
- Tags that have their current editor set to be Wonderware Application Server.

The Wonderware Historian Database Export/Import Utility requires a client connection to the SQL Server used by the historian to perform the export and import tasks. However, the historian does not need to be running.

Encoding Formats for Configuration Exports

When you export configuration information, you can specify either Unicode or ASCII as the preferred encoding format for the text file. Select Unicode if you are exporting any information that uses double-byte characters (for example, Japanese tag names).

When importing a text file, the Wonderware Historian Database Export/Import Utility automatically detects the encoding of the file and converts all text to Unicode, if needed, before populating the Wonderware Historian database.

Configuration Exporter Error Log

The Wonderware Historian Database Export/Import Utility keeps track of errors that occur during an import, on a line by line basis. When an error is encountered, you are prompted to stop the import or continue and process as much of the import as possible.

The utility logs progress and any errors encountered during the import to an error log file, named `aahDBDumpLog.Txt`. The error log file resides in the same folder as the utility executable and can be viewed with any program capable of reading text files, such as Notepad or Microsoft Excel. The error log file contains the:

- Date and time.
- Name of the input file.

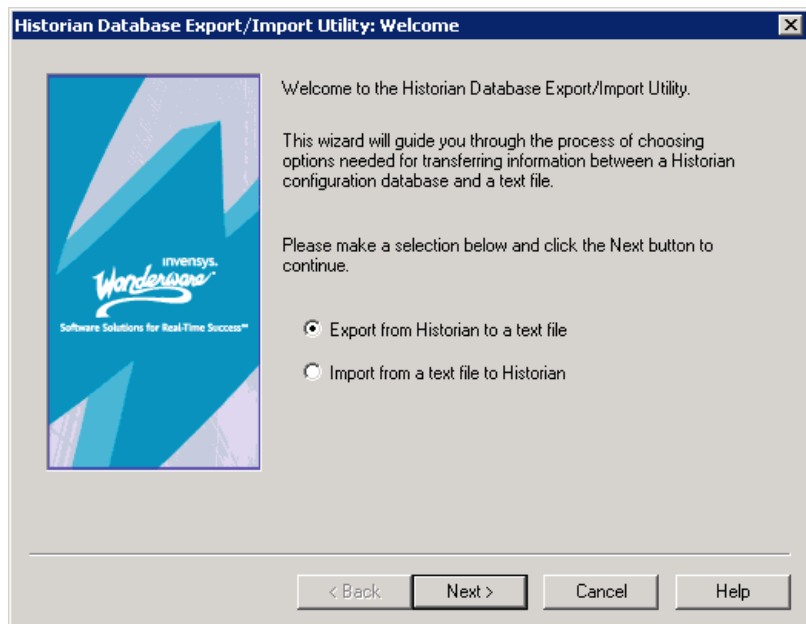
- Line numbers of the input file where errors occurred.
- SQL Server error messages reported when processing that line.

Each subsequent export or import operation appends to the log file. You should periodically delete older records to prevent the log file from becoming too large.

Performing a Configuration Export

To export configuration information

- 1 On the Windows **Start** menu, point to **Programs**, point to **Wonderware**, point to Wonderware Historian, and then click **Database Configuration Export and Import**. The **Historian Database Export/Import Utility Wizard** appears.



- 2 Click **Export from Historian to a text file**.

- 3 Click **Next**. The **Connect** dialog box appears.

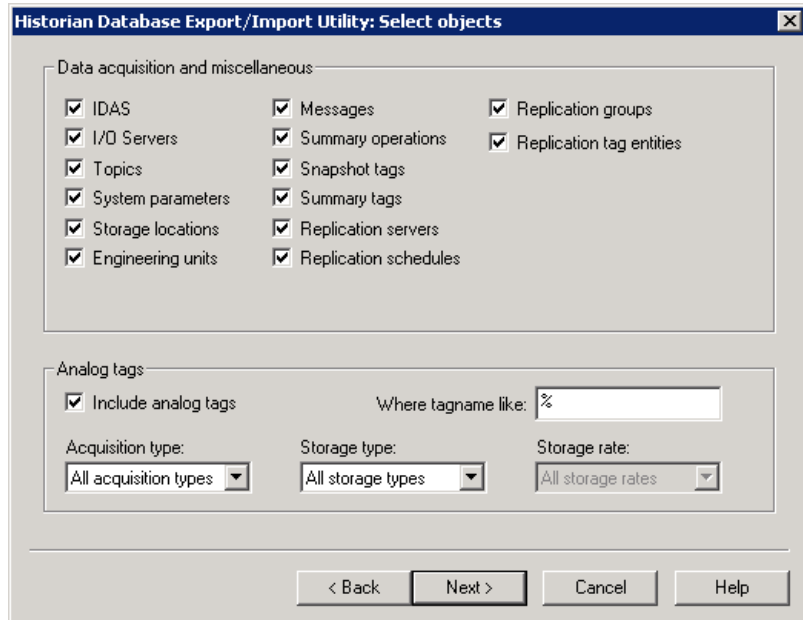
The screenshot shows the 'Historian Database Export/Import Utility: Connect' dialog box. It is divided into three main sections:

- Historian:** Contains a 'Server name' text box with the value 'CONFIG14789/MQ'. Below it are two radio buttons: 'Use Windows authentication' (selected) and 'Use SQL Server authentication'. Underneath are 'Login name' and 'Password' text boxes, both currently empty.
- Text File:** Contains a 'File name' text box with the path 'C:\Users\Administrator\Documents\HistorianDatabase.txt' and a browse button ('...'). Below this is a 'Save file as Unicode' checkbox, which is unchecked.
- Options:** Contains a 'Export all objects' checkbox, which is checked. To the right of this checkbox is a descriptive text: 'Select this option to export all database objects, or leave it unchecked to customize your selection on the pages that follow (this option does not affect imports).'.

At the bottom of the dialog, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

- 4 In the **Server name** box, type the name of the Wonderware Historian for which you want to export configuration information.
- 5 Provide a login for the historian.
Click **Use Windows authentication** to use your Windows logon account to connect to the Wonderware Historian.
Click **Use SQL Server authentication** to use a SQL Server login. Type a valid SQL Server username and password.
- 6 In the **File name** box, type the path for the text file to export, or click **...** to browse to the location.
- 7 If you are exporting and want to encode the data as Unicode, select the **Save file as Unicode** check box. For more information, see "Encoding Formats for Configuration Exports" on page 104.
- 8 To export configuration information for all database entities (for example, tags, engineering units, summary operations, and so on), click **Export all objects**. Skip to Step 17.

- 9 Click **Next**. (If you are exporting a file, and the file already exists at the location, you will be prompted to overwrite it.) The **Select Objects** dialog box appears.



- 10 In the **Data acquisition and miscellaneous** group, select one or more groups of definitions to export.

IDAS

An Wonderware Historian Data Acquisition Service (IDAS) is a software application that accepts data values coming from one or more I/O Servers and forwards them to a historian. For more information, see "About IDASs" in Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

I/O servers

An I/O Server is an application that provides data to a client over a network. For more information, see "Data Acquisition from I/O Servers" in Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

Topics

A topic is an application-specific subgroup of data elements. For more information, see "I/O Server Addressing" in Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

System parameters

A system parameter is a numeric or string value used for system configuration. System parameters are stored in the SystemParameter table in the Wonderware Historian database. For more information, see "SystemParameter" in Chapter 2, "Tables," in your *Wonderware Historian Database Reference*.

Storage locations

The storage location is the directory in which historical data files are stored. Storage locations are stored in the StorageLocation table in the Wonderware Historian database. For more information, see "StorageLocation" in Chapter 2, "Tables," in your *Wonderware Historian Database Reference*.

Engineering units

An engineering unit is the unit of measure for an analog tag. For example, RPMs, milliseconds, degrees.

Messages

Messages are the string values associated with the TRUE (ON) or FALSE (OFF) states of a discrete value.

Snapshot tags

Tags that are defined to have value snapshots saved by the event subsystem. For more information, see "Snapshot Actions" in Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

Summary operations

Aggregation calculations that are used by the event subsystem. For more information, see "Summary Actions" in Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

Summary tags

Tags that are defined to have aggregation calculations performed for their values by the event subsystem. For more information, see "Summary Actions" in Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

Replication servers

A list of the replication servers that are configured for this instance of the historian. For information on adding and maintaining replication groups, see Chapter 7, "Managing and Configuring Replication."

Replication schedules

A list of the replication schedules that are configured for this instance of the historian. For information on adding and maintaining replication groups, see Chapter 7, "Managing and Configuring Replication."

Replication groups

A list of the replication groups that are configured for this instance of the historian. For information on adding and maintaining replication groups, see Chapter 7, "Managing and Configuring Replication."

Replication tag entities

A list of the replication tags that are configured for this instance of the historian. This is the replication configuration for individual tags (simple or summary). For information on adding and maintaining replication groups, see Chapter 7, "Managing and Configuring Replication."

- 11 To export analog tag definitions, select **Include Analog Tags**. System tags are not included.
- 12 In the **Where tagname like** box, type a string value in order to filter the tags by name. To include all tagnames, leave this option blank or use the wildcard symbol (%). The exporter recognizes all SQL Server wildcard characters. For example, to select all analog tags that have names starting with "MyTag", type "MyTag%".
- 13 In the **Acquisition type** list, select the filter for the source of the tag values.

All acquisition types

No filter set. The export file includes all tag definitions (that is, I/O tags, MDAS tags, and tags for which values are not acquired).

I/O Server only

Select to only include tag definitions that specify an I/O Server as the data source.

Manual only

Select to only include tag definitions that specify MDAS or manual data acquisition as the data source. For example, values from MDAS or Transact-SQL statements.

For more information on acquisition, see Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

- 14** In the **Storage type** list, select the filter for the storage type. The storage type determines how often the value for an analog tag is stored. An analog value can be stored either by time interval (cyclic) or when the value changes (delta).

All storage types

Specifies no filter. Cyclic, delta, and unstored tags are selected for export.

Cyclic only

Only include tag definitions that specify cyclic storage. If you select this option, you can set an additional filter on the storage rate in the **Storage rate** list. Otherwise, click

All storage rates.

Delta only

Only include tag definitions that specify delta storage.

For more information on storage types and rates, see Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

- 15** Click **Next**. The **Select Objects** dialog box appears.

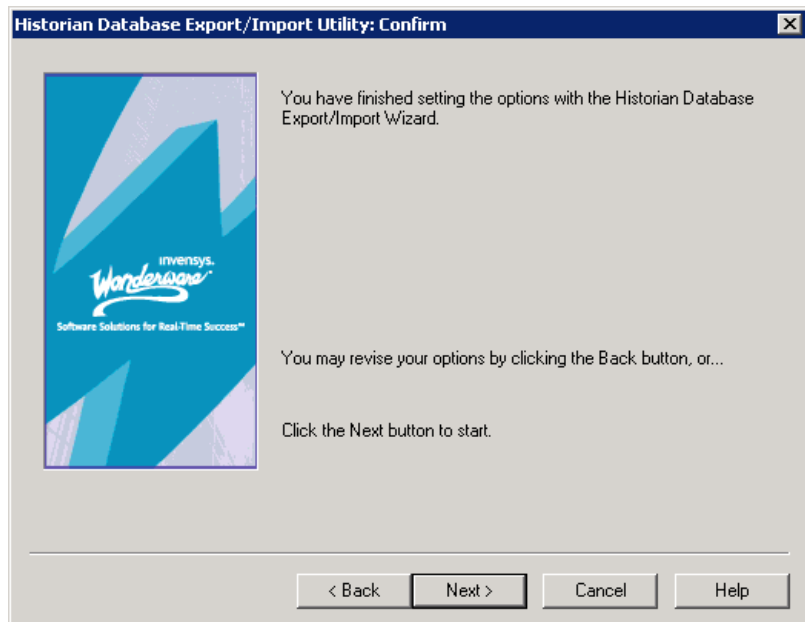
The screenshot shows a dialog box titled "Historian Database Export/Import Utility: Select objects". It contains three sections for selecting tag types:

- Discrete tags:** Includes a checked checkbox "Include discrete tags", a text box "Where tagname like:" containing "%", and a dropdown menu "Acquisition type:" set to "All acquisition types".
- String tags:** Includes a checked checkbox "Include string tags", a text box "Where tagname like:" containing "%", and a dropdown menu "Acquisition type:" set to "All acquisition types".
- Event tags:** Includes a checked checkbox "Include event tags" and a text box "Where tagname like:" containing "%".

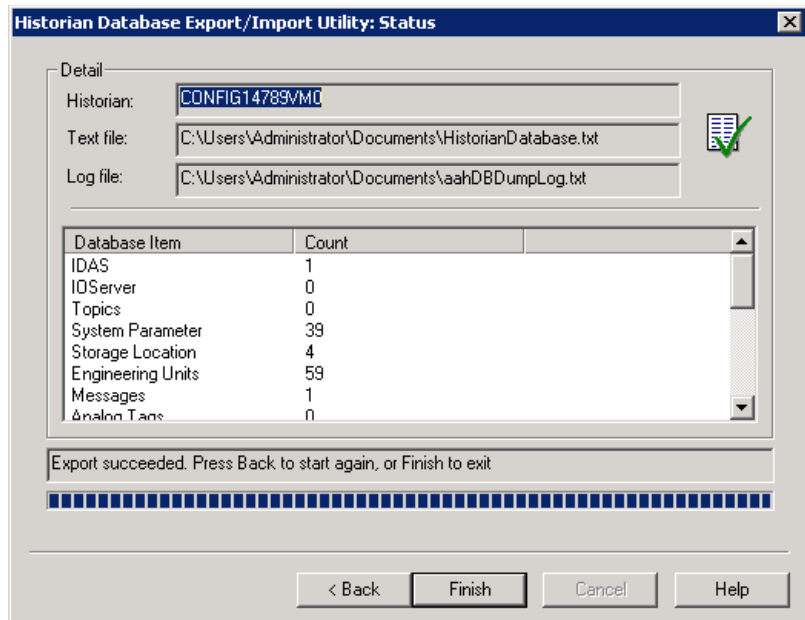
At the bottom of the dialog are four buttons: "< Back", "Next >", "Cancel", and "Help".

- 16** Configure the filters for discrete, string, and event tag definitions. System tags are not included. These options are the same as for analog tags.

17 Click **Next**. The **Final Confirmation** dialog box appears.



18 Click **Next** to start the export. The **Status** dialog box appears, showing the results of the export. The number of objects exported is reported.



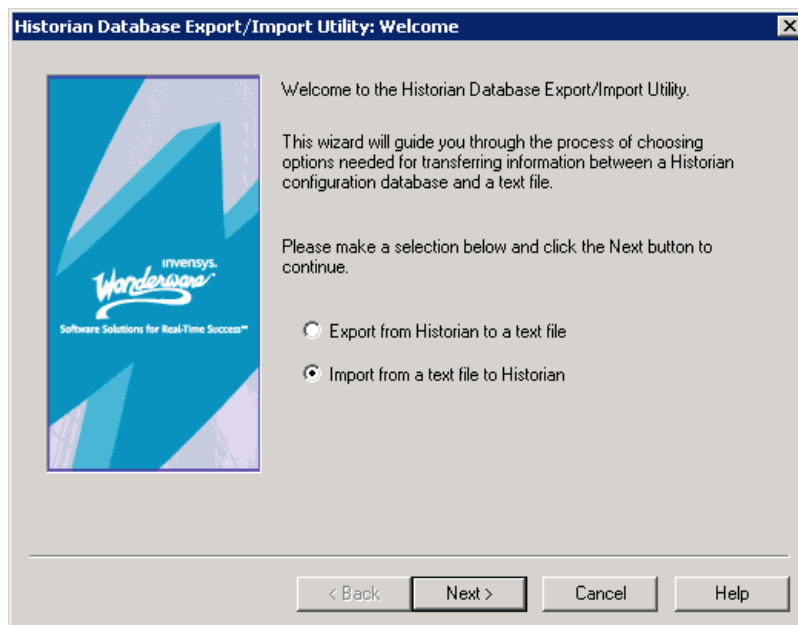
19 Click **Finish** to exit the wizard.

Performing a Configuration Import

Important The Wonderware Historian Database Export/Import Utility offers considerable flexibility for modifying the contents of the Runtime database. However, after an import is complete, there is no rollback or "undo" capability. It is highly recommended that you make a backup of the Runtime database before performing an import.

To import configuration information

- 1 On the Windows **Start** menu, point to **Programs**, point to **Wonderware**, point to Wonderware Historian, and then click **Database Configuration Export and Import**. The **Historian Database Export/Import Utility Wizard** appears.



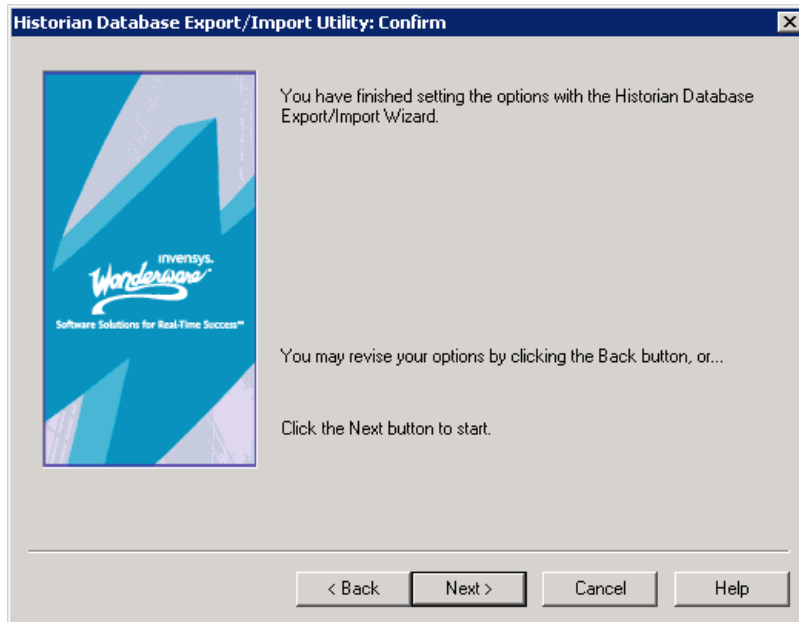
- 2 Click **Import from a text file to Historian**.

- 3 Click **Next**. The **Connect** dialog box appears.

The screenshot shows the 'Historian Database Export/Import Utility: Connect' dialog box. It is divided into three main sections: 'Historian', 'Text File', and 'Options'.
- The 'Historian' section contains a 'Server name' text box with 'CONFIG14789VM0' entered. Below it are two radio buttons: 'Use Windows authentication' (selected) and 'Use SQL Server authentication'. Underneath are 'Login name' and 'Password' text boxes.
- The 'Text File' section has a 'File name' text box containing 'C:\Users\Administrator\Documents\HistorianDatabase.txt' and an ellipsis button to the right. Below this is a checkbox labeled 'Save file as Unicode' which is unchecked.
- The 'Options' section features a checkbox labeled 'Export all objects' which is checked. To its right is a block of explanatory text: 'Select this option to export all database objects, or leave it unchecked to customize your selection on the pages that follow (this option does not affect imports).'
At the bottom of the dialog are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'. The 'Next >' button is highlighted with a dashed border.

- 4 In the **Server name** box, type the node name of the computer hosting Wonderware Historian for which you want to import configuration information.
- 5 Provide a login for the historian.
Click **Use Windows authentication** to use your Windows logon account to connect to the Wonderware Historian.
Click **Use SQL Server authentication** to use a SQL Server login. Type a valid SQL Server username and password.
- 6 In the **File name** box, type the path for the text file to import, or click the ellipsis button to browse to the location.

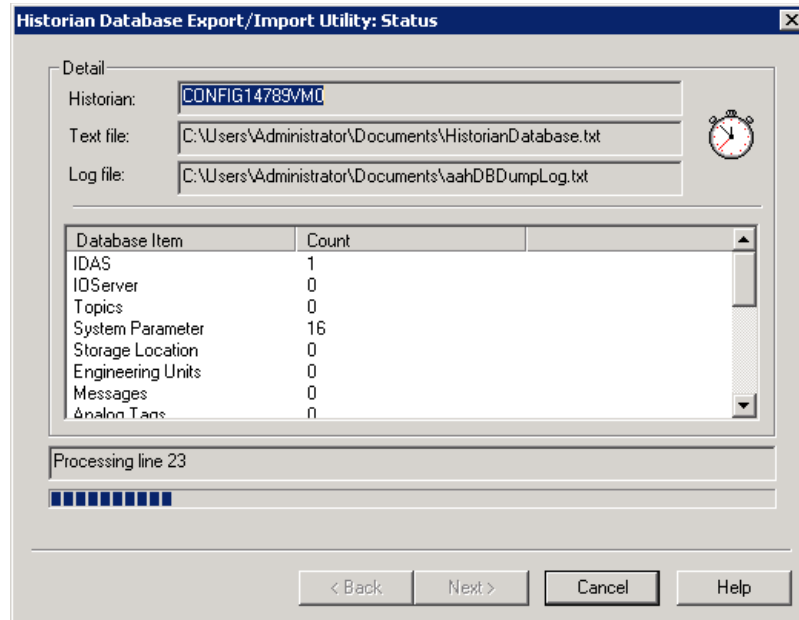
7 Click **Next**. The **Confirm** dialog box appears.



8 Click **Next** to start the import.

Note If you are importing a text file that includes one or more delete mode indicators, the utility prompts you to verify each entity to delete, unless you select to turn off subsequent delete warnings.

9 The **Status** dialog box appears, showing the results of the import. The number of objects imported is reported.



10 Click **Finish** to exit the wizard.

Editing the Configuration Text File

By editing a configuration text file, you can insert new objects into the database, modify existing objects, and delete existing objects. For example, you can add 10 new engineering units simply by adding 10 lines under the EngineeringUnit entity line and then importing the configuration file into the Wonderware Historian. You can also ignore any changes to existing objects by skipping portions of the text file when importing.

Important The order in which entities appear in the text file is important to ensure successful importing of the file. For example, if an analog tag is defined in the file, and the tag requires a new engineering unit, the new engineering unit should appear in the text file before the analog tag. The Wonderware Historian Database Export/Import Utility scans the file once from top to bottom and makes no attempt at resolving ordering conflicts. As a general rule, the following order of entities in the text file should be maintained: IDAS, IO Server, Topics, System Parameter, Storage Location, EngineeringUnits, Messages, AnalogTags, DiscreteTags, StringTags, EventTags, SnapshotTags, SummaryOperations, SummaryTags, ReplicationSchedules, Replication Servers, Replication Groups, and Replication Tag Entities.

The following is an example of a configuration text file. All values must be separated by a tab stop.

Mode Indicator	Entity Name	Attribute Fields			
:	(Mode)update				
:	(IODriver) ComputerName	→	AltComputerName	→	StoreForwardMode
	johanv3	→		→	On
:	(IOServer) ComputerName	→	ApplicationName	→	AltComputerName
	johanv-nb	→	testprot	→	johanv3
	johanv-nb	→	TestSrvr	→	johanv3
:	(Topic)Name	→	ApplicationName	→	ComputerName
	Topic6	→	testprot	→	johanv-nb
	Topic7	→	testprot	→	johanv-nb
	Topic2	→	TestSrvr	→	johanv-nb
:	(EngineeringUnit)Unit	→	DefaultTagRate		
%		→	10000		
None		→	10000		
Minute		→	10000		
:	(Message)Message0	→	Message1		
OFF		→	ON		
Closed		→	Open		
:	(AnalogTag)TagName				

Mode Indicators

The mode indicator determines whether the data is inserted, updated, deleted, or ignored. Valid values for the mode indicator are:

Value	Description
update:	If the line being imported corresponds to an existing entity in the database, the entity is updated with the contents of the line in the file. If the entity does not exist in the database, it is inserted.
insert:	If the line being imported corresponds to an existing entity in the database, that entity is left unmodified in the database. Only non-existing database entities are added when this value is specified for the mode indicator.
delete:	If the line being imported corresponds to an existing entity in the database, that entity is deleted; otherwise, nothing is done.
ignore:	The line in the text file is essentially ignored. This is useful for skipping portions of the text file when importing.

The very first line in the text file must be a valid mode indicator; otherwise, the importer reports an error and stops importing the file. Mode indicators can appear anywhere in the file and remain effective until the next mode indicator or the end of the file is encountered.

Line Entries

The text file contains header lines to indicate the type of database object referenced by the actual data lines following the header line. The header line consists of an entity name (shown within parentheses) followed by a series of attribute identifiers. The entity name loosely corresponds to a table (or tables) in the database, while the attribute identifiers resemble the column names in the tables. Note, however, that there is no strict correspondence between database tables and header lines. For example, a line in the text file related to an analog tag contains all the fields necessary to populate the Tag, AnalogTag, and other tables.

In the text file, a header line is followed by one or more lines containing actual data for the entity shown in the header line. Any particular entity can be repeated in the text file as many times as needed. For example, you can have a set of new analog tags inserted at the beginning of the file, and another set of analog tags deleted later in the file.

When you add lines to the end of the export file, make sure that the last line in the file is terminated by a carriage return/line feed. You can do this by pressing the Enter key on your keyboard at end of the line.

The value of the DefaultTagRate for an engineering unit must be one of the valid cyclic rates for analog tags. For more information, see "Cyclic Storage" in Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

Note The name "\$local" appears in the export file, instead of the real computer name, for any object that has a computer name that refers to the local computer. When an import is performed, "\$local" is translated into the name of the computer that is the target of the import.

Chapter 4

Configuring Data Acquisition

The purpose of the data acquisition subsystem is to accept and process incoming data that originates from data sources. One data source is a Wonderware-compatible I/O Server. An I/O Server is an application that provides factory data to a client by a specific protocol. An IDAS is a component of the Wonderware Historian that accepts data values from an I/O Server and forwards them to the storage subsystem, which stores the data to disk.

You can also batch import existing history data into the system by means of a .CSV file or by using the InTouch History Importer. For more information, see Chapter 6, "Importing, Inserting, or Updating History Data."

For conceptual information about the data acquisition subsystem, see Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

For information about monitoring data acquisition, see "Monitoring Data Acquisition" on page 266.

Accessing Data Acquisition Information

To access data acquisition information

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.

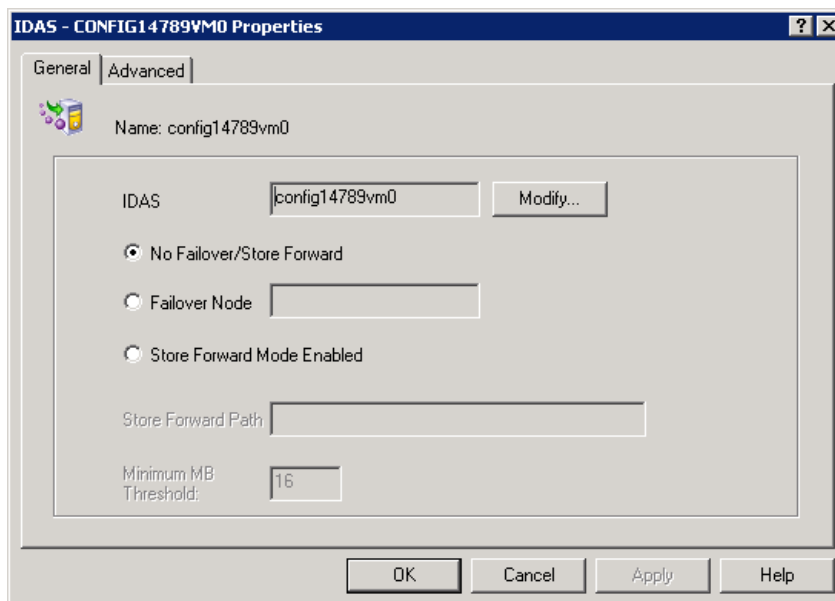
Configuring IDASs

Use the System Management Console to configure IDASs. At least one IDAS must exist.

Editing General Information for an IDAS

To edit general information

- 1 In the System Management Console tree, expand a server group, and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- 3 Right-click on the name of the IDAS to edit, and then click **Properties**. The **Properties** dialog box appears.
- 4 Click the **General** tab.



- 5 To change the name of the computer on which the IDAS runs, click **Modify** and then type the new name in the **IDAS Node** box. If you are creating a new IDAS definition or modifying an existing one, make sure that the IDAS software is installed on the target computer.
- 6 To disable failover or store-and-forward, select **No Failover/Store Forward**.
- 7 To specify a backup IDAS, select **Failover Node**. In the adjacent box, type the name of the computer on which an optional, redundant IDAS runs. You must use the fully qualified name of the computer. You could also use the IP address. This should be set to an empty string if no redundant IDAS is specified. Make sure that the IDAS software is installed on the target failover computer. If the failure of the primary IDAS is detected by the system, the failover IDAS is automatically started. The failover IDAS is shut down after the primary IDAS is back online.
- 8 To enable store-and-forward, select **Store Forward Mode Enabled** and then configure the options.

Store Forward Path

Used to specify the path for the IDAS data buffer on the local hard drive of the IDAS computer. The path should be absolute (for example, c:\IDASBuffer). Data is written to this path until the minimum threshold for the buffer is reached. Remote buffer paths are not supported. When the store-and-forward path specified for the IDAS is invalid, the default path picked by the system is: <public folder>\ArchestrA\Historian\IDAS\SF where the <public folder> is dependent on the operating system. For example, for the Windows 2008 and Windows Vista operating systems, the path is

C:\ProgramData\ArchestrA\Historian\IDAS\SF. On the Windows 2003 and Windows XP operating systems, the path is C:\Documents and Settings\All

Users\Application

Data\ArchestrA\Historian\IDAS\SF. When the store-and-forward path specified for the IDAS is just a folder name (without any path characters like \ and :), the default path picked by the system is: <Windows system path>\<folder name specified by the user>. For example, for the Windows Server 2003, Windows XP,

Windows Vista 32-bit, and Windows Server 2008 32-bit operating systems, the path is
C:\WINDOWS\system32\<<folder name>.

Minimum MB Threshold

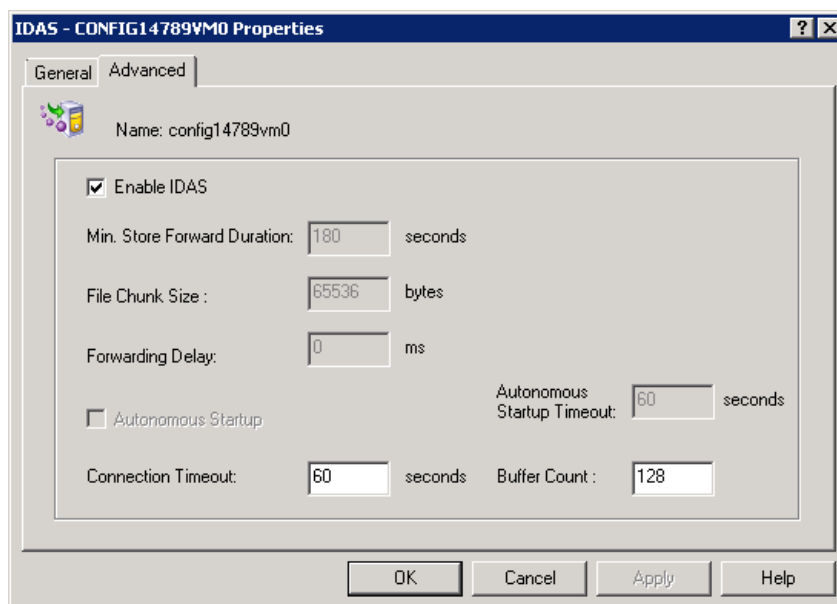
The minimum amount of free disk space, in megabytes, at which IDAS stops collecting data in the store-and-forward buffer.

- 9 Click **OK**.

Editing Advanced Information for an IDAS

To edit advanced information

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- 3 Right-click on the name of the IDAS to edit, and then click **Properties**. The **Properties** dialog box appears.
- 4 Click the **Advanced** tab.



- 5 Select the **Enable IDAS** check box to allow the system to use the IDAS.

6 Configure store-and-forward options.

For more information on store-and-forward, see "IDAS Store-and-Forward Capability" in Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

Min. Store Forward Duration

The minimum duration, in seconds, for the IDAS to function in store-and-forward mode. The IDAS functions in store-and-forward mode for this length of time even if the condition that caused IDAS to function in store-and-forward mode no longer exists. The maximum duration is 3600 seconds, and the minimum is 0 seconds.

File Chunk Size

The size, in bytes, of the data "chunks" that are sent to the historian when store-and-forward data is forwarded. The size of the chunks can be decreased to accommodate slower networks. Decrease this number only if the forwarding delay is greater than zero.

Forwarding Delay

The interval, in milliseconds, at which "chunks" of store-and-forward data are forwarded to the historian. The length of the interval may need to be increased to accommodate slower networks.

7 Configure the IDAS for autonomous startup.

For more information on autonomous startup, see "IDAS Autonomous Startup" in Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

Autonomous Startup

Select to enable the IDAS to start itself, even if the historian is unavailable.

Autonomous Startup Timeout

The amount of time, in seconds, that the autonomous IDAS should wait for configuration commands when started by the Configuration service before going to the autonomous mode. This timeout may need to be increased only if you have a large number of IDASs configured as autonomous on a slow network.

- 8 Configure additional options.

Connection Timeout

The amount of time, in seconds, that the Configuration service attempts to communicate with an IDAS for configuration/reconfiguration. If this timeout elapses, the Configuration service assumes that the IDAS connection has been dropped. This number may need to be increased to accommodate slower networks.

Buffer Count

The number of 64 KB buffers pre-allocated for buffering data. This number may need to be increased to accommodate high data rates.

- 9 Click **OK**.

Adding an IDAS

If you are adding a remote IDAS, install the IDAS software on the remote computer before setting up the IDAS configuration in the System Management Console. During the installation, you are prompted to specify the network account that will be used by a remote IDAS and the historian for communication. This account must belong to the Windows Administrators group on both computers.

To add an IDAS

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**.
- 3 Right-click on **Data Acquisition** and then click **New IDAS**.

The screenshot shows the 'New IDAS - General' configuration window. It includes a title bar with a close button, a decorative purple sidebar with a server icon, and a main configuration area. The configuration area contains the following fields and options:

- IDAS Node:** A text input field.
- Failover Options:** Three radio buttons: 'No Failover/Store Forward', 'Failover Node' (with an associated text box), and 'Store Forward Mode Enabled' (which is selected).
- Store Forward Path:** A text input field.
- Minimum MB Threshold:** A text input field.
- Navigation:** 'Next >', 'Cancel', and 'Help' buttons at the bottom.

- 4 Enter the configuration information for the new IDAS.
For more information on these options, see "Editing General Information for an IDAS" on page 120.
- 5 Click **Next**.
- 6 Enter the advanced information for the new IDAS.
For more information on these options, see "Editing Advanced Information for an IDAS" on page 122.
- 7 Click **Finish**.

Deleting an IDAS

An IDAS cannot be deleted if topics and/or I/O Servers are still associated with it. Also, at least one IDAS must exist. It is recommended that you delete a remote IDAS when it is connected to the historian. This ensures that the temporary configuration files on the remote computer are deleted.

Configuring I/O Server Types

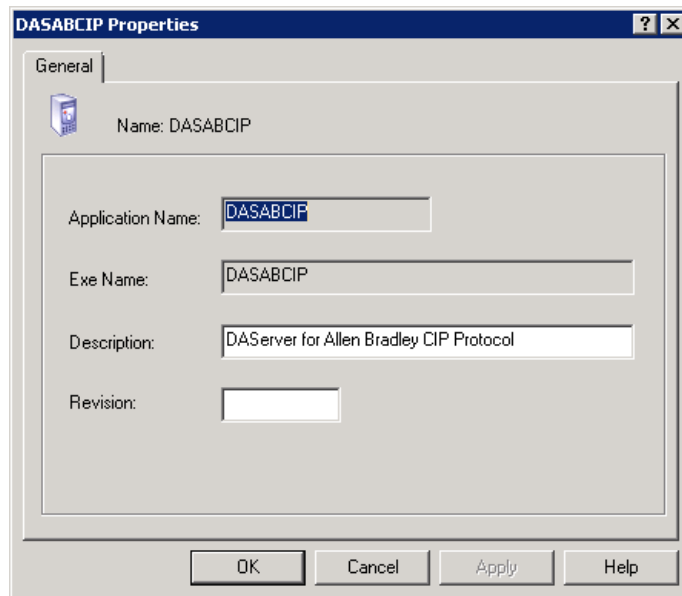
The System Management Console lists every supported Wonderware I/O Server type that is available at the time that Wonderware Historian is shipped. You can add new I/O Server types at any time. Before you add an I/O Server, make sure that its associated type is available in the system for selection.

Editing I/O Server Type Properties

To edit properties for an I/O Server type

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- 3 Click **I/O Server Types**. A list of types appears in the details pane.

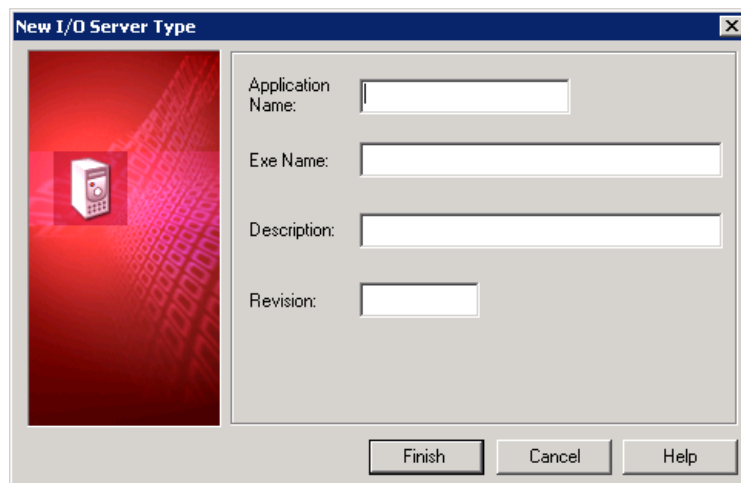
- Right-click on the I/O Server type and then click **Properties**. The **Properties** dialog box appears.



- You can only edit the description, revision letter, and platform for an I/O Server type. For information on these options, see "Adding an I/O Server Type" on page 126.
- Click **OK**.

Adding an I/O Server Type

- In the System Management Console tree, expand a server group and then expand a server.
- Expand **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- Right-click on **I/O Server Types** and then click **New I/O Server Type**.



- 4 In the **Application Name** box, type the application name of the I/O Server. This name is usually the same as the executable file name.
- 5 In the **Exe Name** box, type the name of the I/O Server's executable file.
- 6 In the **Description** box, type the description of the I/O Server type.
- 7 In the **Revision** box, type the revision number for the I/O Server.

Note The values for the **Description** and **Revision** options are not used by the Wonderware Historian.

- 8 Click **Finish**.

Deleting an I/O Server Type

To delete an I/O Server type

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 In the **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- 3 Click **I/O Server Types**. A list of types appears in the details pane.
- 4 Right-click on the I/O Server type and then click **Delete**.

Configuring I/O Servers

I/O Servers and their associated topics can be imported from InTouch HMI software or added manually using the System Management Console.

In the System Management Console tree, selecting the **Data Acquisition** item shows a list of the configured I/O Servers in the details pane. Using the System Management Console, you can view, edit, and delete existing I/O Servers and their associated topics. You can also add new I/O Servers and topics. You cannot create an I/O Server tag unless an I/O Server and an associated topic are available.

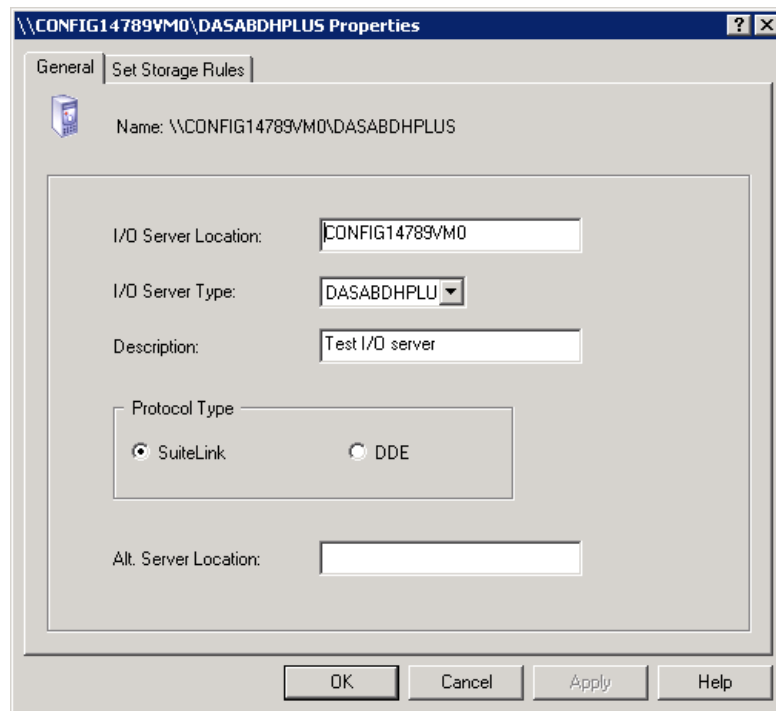
If you edit I/O Server information and then re-import a tagname database using the Tag Importer wizard, the changes you made to the I/O Server will not be preserved.

For more information on I/O Servers, see Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

Editing General Information for an I/O Server

To edit general information

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 In the **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- 3 Expand the IDAS associated with the I/O Server.
- 4 Right-click on the name of the I/O Server to edit, and then click **Properties**. The **Properties** dialog box appears.



- 5 In the **I/O Server Location** box, type the name of the computer on which the I/O Server runs.
- 6 In the **I/O Server Type** list, select the application name of the I/O Server. This name is usually the same as the executable file name.
- 7 In the **Description** box, type a description of the I/O Server.
- 8 In the **Protocol Type** group, select the protocol that the I/O Server uses to send data to the Wonderware Historian. For more information, see "Supported Protocols" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

Note DDE is not supported if the historian is running on the Windows Server 2003, Windows Server 2008, or Windows Vista operating system.

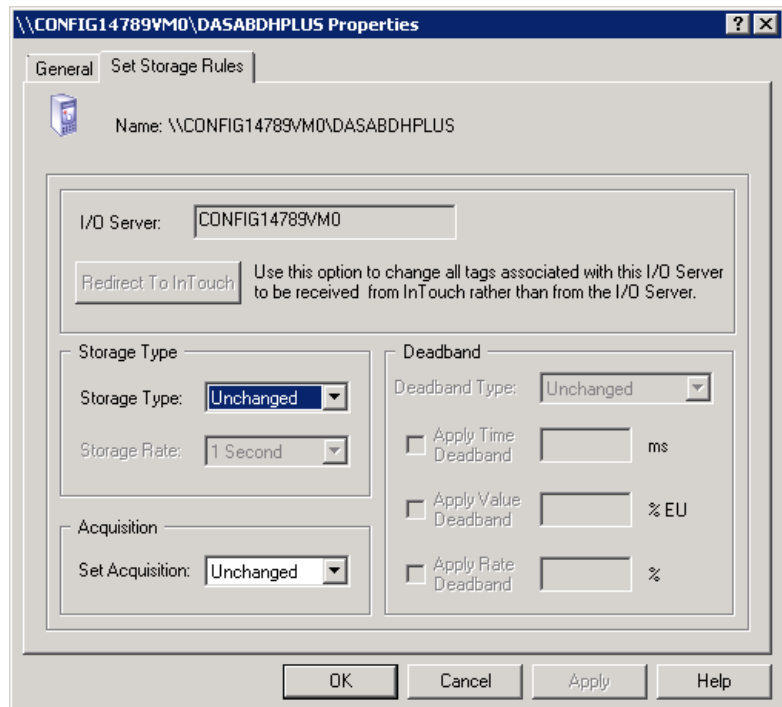
- 9 In the **Alt. Server Location** box, type the name of the computer on which an optional, failover I/O Server runs. The failover I/O Server must be running in order for the switch to be made.
- 10 Click **OK**.

Editing Storage Rule Information for an I/O Server

When you set storage rules for a particular I/O Server, the rules apply to all tag values originating from that I/O Server.

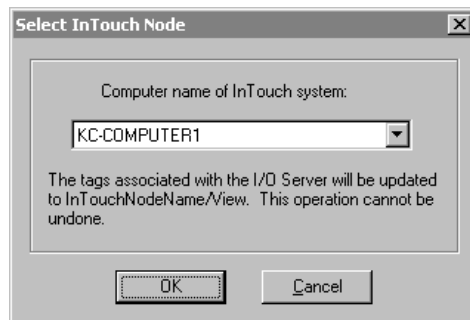
To edit storage rules

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 In the **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- 3 Expand the IDAS associated with the I/O Server.
- 4 Right-click on the name of the I/O Server to edit, and then click **Properties**. The **Properties** dialog box appears.



- 5 Click the **Set Storage Rules** tab.

- 6 To redirect the I/O Server to **InTouch** HMI software, click **Redirect to InTouch**. This button is only available if at least one I/O Server type is "VIEW." The **Select InTouch Node** dialog box appears.



In the **Computer name of InTouch system** list, select the name of the InTouch node from which you want to acquire tag values. If more than one InTouch nodes are imported, be sure to select the InTouch node that receives data from the I/O Server you are redirecting.

For more information, see "Redirecting I/O Servers to InTouch HMI Software" in Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

Important After you redirect an I/O Server, you cannot undo.

Click **OK** to redirect the I/O Server.

- 7 In the **Storage Type** group, configure the storage rule for all the tags associated with the I/O Server:

Unchanged

No storage rule is applied at the I/O Server level.

Delta

Tag values are stored only if they have changed.

Cyclic

Tag values are stored according to a fixed rate, which you can select from the **Storage Rate** list.

None

Tag values from this I/O Server are stored in the active image, but are not stored into history.

Forced

All values received from this I/O Server are stored.

- 8 In the **Deadband** group, configure the deadband. Options in this group are only available if delta storage is selected in the **Storage Type** group. For the deadband type you select, configure the appropriate options.

Unchanged

No storage rule is applied at the I/O Server level.

Time and/or Value

A time deadband is the minimum time, in milliseconds, between stored values for a single tag. Any value changes that occur within the time deadband are not stored. The time deadband applies to delta storage only. A time deadband of 0 indicates that the system will store the value of the tag each time it changes.

A value deadband is the percentage of the difference between the minimum and maximum engineering units for the tag. Any data values that change less than the specified deadband are not stored. The value deadband applies to delta storage only. A value of 0 indicates that a value deadband will not be applied.

Swinging Door

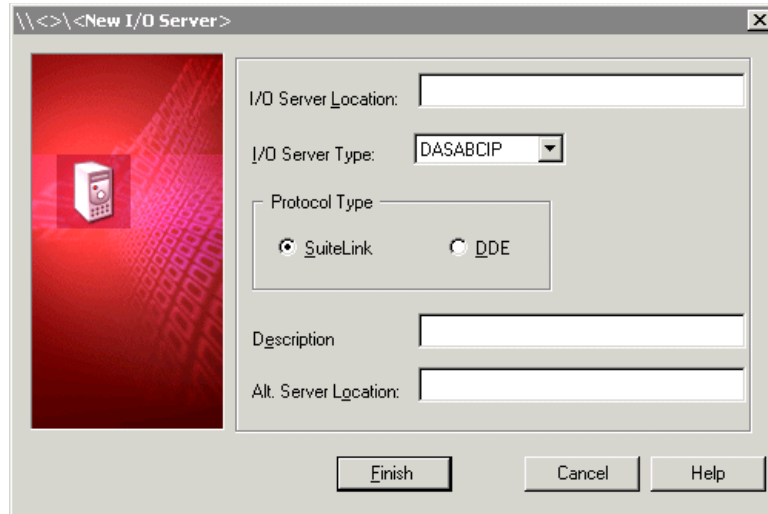
A swinging door deadband is the percentage of deviation in the full-scale value range for an analog tag. The swinging door (rate) deadband applies to delta storage only. Time and/or value deadbands can be used in addition to the swinging door deadband. Any value greater than 0 can be used for the deadband. A value of 0 indicates that a swinging door deadband will not be applied.

- 9 In the **Set Acquisition** box, select whether or not to turn data acquisition from the I/O Server either on or off. The Unchanged option allows you to leave current acquisition settings unchanged, which is useful if you have a mix of acquired and not acquired tags on the I/O Server and do not want to go through all of them.
- 10 Click **OK**.

Adding an I/O Server

To add an I/O Server

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- 3 Right-click on the IDAS to which you want to add the I/O Server, and then click **New I/O Server**.



- 4 Enter the configuration information for the new I/O Server.
For more information on these options, see "Editing General Information for an I/O Server" on page 128.
- 5 Click **Finish**.

Deleting an I/O Server

If you delete an I/O Server and then re-import the tagname database that contained the I/O Server definition using the Tag Importer wizard, the I/O Server is added again. An I/O Server cannot be deleted if there are still topics associated with it.

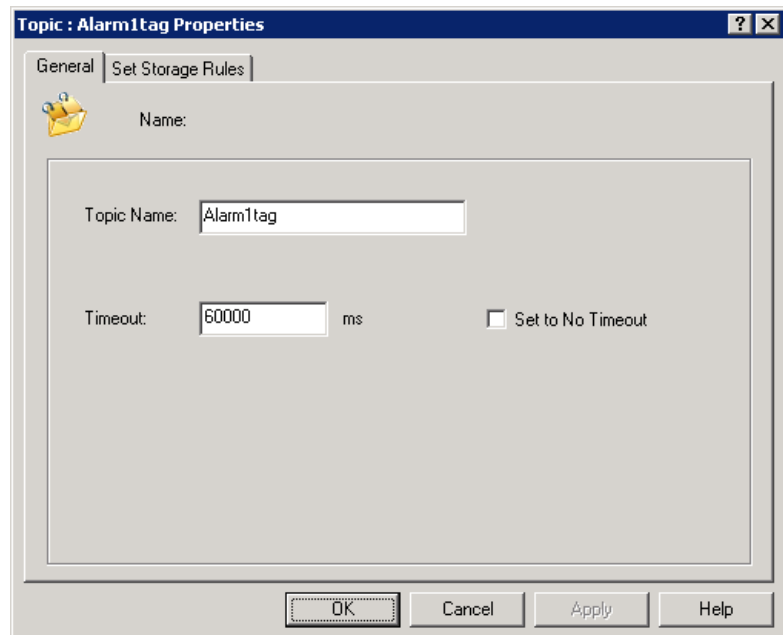
Configuring Topics

A topic is a logical block of data from an I/O Server. Both the DDE and SuiteLink protocols use topics to locate information coming from I/O Servers.

Editing General Information for a Topic

To edit general topic information

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- 3 Expand the IDAS and then the I/O Server that contains the topic to edit.
- 4 Right-click on the topic, and then click **Properties**. The **Properties** dialog box appears.



- 5 In the **Topic Name** list, type the name of the topic.
- 6 In the **Time Out** box, enter the time span, in milliseconds, in which a data point must be received on the topic. If no data point is received in this time span, the topic is considered "dead." The historian disconnects and then attempts to reconnect to the topic. The default is 60000 milliseconds.

Note You can also manually force a reconnect for one or all of the topics in the system. For more information, see "Reinitializing I/O Topics" on page 139.

- 7 To disable the time out, select **Set to No Time Out**.

You might want to disable the time out if the topic has data values that are not changing at all or changing very slowly. If you have a slow-changing tag for which a time out is occurring frequently, you will see periods of NULL data in history, as a result of the historian disconnecting and reconnecting. Disabling the time out prevents the historian from disconnecting, so that valid data is always being logged.

The topic timeout is automatically set to 0 and disabled if you enable late data for the topic (configurable on the **Set Storage Rules** tab).

- 8 Click **OK**.

Editing Storage Rules for a Topic

To edit storage rules for a topic

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- 3 Expand the IDAS and then the I/O Server that contains the topic to edit.
- 4 Right-click on the topic to edit, and then click **Properties**. The **Properties** dialog box appears.
- 5 Click the **Set Storage Rules** tab.

The screenshot shows the 'Topic : Alarm1tag Properties' dialog box with the 'Set Storage Rules' tab selected. The dialog is divided into several sections:

- Name:** A text field for the topic name.
- Time stamp:** A dropdown menu for 'Set Time Stamp of:' with 'Unchanged' selected.
- Storage Type:** A dropdown menu for 'Storage Type:' with 'Unchanged' selected, and a dropdown for 'Storage Rate:' with '1 Second' selected.
- Acquisition:** A dropdown menu for 'Set Acquisition:' with 'Unchanged' selected.
- Late Data:** A checkbox for 'Enable Late Data' (unchecked), an 'Idle Duration:' field set to '60' seconds, and a 'Processing Interval:' field set to '120' seconds.
- Deadband:** A dropdown menu for 'Deadband Type:' with 'Unchanged' selected, and three checkboxes for 'Apply Time Deadband', 'Apply Value Deadband', and 'Apply Rate Deadband', each followed by a text input field and a unit (ms, % EU, or %).

At the bottom of the dialog are buttons for 'OK', 'Cancel', 'Apply', and 'Help'.

- 6 In the **Set Time Stamp of** list, select the whether the timestamp of the data source or the server should be used.

Note If a fast-changing tag is configured to use server timestamping, the packet of data that is sent to the storage subsystem may contain multiple data values with the same timestamp, which may affect data calculations, such as for swinging door storage.

- 7 In the **Storage Type** group, configure the storage rule for all the tags associated with the topic:

Unchanged

No storage rule is applied at the topic level.

Delta

Tag values are stored only if they have changed.

Cyclic

Tag values are stored according to a fixed rate, which you can select from the **Storage Rate** list.

None

Tag values from this topic are stored in the active image, but are not stored into history.

Forced

All values received from this topic are stored.

- 8 In the **Deadband** group, configure the deadband. Options in this group are only available if delta storage is selected in the **Storage Type** group. For the deadband type you select, configure the appropriate options.

Unchanged

No storage rule is applied at the topic level.

Time and/or Value

A time deadband is the minimum time, in milliseconds, between stored values for a single tag. Any value changes that occur within the time deadband are not stored. The time deadband applies to delta storage only. A time deadband of 0 indicates that the system will store the value of the tag each time it changes.

A value deadband is the percentage of the difference between the minimum and maximum engineering units for the tag. Any data values that change less than the specified deadband are not stored. The value deadband applies to delta storage only. A value of 0 indicates that a value deadband will not be applied.

Swinging Door

A swinging door deadband is the percentage of deviation in the full-scale value range for an analog tag. The swinging door (rate) deadband applies to delta storage only. Time and/or value deadbands can be used in addition to the swinging door deadband. Any value greater than 0 can be used for the deadband. A value of 0 indicates that a swinging door deadband will not be applied.

- 9 In the **Set Acquisition** box, select whether or not to turn data acquisition from the topic either on or off. The **Unchanged** option allows you to leave current acquisition settings unchanged, which is useful if you have a mix of acquired and not acquired tags on the topic and do not want to go through all of them.
- 10 In the **Deadband** group, configure the deadband. Options in this group are only available if delta storage is selected in the **Storage Type** group. For the deadband type you select, configure the appropriate options.

- 11 In the **Late Data** group, configure options for transmission of late data from the topic.

For more information, see "IDAS Late Data Handling" in Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

Enable Late Data

Select to allow late data to be processed. Note that if you enable late data, the topic timeout (as configured on the **General** tab) is set to 0.

Idle Duration

The amount of time, in seconds, before data is processed from the I/O Server. For example, if you set this value to 60 seconds, data from this I/O Server is cached and only processed by the storage engine after no more data has been received from the I/O Server for at least 60 seconds.

Processing Interval

The amount of time, in seconds, after which late data from the I/O Server is processed, regardless of the idle duration. If the nature of the data is such that the idle duration is never satisfied, the historian storage engine processes data from the topic at least one time every processing interval. The processing interval defaults to twice the idle duration and cannot be set to a value less than the idle duration.

- 12 Click **OK**.

Adding a Topic

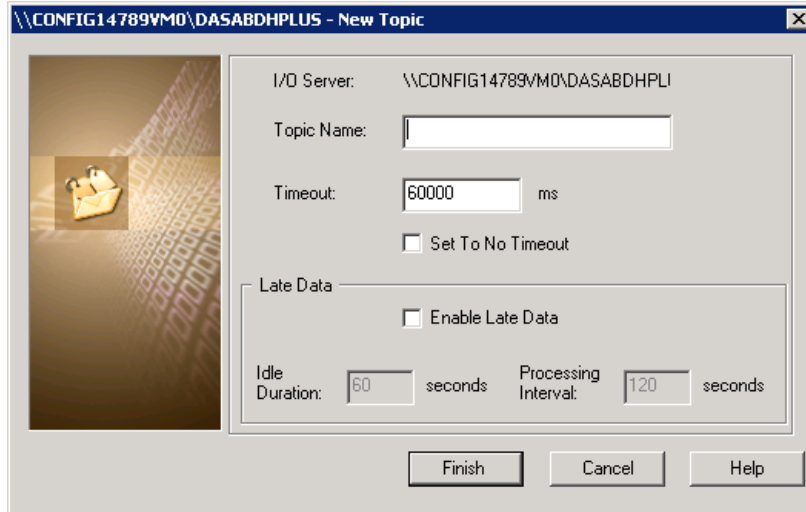
When you add a new topic for an I/O Server, a new row is added to the *Topic* table in the *Runtime* database.

Topic names must be unique for the I/O Server, not for the global system. You can have two topics with identical names, as long as they are on different I/O Servers.

To add a topic

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Data Acquisition**.
- 3 Expand the IDAS that contains the I/O Server.

- 4 Right-click on the I/O Server, and then click **New Topic**. The **New Topic** wizard appears.



- 5 Enter the configuration information for the new topic. For more information on these options, see "Editing General Information for a Topic" on page 133 and "Editing Storage Rules for a Topic" on page 134.
You can set storage properties for a topic after you add it to the system.
- 6 Click **Finish**.

Deleting a Topic

If you delete a topic and then re-import the tagname database that contained the I/O Server definition using the System Management Console, the topic definition is added again to the database. A topic cannot be deleted if tags are still associated with it.

Reinitializing I/O Topics

You can manually reinitialize I/O conversations for topics using the System Management Console. When you reinitialize a topic, the existing I/O conversation is closed and the entire process for setting up the I/O conversation restarts. All I/O points associated with that topic are affected when the reinitialization occurs. You can either reinitialize all of the topics or a single topic.

Note You can also enable an automatic topic time out, in which the Wonderware Historian issues a disconnect and reconnect for a topic that has not provided data within a specified time span. For more information, see "Editing General Information for a Topic" on page 133.

To reinitialize all topics

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, and then expand **System Configuration**.
- 3 Right-click on **Data Acquisition**, point to **All Tasks**, and then click **Reinitialize All Topics**. The **Reinitialize All Topics** dialog box appears.
- 4 Click **OK**.

To reinitialize a single topic

- 1 Click **Data Acquisition**.
- 2 In the details pane, right-click on the topic you want to reinitialize, and then click **Reinitialize Topic**. The **Reinitialize One Topic** dialog box appears.
- 3 Click **OK**.

Chapter 5

Managing Data Storage

Wonderware Historian stores data in the following places:

- Configuration information is stored in a SQL Server database file (.mdf). When you install the historian, this database file is created for you and is named *Runtime*. The Runtime database file is named Run100Dat.Mdf and the transaction log is named Run100Log.Ldf. For general information on database files, see your Microsoft SQL Server Books Online.

Note The *Holding* database is used internally by the historian if you import a tag database from an InTouch application. The file names for the Holding database are Holding100Dat.Mdf and Holding100Log.Ldf.

- Historical tag values from the plant floor are stored to disk in special sets of files, called history blocks.
- Copies of the current values for all defined plant tags in the system are temporarily held in a memory space as the actual values are being stored to history blocks. This memory space is called the active image.

You need to manage aspects of each of these storage places.

For a detailed explanation of historical data storage, see Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

Managing the Wonderware Historian Runtime Database

The Runtime database is a normal SQL Server database and can be managed with SQL Server Management Studio. The Runtime database stores relatively static information about how the Wonderware Historian is configured, such as tag definitions and I/O Server definitions.

Although the Runtime database does not store historical plant data, it stores other types of system-generated data that impacts the size of the database file. For example, information is added to the database file if you:

- Turned on modification tracking, because a record is stored for each modification made. For more information, see "Modification Tracking" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.
- Defined any events. Each detected event is logged in the Runtime database. If you configured any summary actions, the summarized values are stored in the Runtime database. Also, if you set up event snapshot actions, the values for the snapshots are logged in the database. For more information, see Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

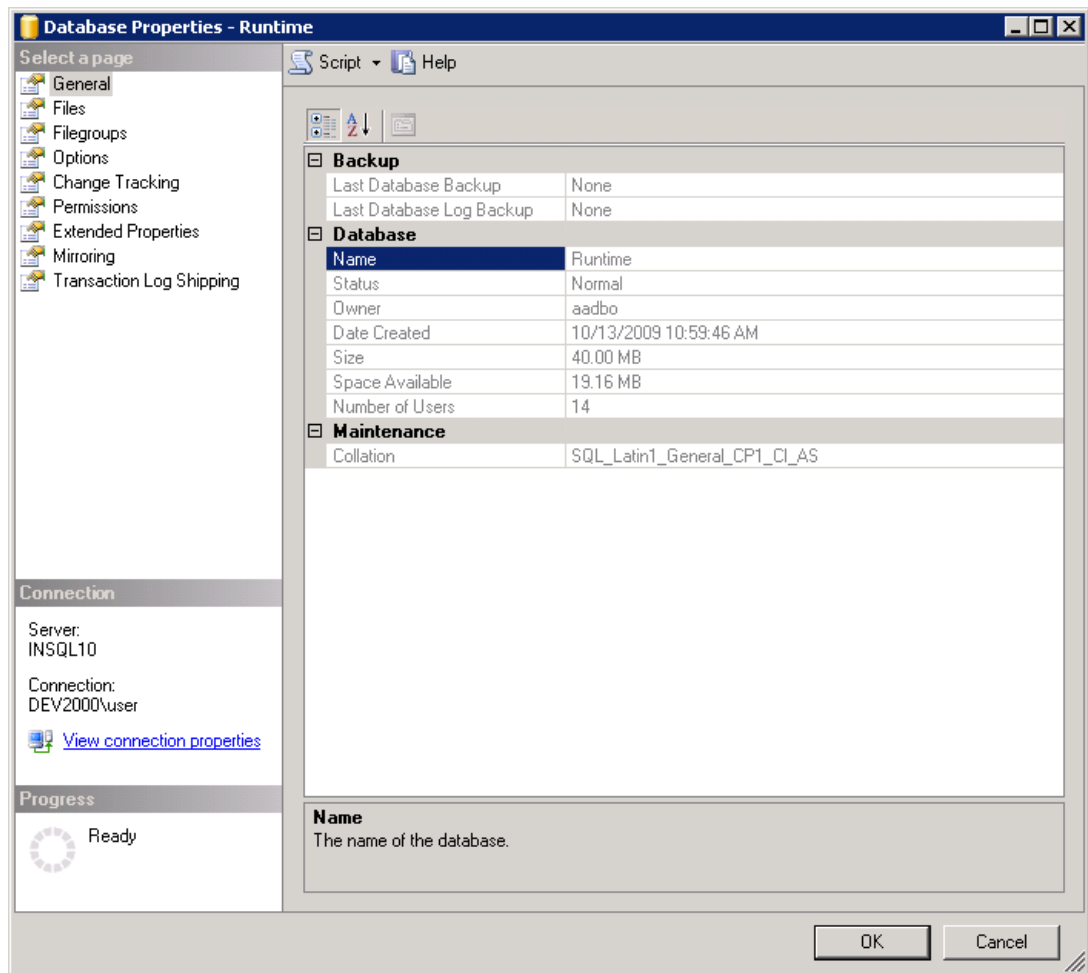
Be sure that you have enough disk space to accommodate a growing Runtime database file. By default, the Runtime database is configured to expand automatically when required.

Changing the Properties for the Runtime Database

You can view or change the properties for the Runtime database, such as the paths to the database files and transactions logs and the permissions on the database.

To view/change the Runtime database properties

- 1 In Microsoft SQL Server Management Studio, expand the Wonderware Historian, and then expand **Databases**.
- 2 Right-click on the Runtime database and then click **Properties**. The **Database Properties** dialog box appears.



- 3 To view directory in which the database file and transaction log resides, as well as view the current size of the file and log, in the **Select a page** pane, click **Files**.

Note To see the database file in the Windows Explorer, look in the \DATA directory of the main Microsoft SQL Server directory.

- 4 Using the options in the **Runtime Properties** dialog box, you can recalculate the space available in the database or the transaction log. You can also set database options and grant and revoke statement permissions for database users and groups.

Important Do not modify the default permissions for the default historian logins and users, as this negatively affects the system.

For more information on managing databases, see your Microsoft SQL Server Management Studio documentation.

- 5 Click **OK**.

Managing the Runtime Database

Managing a database involves procedures such as performing backups or exporting data.

Note You should not edit any of the pre-configured tables, stored procedures, or views that are shipped with the Wonderware Historian.

To manage the Runtime database

- 1 In Microsoft SQL Server Management Studio, expand the Wonderware Historian, and then expand **Databases**.
- 2 Right-click on the Runtime database, point to **Tasks**, and then select the menu command for the task you want to perform.

For more information on managing databases, see your Microsoft SQL Server Management Studio documentation.

Backing Up the Runtime Database

We recommend that you back up all Wonderware Historian and SQL databases:

- Before you make any changes to the database, in case you want to return to the original configuration.
- On a regular schedule, to minimize data loss in the event of a disk failure. The best way to perform database backups is to set up automatic backups using SQL Server Management Studio. You should back up your database at least once a week.

When you perform a database backup, all system tables, user-defined objects, and data are copied to a separate file located on a backup device. Backup devices include disk files, floppy diskettes, zip disks, and tape drives. Backups can be easily managed using the SQL Server Management Studio.

You should not back up the current history block.

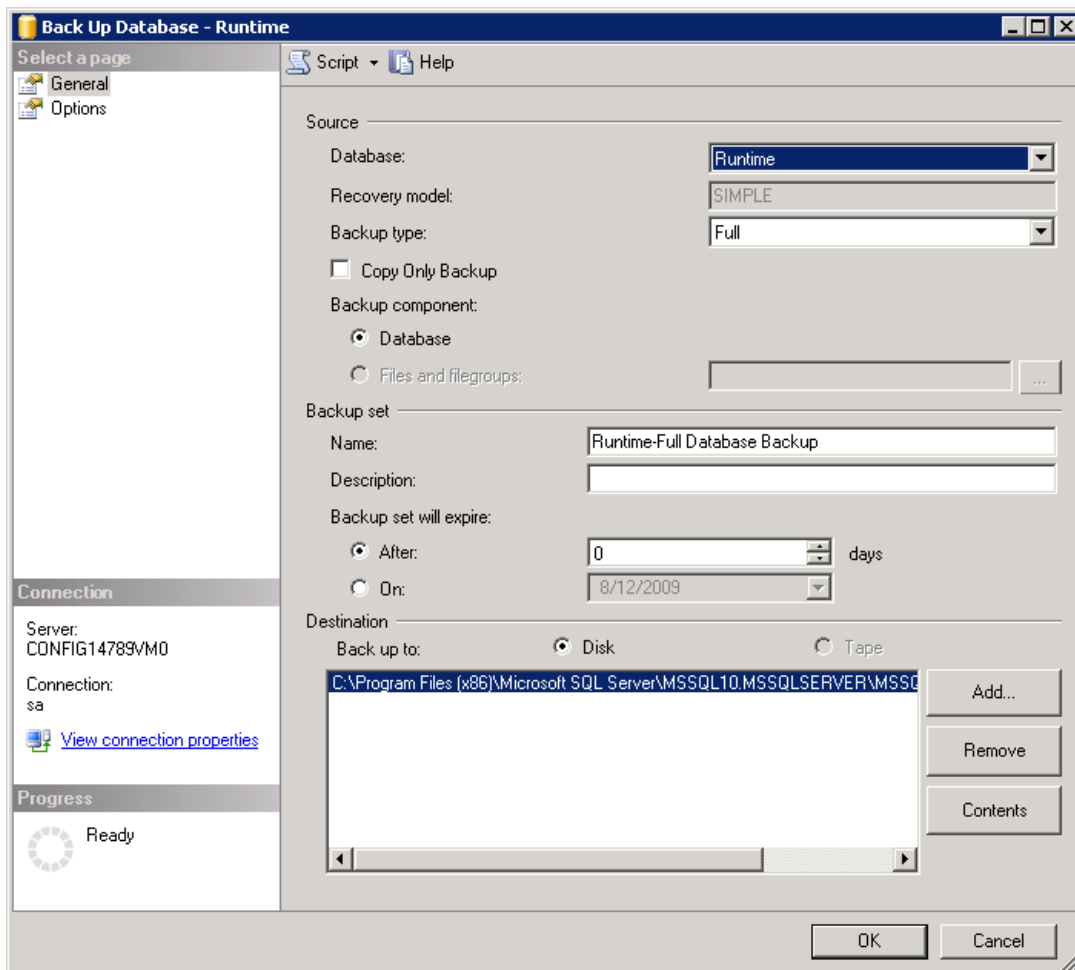
The master and msdb databases should be on the same backup schedule as the Runtime database.

Backing Up the Database

Note Any transactions that are in progress when the backup is performed are rolled back if that backup is later restored.

To backup the database

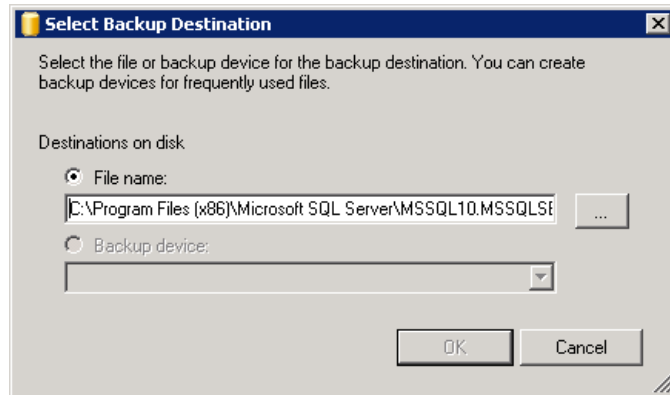
- 1 In Microsoft SQL Server Management Studio, expand the Wonderware Historian, and then expand **Databases**.
- 2 Right-click on the **Runtime** database, point to **Tasks**, and then click **Back Up**. The **SQL Server Backup** dialog box appears.



- 3 Click **General**.
- 4 In the **Database** box, select **Runtime**.
- 5 To use an existing backup device or file for the backup, select the destination in the **Destination** window and then click **OK** to begin the backup.

Note For details on a particular backup destination, select the destination in the list and then click **Contents**.

- 6 If you do not have a backup destination defined, click **Add** to add a new destination. The **Select Backup Destination** dialog box appears.



- 7 Select to back up to either a file or device.

File name

Type or browse to a path for the location of the backup file. Be sure that you have enough free disk space to store the backup.

Backup device

Select an existing backup device or select **<New Backup Device>**. The **Backup Device Properties** dialog box appears. In the **File name** box, type a name for the device. As you type the name, the path for the backup will be modified. Verify that the path for the backup is correct. When you are done, click **OK** to create the backup device.

- 8 Click **OK** to close the **Select Backup Destination** dialog box.
- 9 The newly-created backup device now appears in the **Destination** window of the **SQL Server Backup** dialog box. Select the new backup device.
- 10 Click **OK** to perform the backup.

You can configure various options for database backups, such as an expiration date for a backup. You can also schedule automatic backups.

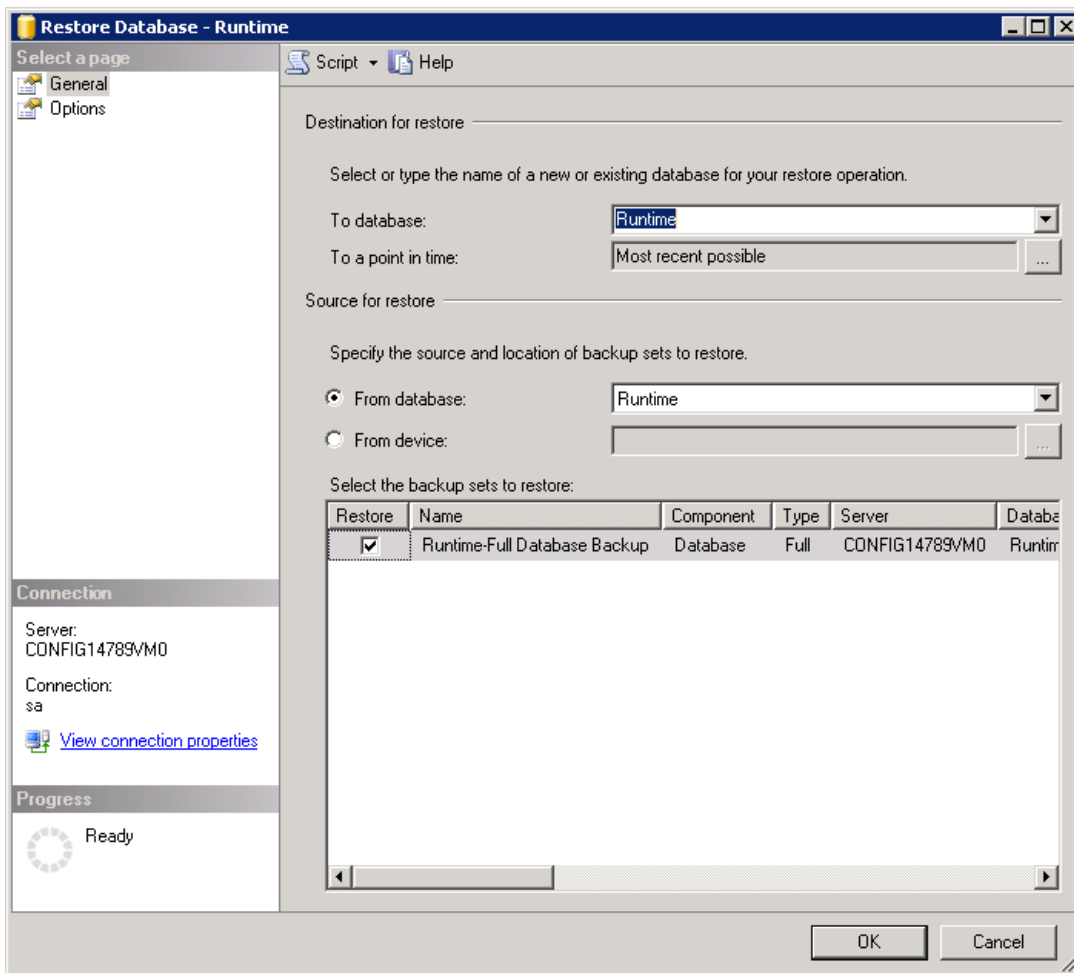
For a complete description of database backup and restoration using SQL Server Management Studio, including scheduling recommendations and transaction log backup, see your SQL Server Management Studio documentation.

Restoring the Database

When you restore a database from backup, any information saved to the database since the backup was performed is overwritten with the restored information. All changes to the database since the backup are lost. Also, any transactions in progress when the backup was performed are rolled back.

To restore the database

- 1 In Microsoft SQL Server Management Studio, expand the Wonderware Historian, and then expand **Databases**.
- 2 Right-click on the **Runtime** database, point to **Tasks**, and then click **Restore**. The **Restore Database** dialog box appears.



- 3 Click **General**.
- 4 In the **Restore as database** list, select the **Runtime** database.
- 5 Select **Database** from the **Restore** options.

6 In the **First backup to restore list**, select the desired backup.

7 Click **OK**. The information is restored.

You can configure various options for database restoration. For more information on restoring from a backup using SQL Server Management Studio, see your SQL Server Management Studio documentation.

Managing a Runtime Database Object

A database object is a component of a database: table, index, trigger, view, key, constraint, default, rule, user-defined data type, or stored procedure. Anything that has a name and consumes space in a database is an object.

Note Do not edit any of the pre-configured tables, stored procedures, or views that are shipped with Wonderware Historian.

To manage database objects

1 In Microsoft SQL Server Management Studio, expand the Wonderware Historian, and then expand **Databases**.

2 Expand the **Runtime** database.

3 All of the object groups in the database appear under the **Runtime** folder.

4 To manage any database object, simply right-click on the object to open the **Properties** dialog box for that object.

5 Click **OK**.

For more information on managing database objects, see your Microsoft documentation.

Space Management for Event and Summary History

If you configured Wonderware Historian to detect events, each detected event is logged into the EventHistory table of the Runtime database. If you configured summary actions, the aggregated values are stored in the SummaryHistory table. The duration for which event and summary history are kept are specified by the EventStorageDuration and SummaryStorageDuration system parameters, respectively.

Duration defaults are as follows:

History	Duration
Event	7 days (168 hours)
Summary	14 days (336 hours)

For information on changing the value of a system parameter, see "Editing System Parameters" on page 251.

For more information on the event system, see Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

Managing Wonderware Historian History Blocks

Historical tag values from the plant floor are stored to disk in special sets of files called history blocks.

For information on history blocks, see "History Blocks" in Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

Viewing History Blocks

You can view details, such as the start and end time, for history blocks.

To view history block information

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Management Console** and then select **History Blocks**. The history block information appears in the details pane.

History Blocks			
Start Time	End Time	Location	Duration
8/12/2009 12:00:00 AM	8/12/2009 10:12:20 AM	C:\Historian\Data\Circular\A090...	10 hrs 12 mins 20 s
8/11/2009 1:12:04 PM	8/12/2009 12:00:00 AM	C:\Historian\Data\Circular\A090...	10 hrs 47 mins 56 s
8/11/2009 12:00:00 AM	8/11/2009 1:11:25 PM	C:\Historian\Data\Circular\A090...	13 hrs 11 mins 25 s
8/10/2009 1:11:20 AM	8/11/2009 12:00:00 AM	C:\Historian\Data\Circular\A090...	22 hrs 48 mins 40 s
8/10/2009 1:05:20 AM	8/10/2009 1:07:20 AM	C:\Historian\Data\Circular\A090...	2 mins 0 secs

Column descriptions are as follows:

Start Time

The starting timestamp for the history block.

End Time

The ending timestamp for the history block.

Location

The path to the storage location. The circular storage location must be a local drive on the server machine, and the path must be specified using normal drive letter notation (for example, c:\Historian\Data\Circular). For a tier-1 historian, the alternate, buffer, and permanent storage locations can be anywhere on the network. For a tier-2 historian, the buffer and permanent storage locations can be anywhere on the network, but the alternate storage location must be on a local drive. The ArchestrA service user must have full access to network locations. The locations must be specified using UNC notation. Mapped drives are not supported.

Duration

The time span for the history block.

TimeZone

The time zone of the history block.

GMT Bias

The time offset from Greenwich Mean Time.

The data shown in the details pane is not automatically refreshed. To refresh the list from the history block information held by the Configuration Manager, right-click on **History Blocks** in the console tree and then click **Refresh**. In most cases, this type of refresh is all that is needed.

However, if you manually move a large history block in or out of your history folder and do not see the changes in the details pane, you may need to force the Configuration Manager to rescan the blocks. To do this, right-click on **History Blocks**, point to **All Tasks**, and then click **Rescan History Blocks**. Then, refresh the details pane.

A yellow icon for a history block indicates that all tag information is loaded into memory, and you can query and insert data for that block. The block is considered to be "online." If the icon is grey, the tag information is not loaded, and the block is considered to be "offline." If you have enabled memory management for the system, tag information is loaded as needed for requested blocks. For more information on memory management, see "Memory Management for Data Storage" in Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

Starting a New History Block

You can manually stop data from being written to the current history block and start a new one. This process can take up to approximately 10 minutes, but no data is lost. The system must have been running for approximately five minutes after startup before a new history block can be started.

To manually start a new history block

- 1 In the System Management Console tree, expand a server group and then expand a server.
- 2 Expand **Management Console**.
- 3 Right-click **History Blocks**, point to **All Tasks**, and then click **Start New History Block**. The **Start New History Block** confirmation box appears.
- 4 Click **OK**.

Note You can also start a new history block using the `xp_NewHistoryBlock` extended stored procedure. For more information, see Chapter 4, "Stored Procedures," in your *Wonderware Historian Database Reference*.

Editing History Block Storage Locations

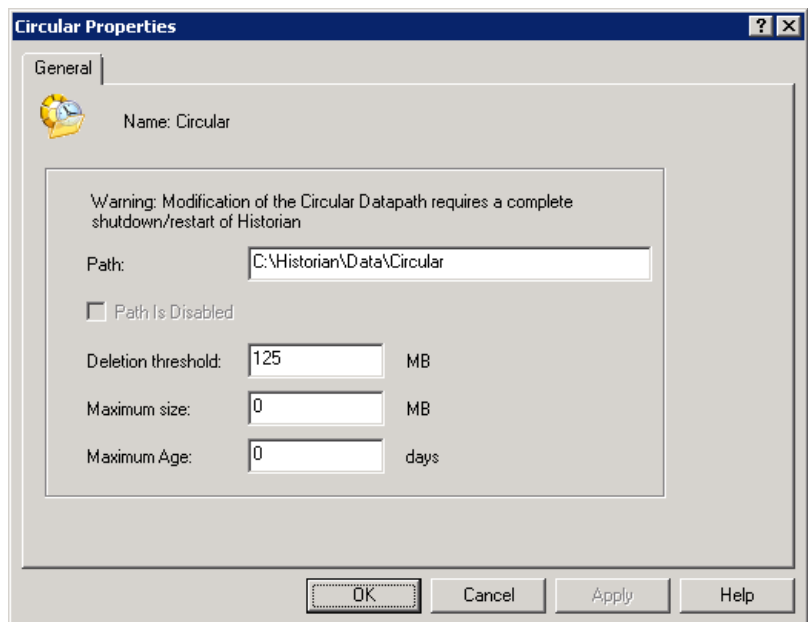
The Wonderware Historian stores history blocks in one or more of the following storage locations on a hard disk you specify: circular, permanent, buffer, and alternate. Paths to these storage locations are specified when the historian is installed.

With the exception of the circular path, all data path changes are dynamic. Only changes to the circular path require reinitializing the system (that is, a complete shutdown and restart of the historian). Also, if a change is made to the default data paths, these directories must be manually created. The System Management Console validates the path you specify.

For more information on storage locations, see "History Block Creation" in Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

To edit storage locations

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Storage**.
- 3 Select **Storage Locations**. All defined storage locations appear in the details pane.
- 4 Right-click on the storage location to edit, and then click **Properties**. The **Properties** dialog box appears.



- 5 In the **Path** box, type the path to the storage location. The circular storage location must be a local drive on the server machine, and the path must be specified using normal drive letter notation (for example, `c:\Historian\Data\Circular`). For a tier-1 historian, the alternate, buffer, and permanent storage locations can be anywhere on the network. For a tier-2 historian, the buffer and permanent storage locations can be anywhere on the network, but the alternate storage location must be on a local drive. The ArcestrA service user must have full access to network locations. The locations must be specified using UNC notation. Mapped drives are not supported. If the path you specify does not currently exist, it is created.

Note The paths to the storage areas are relative to the computer on which the historian is running. If you are running System Management Console on a separate network computer than the historian, the paths may not be same.

- 6 To disable the use of this path, click **Path is Disabled**. This option is not available for the circular storage location.
- 7 In the **Deletion Threshold** box, type the minimum amount of disk space, in megabytes, at which the system attempts to start freeing up space. The threshold applies to circular and alternate storage only. Typically, you should multiply the size of the average history block (before any compression) by 1.5 to determine the minimum threshold.
- 8 In the **Maximum Size** box, type the limit, in megabytes, for the amount of data to be stored to the specified location. The maximum size applies to circular and alternate storage only. If the maximum size is set to 0, all available space at the storage location is used.
- 9 In the **Maximum Age** box, type the age, in days, of data that will be deleted by system to free up disk space. The threshold applies to circular and alternate storage only. The minimum age is 2 days. A value of 0 indicates that no age threshold is applied.

Note The **Deletion Threshold**, **Maximum Size**, and **Maximum Age** options are unavailable for the permanent and buffer storage areas.

- 10 Click **OK**.

Backing Up History Blocks

As history blocks are created, it may be necessary to move some of the data files to long-term storage media to make room for new history blocks to be stored to disk. You can also back up history blocks or portions of history blocks to the permanent storage area.

Always exclude the current history block from the back up.

Note A new block is created if any data file becomes larger than 1.5 GB.

- Backing up history blocks to storage media.

It is highly recommended that you back up the history blocks to long-term storage media such as to DAT tape or to CDs. You can perform backups using the Windows Backup utility.

For detailed information on how to back up and restore data files using the Windows Backup utility, see your Microsoft Windows documentation.

Although historical data backed up to removable media is not readily available to client applications, the data is still accessible if you retrieve the files from the tape and place them on a hard disk. If you have a current record of DAT tapes and the files they contain, you can more easily retrieve the information.

- Backing up history blocks to the permanent storage location.

You can copy history blocks or a subset of history blocks to the "archive" historical path (permanent storage area). This allows for the "capture" of a plant event by reducing the size of the history block. For example, a plant trip time span might be of two hours. These two hours will be put in a history block of 24 hours for most cases. A "snapshot" of these two hours can be copied to the archive path.

To copy a subset of data, use the **xp_DiskCopy** extended stored procedure. For more information on the extended stored procedures, see Chapter 4, "Stored Procedures," in your *Wonderware Historian Database Reference*.

Adding History Blocks from Prior Versions to the System

You can add existing history blocks from prior versions to the system. You can add any combination of blocks from prior versions. The only restriction is that earlier version history blocks are always followed by later version history blocks.

To add a history block

- In Windows Explorer, copy one or more legacy history blocks to the \Permanent data folder of the historian.

Chapter 6

Importing, Inserting, or Updating History Data

If you have existing InTouch history data, you can easily import it into the Wonderware Historian extension tables using the InTouch History Importer utility. In addition, you can import any history data by manually formatting it in a CSV file according to a specification and then copying the file into a special folder on the Wonderware Historian computer.

Using Transact-SQL INSERT and UPDATE statements, you can insert or update history data in the Wonderware Historian extension tables.

You can track modifications to history data. For more information, see "Modification Tracking for Historical Data Changes" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

Importing Data from an InTouch History File

The InTouch History Importer (ITHistImporter.exe) is a stand-alone utility that allows you to import existing InTouch history data into the Wonderware Historian history blocks. InTouch history data is stored in one or more .lgh files located in the InTouch application folder.

Before you start the import, be sure that:

- You can access the .lgh files. The InTouch HMI software is not required to be installed on the same computer as the InTouch History Importer, and InTouch is not required to be running. The importer can import history data generated with InTouch HMI software version 7.0 or later.
- The tag definitions already exist in the Wonderware Historian database. The easiest way to make sure that you have all of the definitions is to use the Wonderware Historian Tag Importer to import the contents of the InTouch tag database. For more information, see "Importing an InTouch Data Dictionary" on page 85.
- You can log on to the Wonderware Historian. The InTouch History Importer requires a logon account to the historian to retrieve a list of all currently imported InTouch nodes.
- You have security access to the historian \FastLoad folder. The InTouch History Importer converts selected .lgh files to CSV files and then copies them into the \FastLoad folder. For more information, see "Configuring CSV File Import Folders" on page 166.
- The storage and manual storage processes are running. These processes monitor the \FastLoad folder and import any CSV files that are copied there.
- The full path to the InTouch .lgh files (including the name of the actual .lgh file) is not longer than 64 characters. This limitation is inherent in the underlying InTouch infrastructure used to access .lgh files. If the path is longer than 64 characters, the importer produces an error message and prevents the import from continuing. If necessary, use a mapped drive or a drive substitution to shorten the name of path.
- The InTouch application is not currently storing data to the .lgh file that you plan to import.

- You change the value of the *AllowOriginals* system parameter to 1. This allows you to insert original data for I/O Servers. For more information on editing system parameters, see "Editing System Parameters" on page 251.
- The data you want to import does not interfere with data in the current history block for the same tags. For example, suppose you import tag definitions from an InTouch application and are currently storing the tag values received from the I/O Server in the historian. If you attempt to import existing InTouch data for these same tags, and the timestamps of the data to be imported fall within the current history block, the import may produce unexpected results. Wait until the next history block is created before attempting to import existing InTouch data.
- If you have a large amount of data to import, process the data in batches, starting from the most recent data to the oldest data. For example, you want to import one year's worth of InTouch history. Divide up the data so that one month of data is included in a batch. When you import the most recent batch, the utility automatically starts with the most recent block and then proceeds backwards. Then, import the second-most recent batch, and so on."

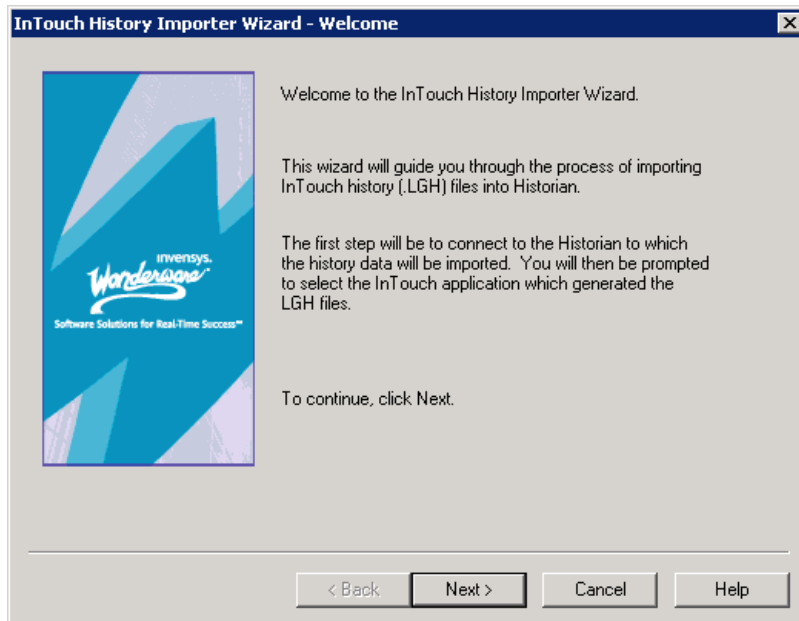
The fast load import mechanism used by the InTouch History Importer is intended for importing data into history for periods where no data for the tags currently exists. For delta stored tags, importing into a region where data already exists results in the addition of the new points. For cyclically stored values, however, the new points are imported on top of the existing cyclic values. For more information on fast load imports, see "About Fast Load CSV File Imports" on page 167.

Performing the InTouch Data Import

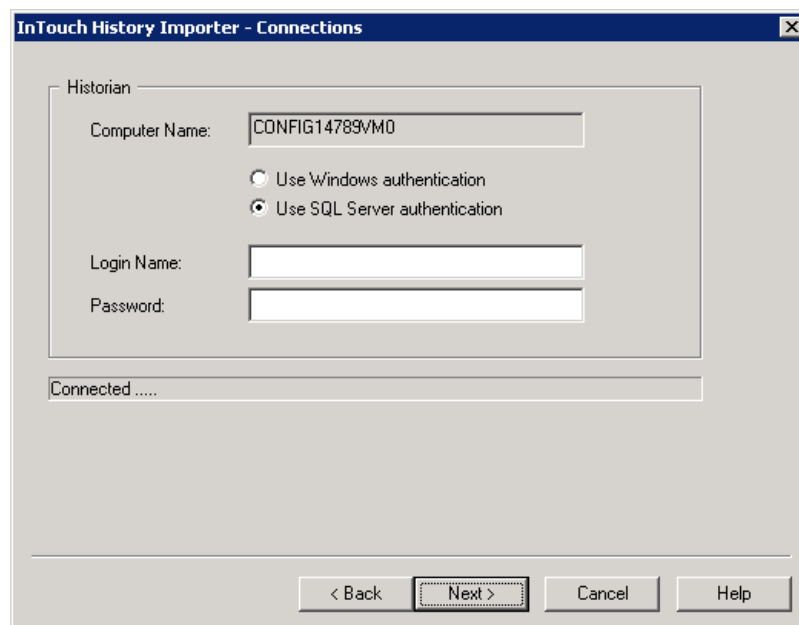
Before you perform the import, review the requirements in "Importing Data from an InTouch History File" on page 158.

To import history data from InTouch HMI software

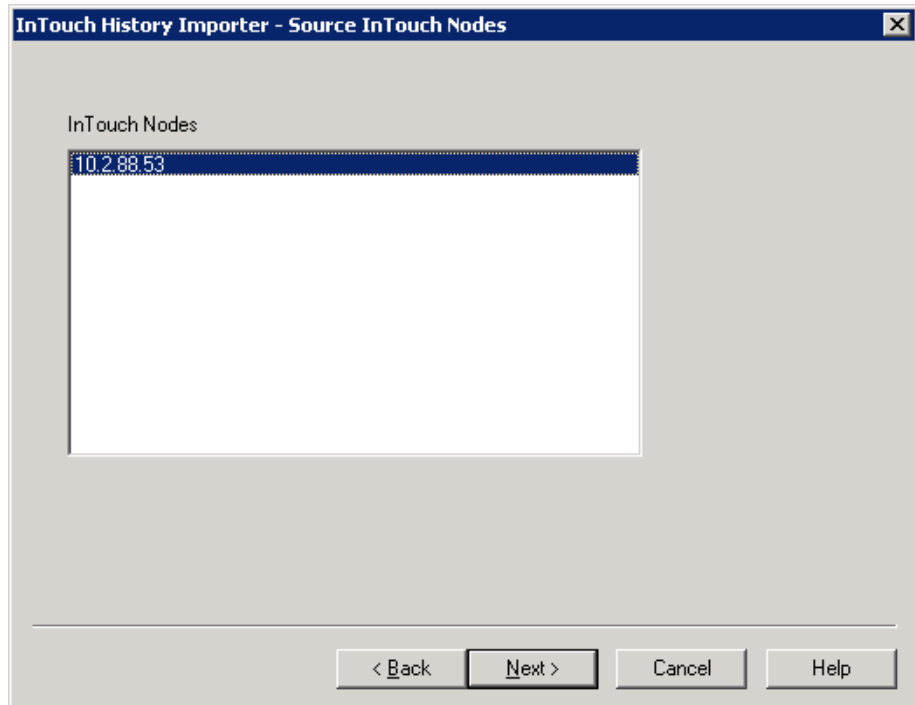
- 1 On the Windows **Start** menu, point to **Programs**, point to **Wonderware**, point to Wonderware Historian, and then click **Import InTouch Historical Data**. The **InTouch History Importer Wizard - Welcome** dialog box appears.



- 2 Click **Next**. The **Connections** dialog box appears.



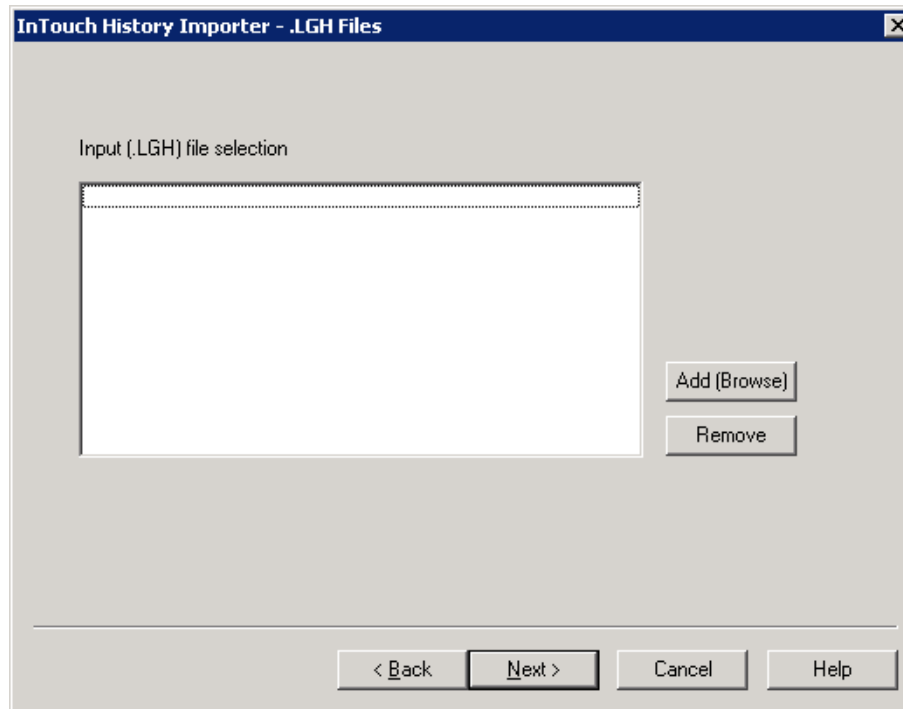
- 3 Provide a logon account to the Wonderware Historian. The importer needs to connect to the historian to access information about imported InTouch nodes.
 - Click **Use Windows authentication** to use your Windows logon account to connect to the Wonderware Historian.
 - Click **Use SQL Server authentication** to use a SQL Server login. Type a valid SQL Server username and password.
- 4 Click **Next**. The **Source InTouch Nodes** dialog box appears.



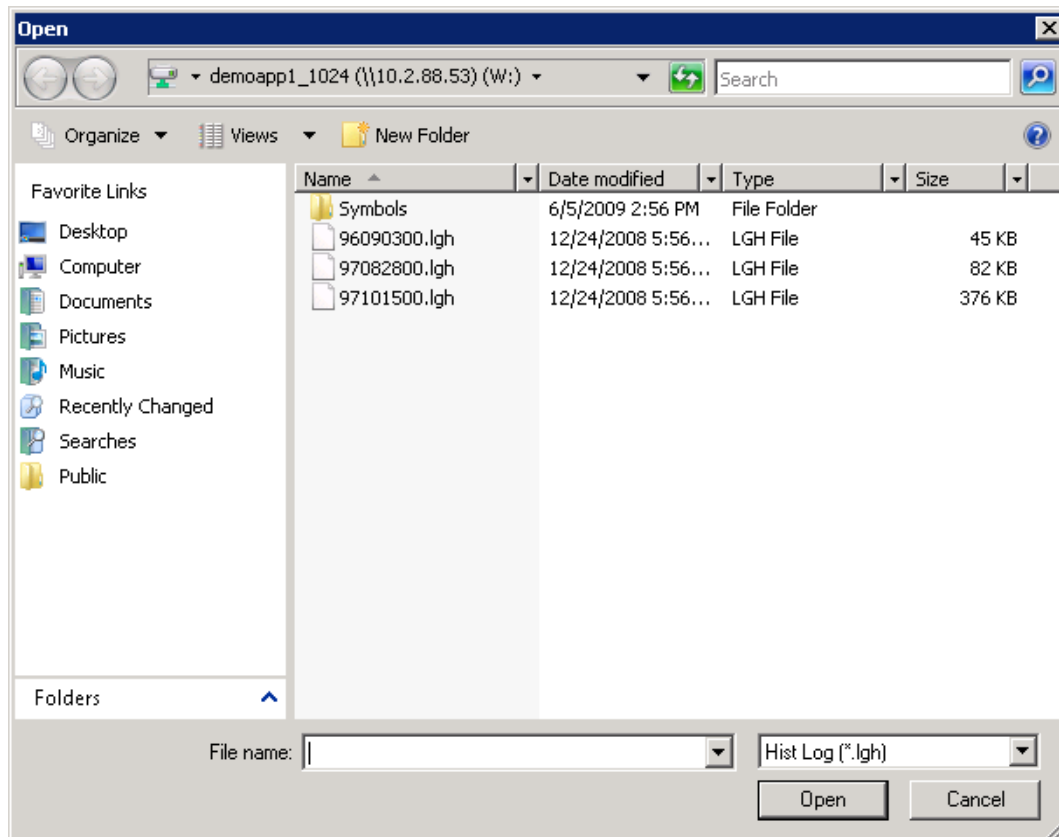
- 5 In the **InTouch Nodes** window, select the name of the InTouch node (computer) from which you want to import data.

Note If the desired node is not listed, you need to first import the tagname database. For more information, see "Importing an InTouch Data Dictionary" on page 85.

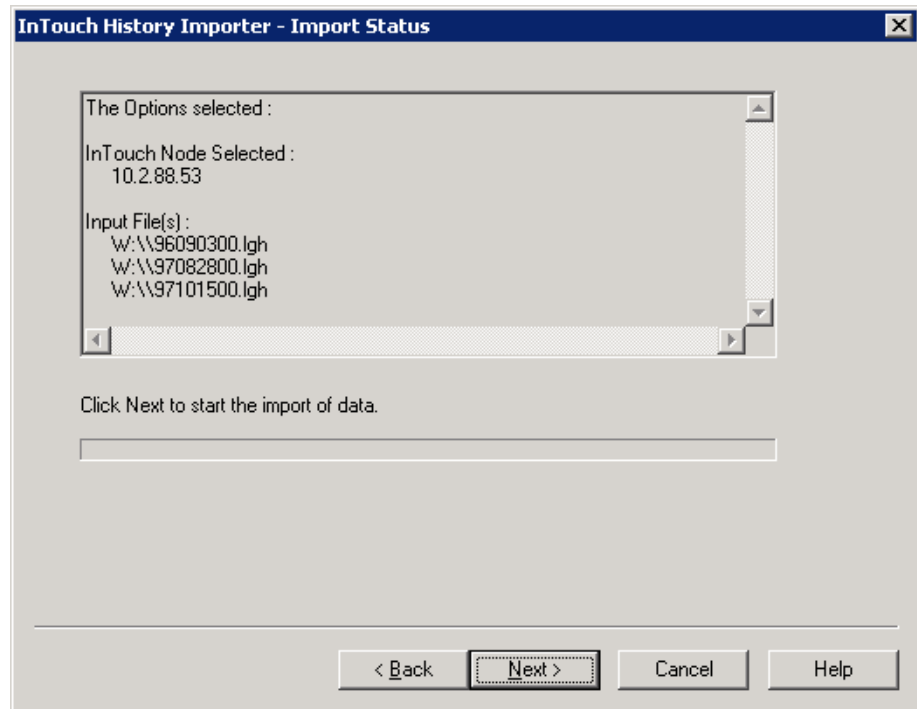
- Click **Next**. The **.LGH Files** dialog box appears.



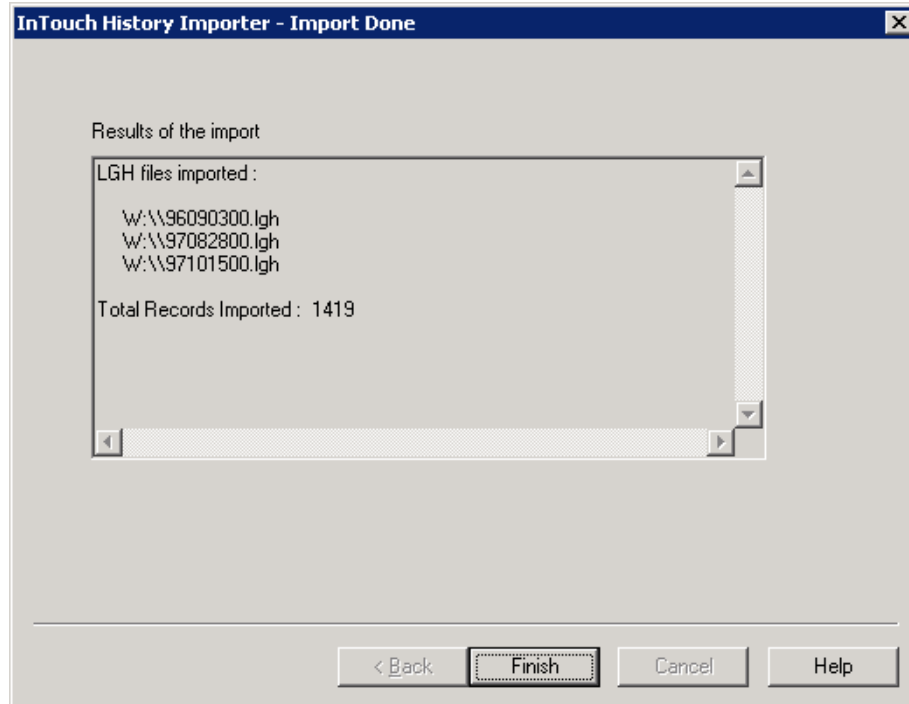
- Click **Add (Browse)** to specify one or more InTouch history files (.lgh) to import. The **Open** dialog box appears.



- 8 Browse to the InTouch application folder, select one or more .lgh files, and then click **Open**. You must select .lgh files from the InTouch node that you previously specified. The files are added to the **Input .LGH file selection** window in the wizard. To remove a file, select it and then click **Remove**.
- 9 Click **Next**. The **Import Status** dialog box appears.



- 10 Verify the history files to import and then click **Next**. The **Import Done** dialog box appears.



The results of the import are shown in the window. If no errors are reported, the selected .lgh files were successfully converted to CSV files and copied into the /FastLoad folder.

Note The history importer does **not** report whether the data in the resultant CSV files is successfully imported into the Wonderware Historian extension tables.

- 11 Click **Finish**.

If the import completes successfully, a record is logged to the Logger. Certain failure conditions and any user-initiated cancellations are also logged.

Importing Data from CSV Files

You can import data into the history blocks, as long as the data is formatted according to a specific comma-separated values (CSV) format. The basic steps for importing data are:

- 1 Configure the data import folder, which is where you will put your formatted CSV files. For more information, see "Configuring CSV File Import Folders" on page 166.

- 2 Add tag definitions to the Wonderware Historian database for all data values you plan to import. Importing data for a tag that is not defined results in an error. If you are importing legacy InTouch data, you can use the Tag Importer to import a tagname database, which contains the tag definitions. Otherwise, you must manually add the tag definitions. For information on importing an InTouch tagname database, see Chapter 3, "Importing and Exporting Configuration Information." For information on adding tag definitions manually, see Chapter 2, "Configuring Tags."
- 3 Determine the type of import, either normal or "fast load." For more information, see "About Normal CSV File Imports" on page 167 and "About Fast Load CSV File Imports" on page 167.
- 4 Determine if you want to insert original data for I/O Server tags. By default, the system does not insert original data for I/O Server tags by a CSV file. However, you can change this setting by changing the value of the AllowOriginals system parameter to 1. For more information on editing system parameters, see "Editing System Parameters" on page 251.
- 5 Format the CSV file according to the import type. For more information, see "Formatting the CSV File for a Normal Import" on page 168 or "Formatting the CSV File for a Fast Load Import" on page 171.
- 6 Place the file into the appropriate data import folder, where it is automatically processed by the system. For more information, see "Copying a CSV File into an Import Folder" on page 175.

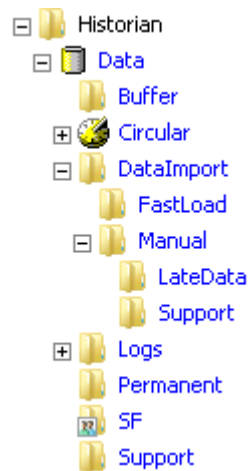
Note You can use the InTouch History Importer to automatically create properly-formatted CSV files from existing InTouch history files (.lgh) and have them copied into the \FastLoad folder. For more information, see "Importing Data from an InTouch History File" on page 158.

If you are inserting or updating values that have a time period spanning across or included in a current gap in the history blocks, a new block can optionally be created to "patch" the gap and hold the insert/update.

For a comparison of the various import methods, see "Guidelines for Importing, Inserting, and Updating History Data" on page 183.

Configuring CSV File Import Folders

By default, the import folders are created in the main Wonderware Historian data folder when the product is installed. For example, if you specified D:\Historian\DATA\Circular as the circular data folder, the CSV data import folders is D:\Historian\DATA\DataImport, which is shown in the following illustration:



Important If you leave the data import path at the default location (on the drive hosting the circular data folder), placing large CSV files in a data import folder may prompt the Wonderware Historian disk management subsystem to immediately start moving or deleting history blocks to maintain the configured amount of required free space on the disk. It is highly recommended to change the data import folder to a different drive than your circular storage.

The different import folders are described in the following table:

Import Folder	Description
\DataImport	Used for normal CSV import files.
\FastLoad	Used for "fast load" CSV import files. Files in this folder are processed one at a time, in the order that they appear in Windows Explorer as you are viewing the folder contents.
\Manual	Used by MDAS. If the amount of data spans multiple 64 KB chunks, files are collected in the \Support subdirectory until all of the data is received. The files are then copied to the \Manual folder for inclusion into history.

To change the import folder

- 1 Use Windows Explorer to create the new folder.

Note Be sure that you maintain the \Manual\Support subfolder and optional \FastLoad subfolder. You cannot change the name of the \FastLoad or the \Support folder to another name.

- 2 Edit the DataImportPath system parameter to specify the new data import folder. For more information on editing system parameters, see "Editing System Parameters" on page 251.
- 3 Restart the Wonderware Historian.

About Normal CSV File Imports

Use the normal import mechanism if you primarily want to modify a small amount of existing data stored in the Wonderware Historian or store a small amount of new values. The insert of an entire CSV file results in a single new version of the data. If an inserted data point falls exactly on an existing timestamp, the data value is added to history. The existing data is maintained in history.

For guidelines on using this import method versus other import methods, see "Guidelines for Importing, Inserting, and Updating History Data" on page 183.

About Fast Load CSV File Imports

Using the "fast load" CSV import mechanism, you can import original data very quickly, using essentially the same CSV file format as for a normal import, with some modifications.

A "fast load" import is much faster than a normal CSV import. For example, a CSV file that is 4 MB imports approximately 100 times faster. For larger files, the speed improvement gets substantially better. Also, there are no restrictions on the size of the file to import, or the number of tags or data values in the file. However, the data that is contained in the CSV file for a fast load import **must** be formatted in time sequential order. It is this ordering that allows the system to process a fast load CSV file more quickly than a normal CSV file.

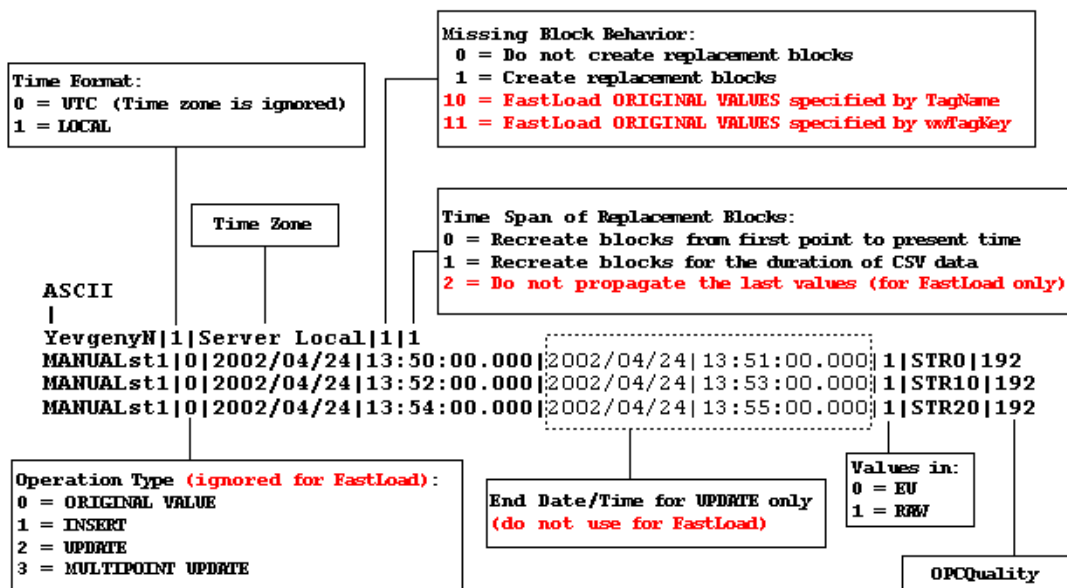
Put a formatted CSV file into a special \FastLoad import folder.

A fast load import can only be applied where there is no existing stored data. Fast load importing is intended for manual tags that do not have data. They are not suitable for routine data acquisition.

For guidelines on using this import method versus other import methods, see "Guidelines for Importing, Inserting, and Updating History Data" on page 183.

General File Format for a CSV Import

The CSV file format for imports is as follows.



Formatting the CSV File for a Normal Import

To import external data into the history blocks, you must format your data according to the CSV file format as outlined in the following table. For a general illustration of the format, see "General File Format for a CSV Import" on page 168.

You can name the CSV file anything you want. For the format, note that:

- Only one operation type per line is allowed.
- Multiple records per line of the same operation type is allowed.

- A multipoint update is a sequence of updates where the beginning of an update period is the end of the previous update. A multipoint update is faster than a simple sequence of inserts because a single version is used for all values. Use a multipoint update to mask underlying data with a new set of values for the specified time period.
 - Fields 3 and 4 of the values are used in single point update only and must be excluded from the record for a multipoint update. A single point update refers to the situation when an update value is assigned to a time period specified by the start date/time and end date/time. A multipoint update can replace a single or multiple previous points. It represents, like a single point update, a span of time that starts with the current row date/time and ending at the next row date/time. The value specified in each record is held as the latest value until the next record. The last record is ignored in a multipoint update.
 - The last record (time wise) will indicate the end of the previous update period. The value will be ignored.

If two multipoint update CSV files for the same tag are simultaneously copied to the \DataImport directory, the update spans across the total time for the two files. A query returning latest data hides (masks) the original version of the data from the end of the first file to the start of the second file.

For example, if the update in one file ranges from 00:00:00 to 00:05:00, and the other ranges from 00:10:00 to 00:15:00, the result is an update starting at 00:00:00 and ending at 00:15:00 ("latest"); the original data from 00:05:00 to 00:10:00 is masked as "original" data. No data is lost. To view either data from a query, use the wwVersion column to specify either "original" or "latest." By default, the latest data is shown. To prevent the masking of the original data, process the CSV files one at a time.

It is recommended not to use both inserts and original inserts for the same tag in the same file or files processed together.

When configuring the scaling setting (field 6), keep in mind that the data conversion to engineering units (a setting of 0) is performed before the value is stored. The reverse of the scaling formula for the tag is used to convert the data before storage. During retrieval, the scaling formula is applied so that the original inserted values are returned. For integer type tags, if the value after the conversion is not an integer value, it is rounded off. The rounding off can change the value to be exactly the same as the previous value, and thus the rounded off value is not stored to disk if delta storage is used. If the tag is a real type tag, the rounding off does not occur, and all values are stored.

The value to insert can be a NULL. For more information, see "Handling of NULL Values in CSV Files" on page 174.

For a fast load CSV import, the end time of the current block in the block80.inf file is considered to be the current time, not the current system time stamp. The end time in the .inf file is updated by the storage subsystem every 20 seconds.

Example CSV Files for a Normal Import

The following is an example of an insert of data values for a single tag, "ReactTemp." The pipe (|) is used as a delimiter.

```
ASCII
|
PatrickP|1|Pacific Daylight Time|1|1
ReactTemp|1|2001/05/19|16:00:00.500|1|256.0|192
ReactTemp|1|2001/05/19|16:00:02.500|1|261.0|192
ReactTemp|1|2001/05/19|16:00:03.500|1|266.0|192
ReactTemp|1|2001/05/19|16:00:04.500|1|271.0|192
ReactTemp|1|2001/05/19|16:00:05.500|1|276.0|192
ReactTemp|1|2001/05/19|16:00:06.500|1|281.0|192
ReactTemp|1|2001/05/19|16:00:08.500|1|286.0|192
ReactTemp|1|2001/05/19|16:00:09.500|1|291.0|192
ReactTemp|1|2001/05/19|16:00:10.500|1|296.0|192
ReactTemp|1|2001/05/19|16:00:11.500|1|2101.0|192
ReactTemp|1|2001/05/19|16:00:12.500|1|2106.0|192
ReactTemp|1|2001/05/19|16:00:14.500|1|2111.0|192
ReactTemp|1|2001/05/19|16:00:15.500|1|2116.0|192
ReactTemp|1|2001/05/19|16:00:16.500|1|2121.0|192
```

The following is an example of an update of data values for a single tag, "Man1." A comma (,) is used as a delimiter.

```
ASCII
'
kristenc,1,Pacific Daylight Time,1,1
MAN1,2,2001/04/24,16:00:00.000,2001/04/24,16:05:00.000,1,1111,192
MAN1,2,2001/04/24,16:00:10.000,2001/04/24,16:15:00.000,1,2222,192
```

The following is an example of a multipoint update of data values for a single tag. A comma (,) is used as a delimiter. The last value is ignored.

ASCII

```
'
BenjaminY,1,Pacific Standard Time,1,1
MANUAL32SI3,3,2002/01/28,00:05:00.500,1,81000,192
MANUAL32SI3,3,2002/01/28,00:05:03.500,1,81010,192
MANUAL32SI3,3,2002/01/28,00:05:06.500,1,81020,192
MANUAL32SI3,3,2002/01/28,00:05:09.500,1,81030,192
MANUAL32SI3,3,2002/01/28,00:05:12.500,1,81040,192
MANUAL32SI3,3,2002/01/28,00:05:15.500,1,81050,192
MANUAL32SI3,3,2002/01/28,00:05:18.500,1,81060,192
MANUAL32SI3,3,2002/01/28,00:05:21.500,1,81070,192
MANUAL32SI3,3,2002/01/28,00:05:24.500,1,81080,192
MANUAL32SI3,3,2002/01/28,00:05:27.500,1,81090,192
MANUAL32SI3,3,2002/01/28,00:05:30.500,1,81100,192
MANUAL32SI3,3,2002/01/28,00:05:33.500,1,81110,192
MANUAL32SI3,3,2002/01/28,00:05:36.500,1,81120,192
MANUAL32SI3,3,2002/01/28,00:05:39.500,1,81130,192
MANUAL32SI3,3,2002/01/28,00:05:42.500,1,81140,192
MANUAL32SI3,3,2002/01/28,00:05:45.500,1,81150,192
MANUAL32SI3,3,2002/01/28,00:05:48.500,1,81160,192
MANUAL32SI3,3,2002/01/28,00:05:51.500,1,81170,192
MANUAL32SI3,3,2002/01/28,00:05:54.500,1,81180,192
MANUAL32SI3,3,2002/01/28,00:05:57.500,1,81190,192
MANUAL32SI3,3,2002/01/28,00:06:00.500,1,81200,192
```

Formatting the CSV File for a Fast Load Import

Important The data points must be sorted in time sequential order for a successful "fast load" import.

The format for the fast load CSV file is essentially the same as the normal format, with a few exceptions.

For a general illustration of the CSV format, see "General File Format for a CSV Import" on page 168. For a detailed description of the normal format, see "Formatting the CSV File for a Normal Import" on page 168.

The fast load format exceptions are:

- All data in the file is treated as original data. The Operation Type field in the file header is ignored.
- The Missing Block Behavior field in the header is used for a different purpose. A value of 10 denotes that tags in the file are specified by name, whereas a value of 11 denotes that the wwTagKey attribute is used to specify tags. By default, missing blocks are created as necessary.

- The Time Span of Replacement Blocks field includes an additional option. A value of 2 denotes that the last values for tags are not propagated for a fast load import.

A fast load import inserts data values as "original" values. These values are typically inserted (or "propagated") in history blocks subsequent to the first block affected by the import, either up to the next pre-existing original value of that tag or up to the current time. This propagation is the most time-consuming part of the fast load process because it is implemented on per-tag basis and includes intensive file I/O.

- If this field is set to 0, then history blocks are recreated from the time of the first value to the current time. The fast load process finds all of the gaps in the history block sequence and creates replacement blocks to cover those gaps. Then, every last value of every tag is propagated up to the next pre-existing original value for that tag or up to the current time. If there are no more pre-existing values for a tag, then the last value is added to the active image and is visible to retrieval for the current time. This is the recommended "fast load" mode of operation.
- If this field is set to 1, only the history blocks necessary to import all of the data in file are recreated. The fast load process does not patch gaps in the history block sequence. In this case, the last value is propagated only up to the first gap. However, if no gaps exist, the last value is propagated to the current time or to the next original value. Because the propagation of the last value depends on the history timeline, it is recommended to use a value of 0 or 2 instead of a value of 1. The value of 1 is supported only for backward compatibility.
- If this field is set to 2, the last values for each tag are inserted, but propagation into subsequent history blocks does not occur and the values are not added to the active image. The values can only be retrieved if the query interval includes the timestamps of the inserted values. Under normal circumstances, avoid using this mode, because disabling propagation deviates from the "original" data model, in which original values are expected to be propagated to the current time. Typically, you would only want to use this mode to insert a large number of consecutive fast load CSV files belonging to one continuous timeline, and you are experiencing slow performance.

- The actual data values in the file **must** be in time sequential order, starting at the top of the file. This is the most important requirement. Values that have out-of-sequence timestamps are ignored. If a data value in the file has a timestamp that is earlier than the timestamp in the previous line in the file, the data value is discarded, regardless of whether it belongs to the same tag or a different tag.
- The file should contain only one data value per line.

Example CSV Files for a Fast Load Import

The following is an example of an insert of original data values for a single tag, "Manual_01." The pipe (|) is used as a delimiter.

ASCII

|

RolandoM|1|Server Local|10|0

Manual_01|0|2004/12/08|04:00:17.000|0|22|192

Manual_01|0|2004/12/08|04:01:17.000|0|23|192

Manual_01|0|2004/12/08|04:02:17.000|0|24|192

Manual_01|0|2004/12/08|04:03:17.000|0|25|192

Manual_01|0|2004/12/08|04:04:17.000|0|26|192

Manual_01|0|2004/12/08|04:05:17.000|0|27|192

Manual_01|0|2004/12/08|04:06:17.000|0|28|192

Manual_01|0|2004/12/08|04:07:17.000|0|29|192

Manual_01|0|2004/12/08|04:08:17.000|0|30|192

Manual_01|0|2004/12/08|04:09:17.000|0|31|192

The following example shows an insert of original data values for a single tag, identified by a wwTagKey of 777. A comma (,) is used as a delimiter. The file is saved as UNICODE, where every character is represented by two bytes.

```
UNICODE
,
MikeA,1,Server Local,11,2
777,0,2004/12/09,12:05:24.000,0,100,192
777,0,2004/12/09,12:48:36.000,0,101,192
777,0,2004/12/09,13:31:48.000,0,102,192
777,0,2004/12/09,14:15:00.000,0,103,192
777,0,2004/12/09,14:58:12.000,0,104,192
777,0,2004/12/09,15:41:24.000,0,105,192
777,0,2004/12/09,16:24:36.000,0,106,192
777,0,2004/12/09,17:07:48.000,0,107,192
777,0,2004/12/09,17:51:00.000,0,108,192
```

Handling of NULL Values in CSV Files

The value to insert can be a NULL.

If the OPC Quality in the CSV file is between 0 to 63, then:

- The NULL value is stored.
- The Quality Detail is set to 249 (not a number).
- The OPC Quality is what was specified in the CSV file.

If the OPC Quality in the CSV file is greater than 63, then:

- The value that was specified in the CSV file is stored.
- The Quality Detail is set to 192 (unless the value specified is NULL in the CSV file, in which case the Quality Detail is set to 249).
- The OPC Quality is what was specified in the CSV file (unless the value specified is NULL in the CSV file).


If the value is not NULL, but the OPC Quality is less than 63, then:

- A NULL value is stored.
- The Quality Detail is set to 249 (not a number).
- The OPC Quality is what was specified in the CSV file.

Copying a CSV File into an Import Folder

After you copy one or more CSV files to an import folder, the Wonderware Historian attempts to read the file(s) only one time. If the read is successful, the data is automatically converted and merged in with the appropriate history block according to the date range provided in the CSV file. The CSV file is then deleted from the directory. If an error occurs during the import, the CSV file is moved to the \Support folder. A message is also posted in the error log.

At any given time, the manual storage service processes either fast load CSV files or normal CSV files; the two types are not processed concurrently.

Do not attempt a CSV file import if the manual storage process is initializing, as indicated by the  icon in the status display of the Management Console.

Be sure that the access for the history blocks is read/write (if you copy them from a CD or DVD, for example, they are read-only). Also, if you copy a large number of history blocks, it is a good idea to request a history block scan.

Inserting or Updating Data with Transact-SQL Statements

Using the Transact-SQL INSERT and UPDATE statements, you can insert or update data in the AnalogHistory, DiscreteHistory, StringHistory, and History tables (Value and QualityDetail only).

The Wonderware Historian uses the same security defined for SQL Server for inserting and updating data. However, as with a .CSV, you cannot delete any data value from storage.

If you are attempting to insert or update values whose time period spans across missing history blocks, the necessary history block(s) are recreated for the duration of the data.

For guidelines on using this import method versus other import methods, see "Guidelines for Importing, Inserting, and Updating History Data" on page 183.

INSERT ... VALUES Syntax

An INSERT statement with a VALUES clause is supported only if you use the four-part syntax.

Syntax

```
INSERT [INTO] {table_name | view_name} (column_list)
VALUES ({DateTime: constant | variable},
       {TagName: constant | variable},
       {Value: constant | variable}
       [, {QualityDetail: constant | variable}]
       [, {wwTimeZone: constant | variable}]
       [, {wwVersion: constant | variable}] )
```

Using variables in the VALUES clause is permitted only with four-part naming. For more information, see "Using the Four-Part Naming Convention" in Chapter 6, "Data Retrieval Subsystem," in your *Wonderware Historian Concepts Guide*.

Arguments

table_name

The name of the extension table into which you want to insert the data. Valid values are: AnalogHistory, DiscreteHistory, StringHistory or History.

view_name

The corresponding view name for an extension table. Valid values are: v_AnalogHistory, v_DiscreteHistory, v_StringHistory or v_History.

column_list

Mandatory columns are *DateTime*, *TagName* and *Value*. *QualityDetail*, *wwTimeZone*, and *wwVersion* are optional columns. If the *QualityDetail* column is omitted in an INSERT ... VALUES statement, a *QualityDetail* value of 192 (Good) is inserted automatically. If the *wwTimeZone* column is omitted, the time zone of the server is assumed. The *wwVersion* column defaults to 'original' for non-I/O Server tags and for I/O Server tags.

Due to a restriction on the vValue (variant) column in Microsoft SQL Server, any string data inserted or updated must be done to the StringHistory table, not the History table.

The *column_list* parameter, which is optional in a regular SQL INSERT ... VALUES statement, is mandatory for the Wonderware Historian INSERT ... VALUES syntax.

Examples

The following examples show valid INSERT ... VALUES statements using the "four-part" query syntax.

For more information on four-part queries, see "Query Syntax for the Wonderware Historian OLE DB Provider" in Chapter 6, "Data Retrieval Subsystem," in your *Wonderware Historian Concepts Guide*.

```
INSERT INSQL.Runtime.dbo.AnalogHistory (DateTime,
    TagName, Value, QualityDetail)
    VALUES ('1999-11-11 16:05:10', 'NonIOTag1', 56, 192)

INSERT INTO INSQL.Runtime.dbo.StringHistory (DateTime,
    TagName, Value, wwTimeZone, wwVersion)
    VALUES ('1999-11-11 16:05:10', 'IOstring1', 'Batch
    10', 'Eastern Standard Time', 'latest')
```

You can also use the view name in place of the four-part name. For example, in the following queries, *v_History* and *v_AnalogHistory* are used instead of the four-part name *INSQL.Runtime.dbo.History* and *INSQL.Runtime.dbo.AnalogHistory*, respectively.

```
INSERT v_History (TagName, QualityDetail, Value,
    DateTime)
    VALUES ('NonIOTag1', 192, 56, '1999-11-11 16:05:10')

INSERT INTO v_History (TagName, DateTime, Value,
    QualityDetail)
    SELECT 'ManualReactTemp', DateTime, 32 + Value * 9 /
    5, 192 FROM v_AnalogHistory
    WHERE TagName = 'ReactTemp'
    AND DateTime >= dateadd(mi, -50, getdate())
    AND DateTime < dateadd(mi, -10, getdate())
    AND wwRetrievalMode = 'Delta'
```

You can use SQL variables in a four-part query. For example.

```
DECLARE @Value float
DECLARE @DateTime DateTime

SET @Value = 1.2345
SET @DateTime = DateAdd(Minute, -10, GetDate())

INSERT v_History (DateTime, TagName, Value,
    QualityDetail)
    VALUES (@DateTime, 'NonIOTag1', @Value, 192)
```

Using the wwVersion Parameter for INSERTs

You can use the wwVersion parameter to specify different handling for data that you are inserting. You can insert real-time data or non-real-time data ("late" or "old" data). For non-real-time data, you have the option of creating new versions for the values that you insert.

Regardless of the value of the wwVersion parameter, you can only insert quality detail values of either 192 (GOOD) or 0-63 (NULL). Any other values are not valid.

Inserting Real-time Original Data

Real-time data insertion by means of an INSERT statement is supported for all non-I/O Server tags. Data that is acquired in this manner is handled just like real-time data coming from an I/O Server tag. You insert real-time data into history by specifying REALTIME for the value of the wwVersion parameter in a Transact-SQL INSERT statement. All data inserted as real-time data is assumed to be "original" data. "Original" data is the first data value that is stored for a particular timestamp.

Real-time data is always inserted into the current history block and incorporated into the primary (real-time) data stream. This eliminates the performance overhead that is associated with inserting and/or versioning non-real-time data, thus making the inserts very efficient. For more information on data streams, see "About Snapshot Files" in Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

For example, you can create a client application that uses Transact-SQL INSERT statements to insert real-time data into the system. This functionality is similar to an MDAS-enabled client application.

The following restrictions apply to a real-time insert.

- You cannot insert real-time data for an I/O Server tag.
- You must have SQL Server permissions to perform an insert.
- The storage method for the tag should be of type delta, with no deadbands.
- The value of the DateTime column in the INSERT statement must be no more than 30 seconds behind or ahead of the current server time.

If the timestamp is a date in the future, relative to the Wonderware Historian time, but still within a +/- 30 second, the tag value is stamped with current historian time.

If the timestamp is more than 30 seconds ahead or behind the historian time, the tag value is not inserted into history. The Wonderware Historian OLE DB provider does not verify this condition and does not return an error message.

In the following example, a value is inserted for 'MyAnalogTag1' directly into the primary data stream. The timestamp for the value is determined by the result of the `getdate()` function:

```
INSERT INSQL.Runtime.dbo.AnalogHistory (DateTime,
    TagName, Value, QualityDetail, wwVersion)
    VALUES(getdate(), 'MyAnalogTag1', 10, 192,
    'REALTIME')
```

You can also allow the system to timestamp the value by specifying a NULL value for the `DateTime` column. The timestamp is the current time of the historian. For example:

```
INSERT INSQL.Runtime.dbo.AnalogHistory (DateTime,
    TagName, Value, QualityDetail, wwVersion)
    VALUES(null, 'MyAnalogTag1', 10, 192, 'REALTIME')
```

Note that this is a special case that is supported by the `REALTIME` parameter; under normal circumstances a NULL value for the `DateTime` column produces an error.

Inserting Non-Real-time Original Data

The first data value that is stored for a particular timestamp is considered to be "original" data. You insert original data into history by specifying `ORIGINAL` for the value of the `wwVersion` parameter in a Transact-SQL `INSERT` statement.

Values inserted as original data are not considered real-time data, and therefore are stored in the secondary data stream(s). For more information on data streams, see "About Snapshot Files" in Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

You can insert original data for both I/O Server tags and non-I/O Server tags. However, to insert original data for I/O Server tags, the *AllowOriginals* system parameter must be set to 1. For more information, see "Editing System Parameters" in Chapter 9, "Viewing or Changing System-Wide Properties," in your *Wonderware Historian Administration Guide*.

The timestamp of the data to insert can be any time except in the future, relative to the Wonderware Historian.

If original data is already stored in the history blocks with the same timestamps as the data you are inserting, the system retains the first set of original values and adds the second set of original values as well, resulting in multiple original values for the same timestamps. If you specify to retrieve original values, there is no way to determine the order in which the values were inserted. In a case such as this, it is better to insert versioned data, if the added performance overhead is not a problem.

The following query inserts an original value for 'NonIOTag1' into history:

```
INSERT INSQL.Runtime.dbo.AnalogHistory (DateTime,
    TagName, Value, QualityDetail, wwVersion)
    VALUES('2002-11-11 16:05:10', 'NonIOTag1', 10, 192,
    'ORIGINAL')
```

Inserting Non-Real-time Versioned Data

The Wonderware Historian supports multiple versions of a tag value for a particular timestamp. If a tag value currently exists in history, you can insert another value with the same timestamp and allow the historian to add internal version information so that the order of insertion is preserved.

You insert versioned data into history by specifying **LATEST** for the value of the `wwVersion` parameter in a Transact-SQL **INSERT** statement. This is essentially the same as performing an update, but without some of the limitations.

You can insert versioned data for both I/O Server tags and non-I/O Server tags. The timestamp can be any time except in the future, relative to the historian.

Values inserted as versioned data are not considered real-time data, and therefore are stored in the secondary data stream(s). For more information on data streams, see "About Snapshot Files" in Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

The following query inserts a versioned value for 'NonIOTag1' into history:

```
INSERT INSQL.Runtime.dbo.AnalogHistory (DateTime,
    TagName, Value, QualityDetail, wwVersion)
    VALUES('2002-11-11 16:05:10', 'NonIOTag1', 15, 192,
    'LATEST')
```

Note Only the first (original) and last (latest) version of a tag value are exposed for retrieval.

UPDATE Syntax

The Wonderware Historian implements UPDATE only by the OPENQUERY function, not by a four-part syntax. The reason for this is the method of implementation of UPDATE in Microsoft SQL Server. If you attempt to update values using the four-part query syntax, you will receive an error.

Also, a limitation of using the OPENQUERY function is that SQL variables cannot be used in the UPDATE statement.

Updating data in history always results in a new history version, and can be performed multiple times; however, only the original or the latest version of the data is available upon retrieval.

Syntax

The syntax of the UPDATE statement in the OPENQUERY portion is:

```
SELECT * FROM OpenQuery(INSQL, 'UPDATE { table_name }
    SET
        column_name = constant [,...n]
    WHERE
        <search_condition>')
```

Arguments

table_name

The name of the extension table into which you want to update the data. Valid values are: AnalogHistory, DiscreteHistory, StringHistory or History.

column_name

Valid values are: Value, QualityDetail. (Update of the vValue column of the History table is not supported.)

Remarks

For the <search_condition>, DateTime and TagName search criteria are mandatory. The DateTime criterion must refer to a time range; an update at a single time point ('DateTime=') is not supported.

Important When updating data using the OLE DB provider, the greater than operator (>) and the less than operator (<) are always interpreted as >= and <=, respectively. For more information, see Example 2 in this section.

```
DateTime >[=] earlier_datetime_value AND DateTime <[=]
    later_datetime_value
```

Similarly, TagName may refer to one or more tags:

```
TagName = ...
```

-or-

```
TagName [NOT] LIKE ...
```

-or-

```
TagName IN ( ... )
```

'TagName NOT IN (...)' is not supported. This is similar to the capabilities of OpenQuery SELECT; 'NOT IN' syntax is also not supported here.

As with INSERT ... VALUES, wwTimeZone is optional. If not specified, the time zone defaults to the time zone of the Wonderware Historian.

Important Other types of search conditions (for example, using a condition on Value) are not supported.

Example 1

The supported UPDATE syntax is shown in the following example:

```
SELECT * FROM OPENQUERY(INSQL, 'UPDATE History SET
  Value = 10, QualityDetail = 192
  WHERE TagName LIKE "Line1V%"
        AND DateTime >= "1999-11-11 16:05:10"
        AND DateTime <= "1999-11-11 16:05:40" ')
```

This query sets the *Value* to 10 and the *QualityDetail* to 192 for all data values for the specified tags, when the specified DateTime criteria are met.

Example 2

For the following query, the data that is updated will include the timestamps of 2002-10-03 14:59:59 and 2002-10-03 16:00:00, respectively. Existing points at these timestamps will therefore be affected by the update.

```
SELECT * FROM OPENQUERY(INSQL, 'UPDATE History SET
  Value = 1, QualityDetail = 192
  WHERE TagName = "Manual_AD32SI1"
        AND DateTime > "2002-10-03 14:59:59"
        AND DateTime < "2002-10-03 16:00:00" ')
```

Guidelines for Importing, Inserting, and Updating History Data

Use the following guidelines to help you decide the best way to import or insert data into history. Each method has its strengths for certain applications, and often you will need to balance the need for speed against some limitations.

For a normal CSV import, the CSV file format and the format of the data contained within the file is very flexible. However, this flexibility requires the system to perform a large amount of processing on the data before it can be imported. Thus, there is an inverse relationship between amount of data to process and import speed. The time required to process a file is at least exponentially related to the number of values contained in the file.

Additional factors for a normal import are:

- If multiple files are to be processed at the same time, the total size of the CSV file is limited to less than 4 MB.
- The CSV file cannot contain more than 100,000 data values.
- The number of tags represented in the file cannot exceed 1024.
- Single files of up to 6 MB will be processed, provided that it does not exceed the file data and tag limits.

Performing a non-real-time inserts by a Transact-SQL statement also requires a large amount of data processing.

For both normal CSV imports and non-real-time inserts, avoid creating an application that performs a high number of these types of operations per day. For example, an application that performs 100 individual non-real-time insert operations per day may cause the limits for the system to be exceeded. Although there is increased processing overhead for larger imports and inserts, it is better to reduce the number of operations to stay within the acceptable limits. If you have a high number of operations per day, and increasing the number of values per operation is not feasible, then you can insert the data into a manual history table or custom table and then move data in batches to the extension tables using an `INSERT INTO ... SELECT` statement.

The fastest way to insert/import data into the system is to use one of the methods that employ the real-time storage service to get the data into the history blocks. These include real-time inserts by Transact-SQL statements and "fast load" CSV imports. Real-time inserts can occur at a fairly high speed, so use this method when possible. Performing a "fast load" CSV import is also a high-speed option. To do a "fast load" import, however, the data must be in time-series order.

Generally, use the fast load import if:

- It is not is not feasible to perform a normal CSV import.
- You need to import very large CSV files.
- You want storage rules applied to the data you are importing. A normal CSV import does not apply storage rules; everything is stored as a delta.

Be aware of the performance and memory requirements for using a fast load import. Every time you import a fast load CSV file, a new data stream is created in history, and new tag versions are added to the history block tag information file. The tag information is kept in the memory of the Wonderware Historian Indexing Service, which is not limited by default. If you execute a large number of fast load imports on a regular basis, the 2 GB memory limit imposed by the operating system may be reached, and the historian will not be able to load new versions of history blocks. To prevent this, enable the Wonderware Historian Indexing Service memory management by setting the `HistoryCacheSize` system parameter to some reasonable value. For example, 20 percent of physical RAM.

A similar problem of excessive memory consumption by the Indexing Service may occur if you perform not just "fast load" imports, but any other modifications of old data (inserts/updates/normal CSV imports) on regular basis. In general, if you have any batch processes running regularly and performing old data modification, it is recommended that you enable the Indexing Service memory management.

For more information on memory management, see "Memory Management for Data Storage" in Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

Also, do not import fast load data for a tag if there is existing stored data for that tag in the same time range.

It is recommended to set the Time Span of Replacement Blocks field to 0 to ensure the propagation of the last value into the current block and the active image. If you need to perform a "fast load" import for several consecutive days of data, where one day corresponds to one "fast load" CSV file, it is recommended to perform the import in reverse order. That is, you first import the "fast load" CSV file of the latest day, then file of the day before, and so on. By using this approach, you limit the propagation of the last value for every tag by the next day, and the whole import process will take less time and require less memory for storing new tag versions. For more information on the Time Span of Replacement Blocks field, see "Formatting the CSV File for a Fast Load Import" on page 171.

To give you an estimate of relative performance among the different options, consider a system that can handle 100,000 real-time values per second from an IDAS. This system should be able to handle:

- 5,000 values per second by a real-time inserts (Transact-SQL).
- 100 values per second by a normal CSV import.
- 1,000 values per second via a fast load CSV import or an INSERT INTO ... SELECT statement.

Updating Replicated Data

Updating replicated data is very similar to updating non-replicated data with a few exceptions.

Always update data at the tier-1 historian. The replication process then propagates the information from the tier-1 historian to the tier-2 historian. In other words, do not attempt to update Tier-2 data. Remember that there is some latency with propagating updated information, typically from a few seconds to a few minutes. However, bandwidth limitations and the quantity of data to be replicated may also cause delays in propagation. After propagation, all replicated tag values and their OPC qualities are identical on both tiers.

If any data modification is performed on the tier-2 historian, including deletion of history blocks and if the data for the same tag is then modified on the tier-1 historian and an overlapping time interval, then the data modification on the tier-2 historian may be overwritten during replication. The replication process also creates new "patch" history blocks on the tier-2 historian when necessary.

A patch history block is a data block created to patch a time gap between data blocks. This patch block is created to contain the current inserted data and any possible subsequent inserts. Transact-SQL will always generate a patch block (if needed), and a CSV will create a patch block as per the file configuration.

If some history blocks are deleted on the tier-1 historian manually or due to scheduled disk management, the tier-2 values remain unchanged.

For more information on tag replication and replication servers, see Chapter 9, "Replication Subsystem," in your *Wonderware Historian Concepts Guide*.

Chapter 7

Managing and Configuring Replication

You can replicate tag information in a Wonderware Historian from one historian to another. This allows you to replicate tag data from one or more historians (known as tier-1 historians) to one or more other historians (known as tier-2 historians). You can replicate tag data to the same server as the tier-1 historian.

You can replicate tag data directly using simple replication, where the tag information is replicated directly to the tier-2 historian. For simple replication, every value for a tag is copied. You can also set up summary tags that receive a summarized version of the tag data.

Note This is only a very brief overview that does not describe the many features and concepts for replicating tags and using tiered historians. Before you set up and configure replication on your installation, see Chapter 9, "Replication Subsystem," in your *Wonderware Historian Concepts Guide*.

Adding a Replication Server

A replication server is a tier-2 historian.

The general process for adding a replication server is that you enter the configuration information for the replication server on a tier-1 historian, and the information is then pushed to the tier-2 historian. You set up schedules, groups, and tags from the tier-1 historian as well.

If the tier-2 historian doesn't yet exist or can't be reached over the network, the information is held until the tier-1 historian can connect with an instance of Wonderware Historian on the tier-2 computer. If the tier-1 historian cannot communicate with the tier-2 historian for any reason, data accumulates in the designated store-and-forward path.

By default, Wonderware Historian creates a local replication server (named Local Replication) as part of the installation process. You can create replication tags that use this local replication server or another replication server.

When you create a new replication server, the system automatically generates replication groups for analog summary and state summary replication types using default replication schedules. For more information, see *Adding a Replication Group* on page 208.

A few default replication schedules are also created for your new replication server, and you can use these schedules to create replication groups.

The system also creates a list of system tags for each replication server. For more information on the default system tags, see "Replication Subsystem Tags" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

Important Replication is not supported between a case-sensitive tier-1 historian and a case-insensitive tier-2 historian.

To add a replication server

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Replication**.

- 3 Right-click **Replication Servers** and select **New Replication Server**. The **New Replication Server** dialog box appears.

- 4 Configure the basic options for the replication server. Do the following:
- In the **Node Name/IP Address** box, type the node name or IP address of the computer to configure the tier-2 historian on. (This node name or IP address does not need to be active or accessible when you set up the information for the new replication server.)
 - In the **Description** box, type a description of the server. This description appears in the System Management Console, as well as in Historian Client reports.
 - In the **Store & Forward path** box, type the store-and-forward path for data for this replication server. This must be an absolute path on the tier-1 computer. Remote paths are not supported for store-and-forward addresses.
 - In the **SF FreeSpace** box, type the minimum free space in MB to allocate for store-and-forward storage. This can be an integer from 0 to 2147483647. If the free disk space is less than the configured value, MDAS will not go into store-and-forward if the tier-2 historian becomes unavailable and data will be lost.

- Select **Specify UserName and password** and then enter the user name and password for the replication server computer. To specify a Windows domain, prefix the username with the domain name and a backslash. For example: <domainname>\<username>. Select **Authenticate using local ArcestrA User** to use the local ArcestrA user information. The login information is only used for permission to access the replication server. Furthermore, this login information only needs to be valid on the replication server, not the tier-1 historian. The replication user specified should be a member of aaReplicationUsers security group on the tier-2 historian. For more information on tier-1 and tier-2 login information, see "Security for Data Replication" in Chapter 9, "Replication Subsystem," in your *Wonderware Historian Concepts Guide*.
- 5 To test the connection to the new replication server computer, click **Test Connection**. The test only succeeds if:
- There is a valid node name.
 - The TCP port is the same for both the tier-1 and tier-2 nodes. To configure the TCP port, click the **Advanced** tab.
 - Valid credentials for an account that has permission on the tier-2 node to send replication data are entered.

If the test fails, see the ArcestrA Logger entries on both the tier-1 and tier-2 historians for more information.

- 6 Click **Next**. The **New Replication Server - Advanced** dialog box appears.

The screenshot shows the 'New Replication Server - Advanced' dialog box. It is divided into several sections:

- Summary replication tag naming scheme:**
 - Default**: <ReplicationDefaultPrefix>. <SourceTagName>. <TypeAbbreviation><GroupAb
 - Custom**: [Empty text box] [...]
- Simple replication tag naming scheme:**
 - Default**: <ReplicationDefaultPrefix>. <SourceTagName>
 - Custom**: [Empty text box] [...]
- Advanced Settings:**
 - TCP Port:** 32568
 - Min SF Duration :** 180 Seconds
 - Buffer Count :** 128
 - Bandwidth:** Unlimited [Empty text box] Kbps
- Navigation Buttons:** < Back, Finish, Cancel, Help

You can use the default summary and simple replication tag naming schemes, or you can create your own.

- 7 In the **Summary Replication Tag Naming Scheme** and **Simple Replication Tag Naming Scheme** areas, select the replication tag naming scheme to use. Specify a custom naming scheme by selecting **Custom** and clicking the ellipsis button to the right of the box. The **Naming Scheme** dialog box appears. For information about configuring the naming scheme, see *Specifying Naming Schemes for Replication* on page 193.
- 8 Configure the remaining advanced settings. Do the following:
 - In the **TCP Port** box, type the TCP port to use for the new replication server. The TCP port is used by the tier-2 historian to receive data from the replication service on a tier-1 historian. This can be an integer between 1 and 65535. The default is 32568. This port number must match the ReplicationTepPort system parameter value that is specified on the tier-2 historian. Be sure that you open this port in Windows Firewall. The port must not conflict with any other ports used by other applications on the tier-2 historian.

- In the **Min SF Duration** box, enter the minimum duration in seconds for the replication service to function in store-and-forward mode. The replication service functions in store-and-forward mode for this length of time even if the condition that caused the replication service to function in store-and-forward mode no longer exists. The duration can be an integer from 0 to 3600. Pick a value that provides a smooth transition for store-and-forward operation and prevents the system from repeatedly going in and out of store-and-forward mode.
- In the **Buffer Count** box, enter the number of 64KB buffers to allocate for the new replication server. This can be an integer from 128 to 2048. You may need to increase the buffer count to accommodate high data rates.
- Check **Unlimited** for unlimited bandwidth to be used by the MDAS to communication with the MDAS server, or uncheck **Unlimited** and enter a value in the **Kbps** box to specify a custom bandwidth. This can be an integer from 10 to 1000000.

Setting a limit on the bandwidth throttles the amount of data that is sent during operations such as a store-and-forward, an update, or a CSV export. You commonly use this feature when you have a WAN with a low bandwidth. For example, suppose your WAN has a 128kbps bandwidth between the tier-1 and tier-2 historians. If you have real-time streaming data that requires 64kbps for normal operation but the network is down for 8 hours and information is saved for store-and-forward, it will take 8 hours for the data to be uploaded. If you leave this set to **Unlimited**, it will work fine.

But if you have 256kbps bandwidth that you have to share with other applications, set this to 128kbps to throttle the store-and-forward data and anything that isn't streaming. This prevents the historian's operations from choking the other applications for bandwidth. The most common symptom of a problem is that when you come out of store-and-forward and start sending data, the remote desktop is very sluggish and unresponsive.

- 9 Click **Finish**. The new replication server appears in the replication server list.

Specifying Naming Schemes for Replication

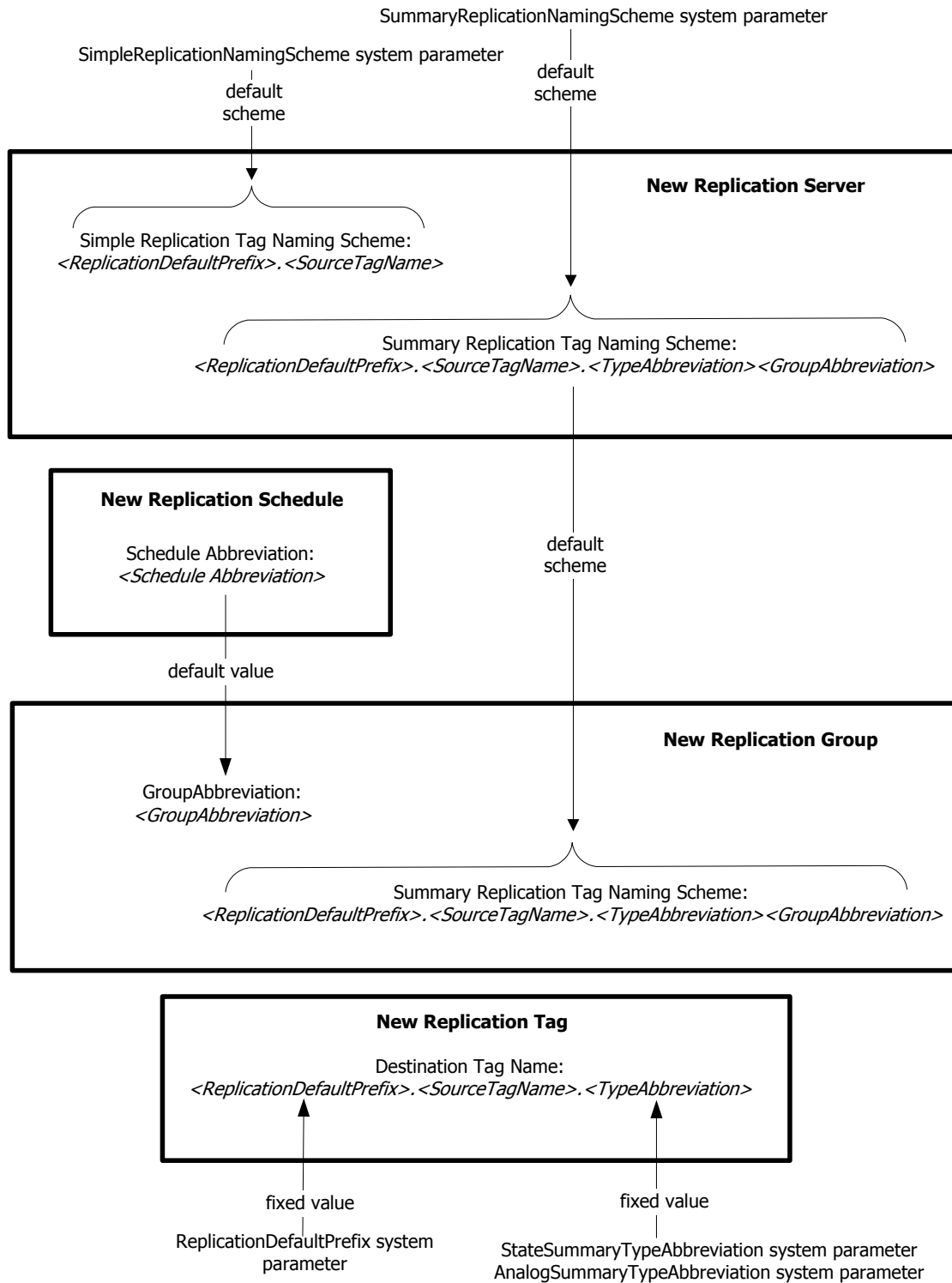
A replication naming scheme is a collection, or expression, of identifiers that fully describe a replication tag. Replication tag naming schemes identify the information being replicated quickly and easily and also prevent name collisions between tags that inadvertently have identical names. You are encouraged to plan your naming conventions and system requirements before implementing a naming scheme.

Note Name collisions can occur when you have two or more tags (usually from different historians) that have the same name. The data stored from one tag is mixed with data from the other tag, contaminating the data on the replication server.

The naming scheme placeholders are described in the following table:

Value	Description
<ReplicationDefaultPrefix>	A prefix based on the replication server name.
<SourceTagName>	The name of the source tag on the tier-1 historian that is being replicated to the tier-2 historian.
<TypeAbbreviation>	The type of summary tag: blank for analog summary or S for state summary. The type abbreviation is most useful for preventing collisions between analog tags. For an integer source tag, you can create both analog and state summary tags, which can result in tag naming collisions if you use only the other naming parameters.
<GroupAbbreviation>	The abbreviation for the replication group.

A diagram of the naming scheme relationships is as follows:



When you define a new replication server:

- The default scheme for the simple replication tag naming scheme is taken from the `SimpleReplicationNamingScheme` system parameter.
- The default scheme for the summary replication tag naming scheme is taken from the `SummaryReplicationNamingScheme` system parameter.

When you define a new replication schedule, you define a schedule abbreviation.

When you define a new replication group:

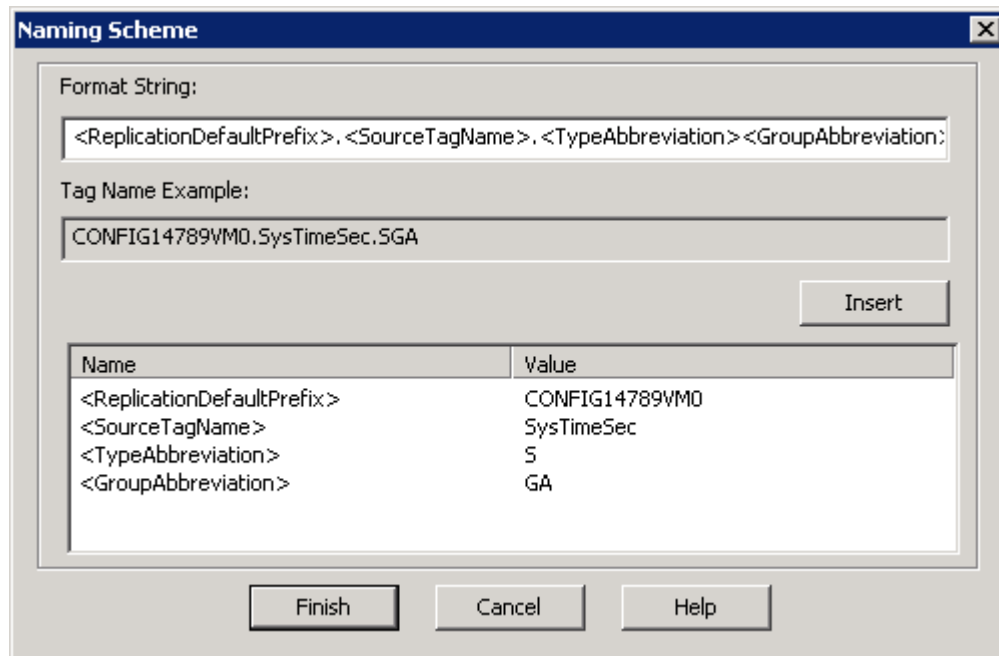
- The default value for the group abbreviation is taken from the schedule abbreviation for the associated replication schedule.
- The default scheme for the summary replication tag naming scheme is copied from the summary replication tag naming scheme of the associated replication server.

When you define a new replication tag:

- The value for the `<ReplicationDefaultPrefix>` is taken from the current setting of the `ReplicationDefaultPrefix` system parameter.
- The value for the `<TypeAbbreviation>` is taken from the `StateSummaryReplicationTypeAbbreviation` or `AnalogSummaryReplicationTypeAbbreviation` system parameter, depending on the type of replication (the “folder” within the server). The `<TypeAbbreviation>` is applicable only for summary replicated tags.

To configure the naming scheme

- 1 Specify a custom naming scheme in a dialog box by clicking **Custom**, and then clicking the button to the right of the box. The **Naming Scheme** dialog box appears.



- 2 Enter the naming scheme to use for tagging the replication tags. The parameters you can use and an example of what the string looks like appear in the **Tag Name Example** box.

Note Simple replication tags do not have a type abbreviation and are not assigned to a group. You can use the <TypeAbbreviation> and <GroupAbbreviation> parameters in a simple replication tag naming scheme, but they always have empty values.

- 3 Click **Finish**.

Editing Replication Server Properties

You can edit the properties for a replication server. The general procedure and options are the same as for adding a replication server.

To edit properties for a replication server

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Servers**.
- 3 Right-click the replication server to be edited and then click **Properties**. The **Properties** dialog box appears

The screenshot shows a Windows-style dialog box titled "10.2.88.53 Properties". It has two tabs: "General" (selected) and "Advanced". The "General" tab contains the following fields and options:

- Name:** CONFIG14789VM0
- Node Name/IP Address:** A dropdown menu showing "CONFIG14789VM0".
- Description:** A text box containing "Remote Replication Server".
- Store & Forward path:** A text box containing "C:\Historian\StoreForward\CONFIG14789VM0".
- SF FreeSpace:** A text box containing "125" followed by "MB".
- Authentication:** Two radio buttons. The first, "Authenticate using local Arcestra User", is selected. The second is "Specify UserName and password".
- Replication UserName:** An empty text box.
- Replication Password:** An empty text box.

At the bottom of the dialog are four buttons: "OK", "Cancel", "Apply", and "Help".

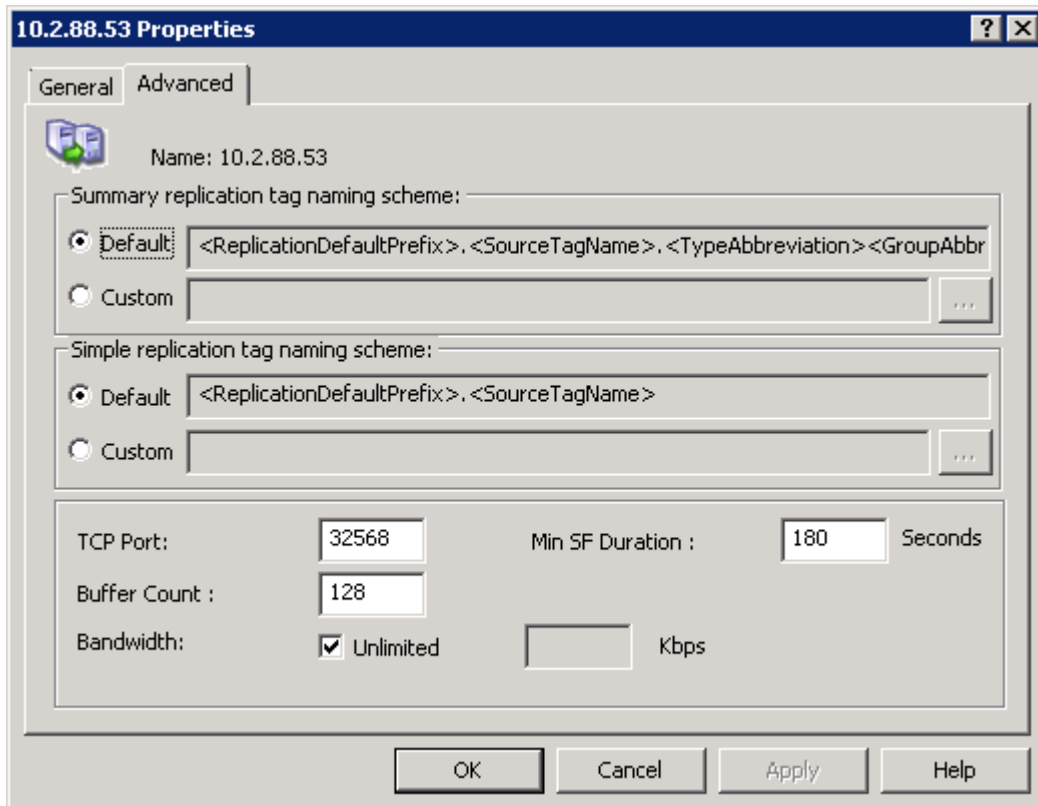
- 4 Edit the general properties. The options are the same as for adding a new replication server. For more information, see Adding a Replication Server on page 188.

Important Unreplicated data contains the replication server name as part of the store-and-forward identification information. Changing the node name/IP address can create orphaned data with no connection to the replication server.

Important If you have unreplicated data in the old store-and-forward path, changing the path can create orphaned data with no connection to the replication server.

If you change the store-and-forward path, you must commit the change to the database before the change will go into effect.

- 5 Click the **Advanced** tab.



- 6 Edit the advanced properties. The options are the same as for adding a new replication server. For more information, see Adding a Replication Server on page 188.

When you change a naming scheme, the change is reflected for all subsequent tag entries, but the change does not affect any existing replication data already on the server.

- 7 When you are done, click **OK**.

Deleting a Replication Server

You can delete a replication server using the System Management Console. Deleting the server also automatically deletes the replication groups associated with the server.

WARNING! Be very certain that you are deleting the right replication server and that you have backed up data and tag information appropriately.

If you have configured a tag for replication to a server, you must first delete the tag replication before you can delete the server.

To delete a replication server

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Servers**.
- 3 Select the server in the details pane and perform any of the following:



- Click the **Delete** button on the toolbar.
- On the **Action** menu, click **Delete**.
- Right-click on the tag and then click **Delete**.

Configuring Tags to Be Replicated

Simple replication is when the destination tag on the tier-2 historian has the same type and storage rules as the source tag on the tier-1 historian, and that the destination tag will also have the same values/data.

The rules for other kinds of tags also apply to replicated tags:

- Each tag is identified by a unique name.
- Configuration information for each type of tag is stored in the historian, as well as the history for tags over time.
- You can use the Configuration Editor to view and edit information for existing tag definitions, create definitions for new tags, or delete existing tags.

For more information about tags and tag naming conventions, see "About Tags" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

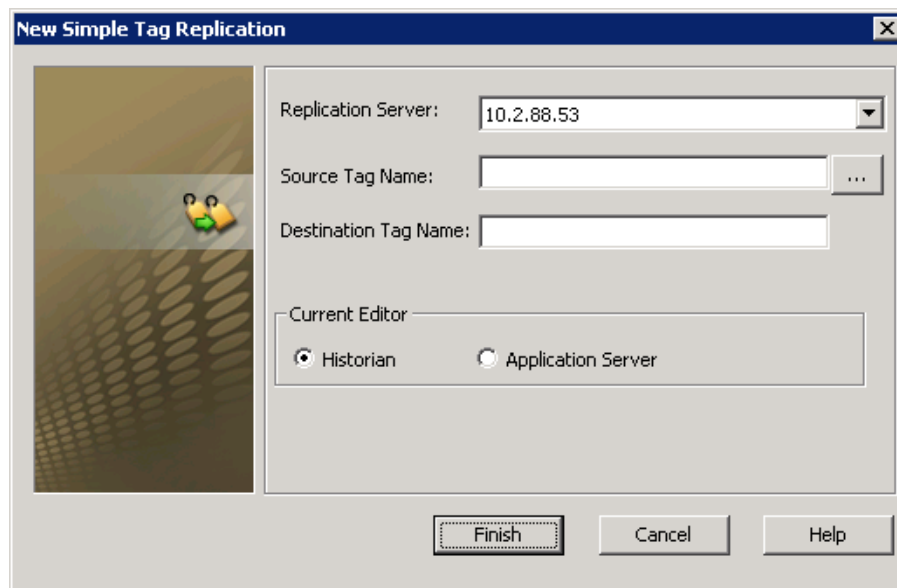
You can create simple replication tags one at a time or in multiples.

Adding a Single Tag for Simple Replication

You can configure a tag for simple replication. This is particularly useful if you have added or modified a tag, or are now using a tag as part of summary calculations, and just need to add a simple replication tag for that one tag.

To add a single simple replication tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, expand **Replication Servers**, then expand the replication server.
- 3 Right-click the **Simple Replication** folder and select **Add Single Tag**. The **New Simple Tag Replication** dialog box appears.



- 4 In the **Replication Server** box, select the replication server to create the tag on.
- 5 In the **Source Tag Name** box, type the name of the tag that provides the source data for the summary tag. (For more information on finding a tag, see Finding Source Tags on page 215.)
- 6 In the **Destination Tag Name** box, type the name of the simple replication tag.

Note The **Current Editor** option is reserved for future use.

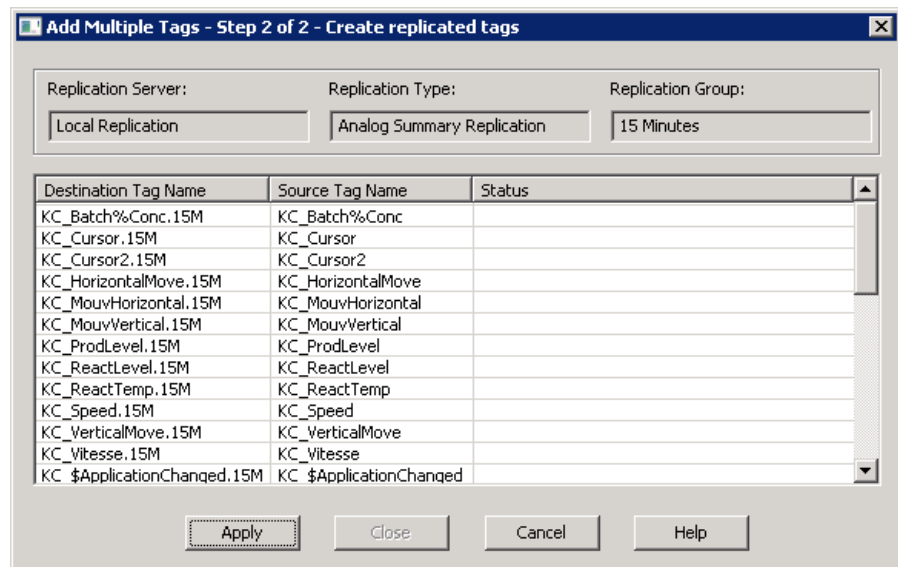
- 7 Click **Finish**. The simple replicated tag appears in the folder.

Adding Multiple Tags for Simple Replication

When you are setting up a new replication server or incorporating a new set of tags from an application, it is easier to configure tags for simple replication all at once rather than singly.

To add multiple simple replication tags

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, expand **Replication Servers**, then expand the replication server
- 3 Right-click the **Simple Replication** folder and select **Add Multiple Tags**. The **Add Multiple Tags - Step 1 of 2** dialog box appears.
- 4 In the **Tag Name** box, select an option from the drop-down list. Check **Not** to negate the search option in the **Tag Name** box. Type the search string in the box to the right.
- 5 If you also want to search using a description, select an operator in the **Operator** box and then make entries in the **Description** boxes.
- 6 Click **Find Now** to start the search. Results matching the criteria appear in the **Found Tags** box.
- 7 Move tags from the **Found Tags** box to the **Target Tags** box by double-clicking them or highlighting the tags and using buttons to the right of the **Found Tags** box.
- 8 Click **OK**. The **Add Multiple Tags - Step 2 of 2** dialog box appears.



- 9 You can modify the destination tagname by editing it directly in the **Destination Tag Name** column.
- 10 Click **Apply**. The system adds the tags. A status indicating the outcome of operation appears for each tag in the Status field.

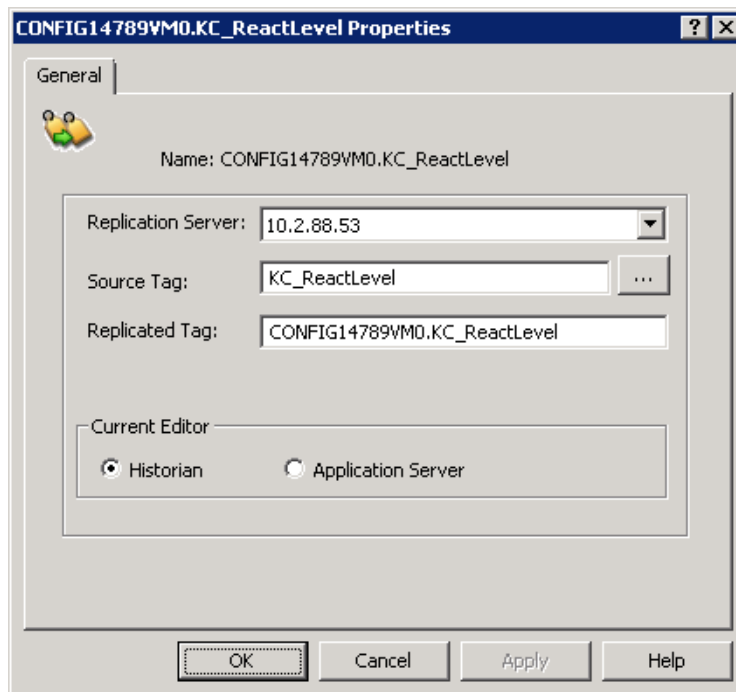
If you prefer, you can search for tags using a **SQL query**. Click the **SQL Query** tab, then use the same procedure as for adding a single summary tag using the **SQL Query** tab. For more information, see *Adding a Single Summary Tag* on page 213.

Editing Simple Replication Tag Properties

You can edit the properties for a simple replication tag. The general procedure is similar to the procedure for adding a simple replication tag.

To edit properties for a simple replication tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Servers**.
- 3 Expand the replication server, and then select the **Simple Replication** folder.
- 4 Double-click the tag you want to edit properties for. The **Properties** dialog box appears



- 5 In the **Replication Server** list, click the replication server.
- 6 In the **Source Tag** box, type the name of the tag that provides the source data for the tag. For more information on finding a tag, see Finding Source Tags on page 154.
- 7 In the **Replicated Tag** box, type the name of the replicated tag. The naming scheme shown for the replicated tag appears depends on the system parameter or as specified for the replication server.

Note The **Current Editor** option is reserved for future use.

- 8 Click **OK**. The tag's properties are updated.

Deleting a Simple Replication Tag

You can delete a simple replication tag through the System Management Console.

If you delete a replication tag from the tier-1 historian, data will no longer be replicated to the tier-2 historian. However, the replicated data for the deleted tag is not deleted from the tier-2 historian for the simple replicated tag. Also, the replication tag is not deleted from the tier-2 historian.

WARNING! Be very certain that you are deleting the right tag.

To delete a simple replication tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, expand **Replication Servers**, then expand the replication server, expand the **Simple Replication** folder.
- 3 Select the tag in the details pane and perform any of the following:



- Click the **Delete** button on the toolbar.
- On the **Action** menu, click **Delete**.
- Right-click on the tag and then click **Delete**.

Adding a Replication Schedule

A replication schedule defines the interval or specific times for summary periods. Replication intervals are defined by a number of minutes or hours.

The Wonderware Historian sets up several standard replication schedules: 1, 5, 15, and 30 minutes, 1 hour, and 1 day. You can also add custom replication schedules to fit your own time requirements.

Replication is triggered at the schedule interval calculated from the beginning of the day (local time). For example, if you specify a 5-hour interval: replication will have summary values at 0:00, 5:00, 10:00, 15:00, 20:00 and again at 1:00. This is only the case for periodic schedules, not custom ones.

If a partial interval has elapsed at midnight, it will automatically trigger whether or not the interval has expired. All replication intervals cannot be longer than one day (24 hours).

Custom replication schedules are a list of start times (local time) to trigger the summary. These will only trigger at the specified times and will not necessarily trigger at the end of the day.

You can also define a schedule abbreviation that is used when new replication groups are defined using the particular schedule. The schedule abbreviation is automatically generated as the interval is modified, but you can override the default. For example, with a tag named LevelTag1 configured for 7 minute replication using the schedule abbreviation 7m and being replicated from LocalServer1 to ReplServer2, the abbreviation is included in the destination tag name: LocalServer1.LevelTag1.7m.

The schedules you set up are expressed in local time and are impacted by Daylight Savings Time changes. For more information, see "Replication Schedules and Daylight Savings Time" in Chapter 9, "Replication Subsystem," in your *Wonderware Historian Concepts Guide*.

To add a replication schedule

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Replication**.
- 3 Right-click **Replication Schedule** and select **New Replication Server**. The **New Replication Schedule** dialog box appears.

- 4 In the **Schedule Name** box, type the name of the schedule (up to 256 characters).
- 5 In the **Schedule Abbreviation** box, type the schedule abbreviation (up to 32 characters). This is used as part of the default naming scheme.
- 6 Check **Automatically create replication group for each new Replication Server** to have the Historian add this schedule group to the default list of schedule groups whenever you create a replication server. (To add it to an existing server, you have to manually add the group.)
- 7 Select **Interval** and specify a time to set a regular time interval for replication. Alternatively, you can select **Custom Replication Schedules** and then enter specific trigger times for the replication schedule. A custom replication schedule can have up to 100 trigger times.
- 8 Click **Finish**. The new replication schedule appears in the replication schedule list.

Editing Replication Schedule Properties

You can edit the properties for a replication schedule. The general procedure is similar to the procedure for adding a replication schedule.

Replication schedules are referenced by replication groups rather than copied, so changes to a replication schedule affect all replication groups that reference that schedule. However, changes to the tag naming rules (such as the schedule abbreviation) do not affect any tags already configured for replication.

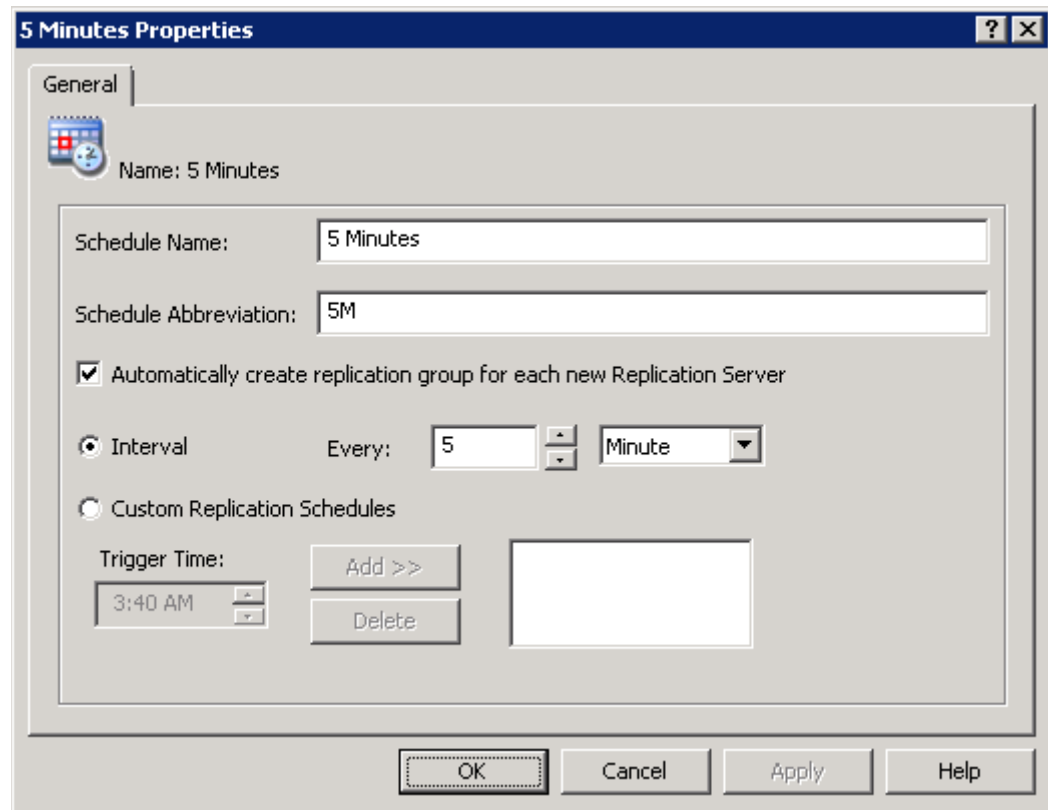
You can modify replication schedules when there are existing replication entities referencing the schedules or groups. When you change the schedule for a summary tag, an extra replication summary is sent at the time of the configuration change to transition to the new schedule.

If you change an interval replication schedule to a custom replication schedule, there is loss of data on the tier-2 historian for the period from the last interval schedule to the first custom replication scheduled.

To edit properties for a replication schedule

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Schedule**.

- 3 Right-click on the replication schedule to be modified and then click **Properties**. The **Properties** dialog box appears



- 4 Edit the general properties. The options are the same as for adding a new replication schedule. For more information, see [Adding a Replication Schedule](#) on page 204.
- 5 Click **OK**.

Deleting a Replication Schedule

You can delete a replication schedule through the System Management Console.

WARNING! Be very certain that you are deleting the right replication schedule.

If you have configured a replication schedule for use in a replication group, you must first remove the replication schedule from the group before you can delete the schedule.

To delete a replication schedule

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Schedules**.
- 3 Select the schedule in the details pane and perform any of the following:
 - Click the **Delete** button on the toolbar.
 - On the **Action** menu, click **Delete**.
 - Right-click on the tag and then click **Delete**.



Adding a Replication Group

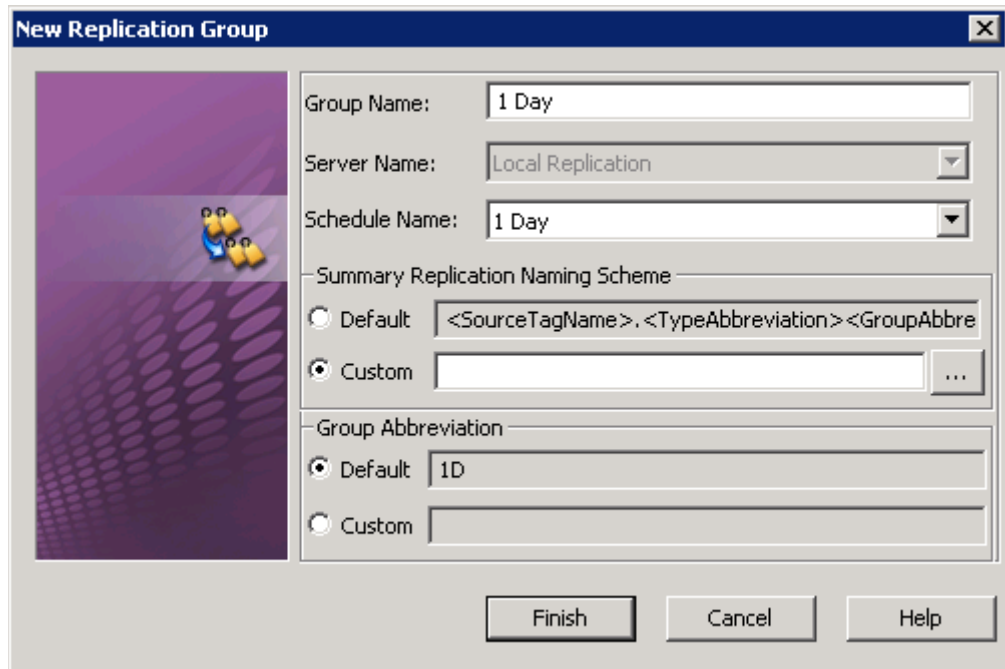
When you create a new replication group, you can add it to existing replication group configurations.

You can have an unlimited number of groups.

To add a replication group

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Servers**.

- 3 Expand the replication server you want to add the group to, and then right-click the folder you want to create the replication group in. Select **New Replication Group**. The **New Replication Group** dialog box appears.



- 4 In the **Group Name** box, type the name for the new group (up to 255 characters).
- 5 In the **Schedule Name** list, select an existing schedule to assign to the group.
- 6 In the **Summary Replication Tag Naming Scheme** area, select the replication tag naming scheme to use. Specify a custom naming scheme by selecting **Custom** and clicking the ellipsis button to the right of the box. The **Naming Scheme** dialog box appears. For information about configuring the naming scheme, see *Specifying Naming Schemes for Replication* on page 193.
- 7 In the **Group Abbreviation** area, select the default group abbreviation or type a custom group abbreviation.
- 8 Click **Finish**. The new replication group appears in the replication server's group list.

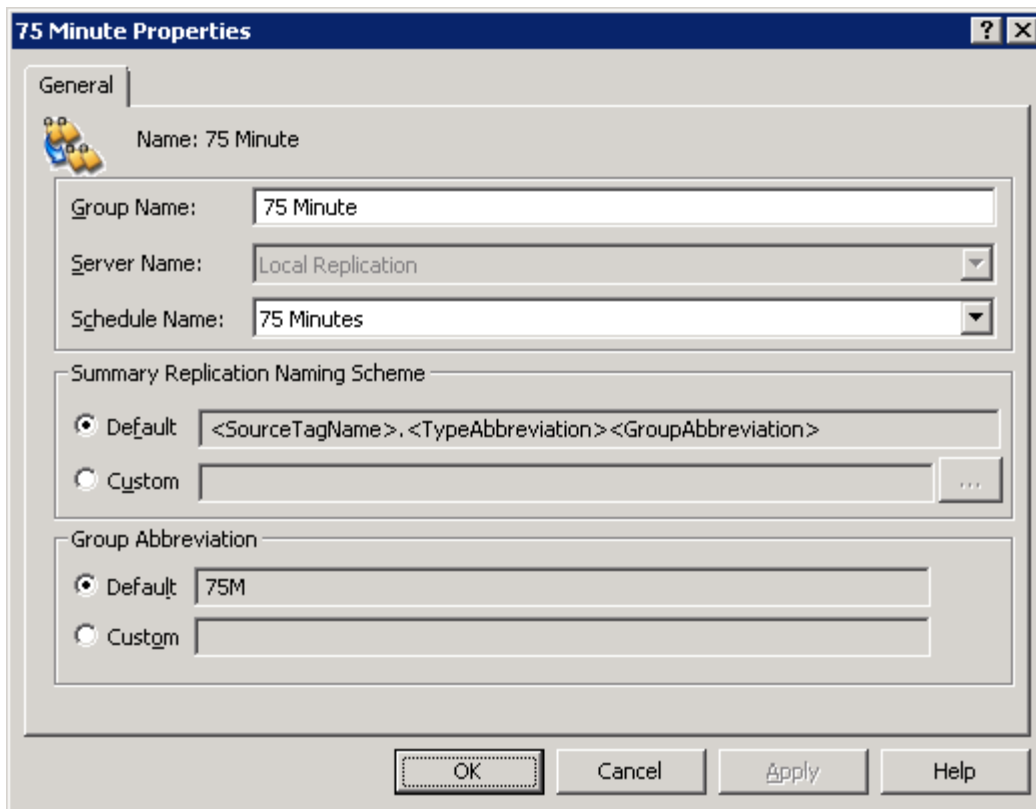
Editing Replication Group Properties

You can edit the properties for a replication group. The general procedure is similar to the procedure for adding a replication group.

You can modify replication groups when there are existing replication entities referencing the schedules or groups. When you change the schedule for a summary tag, an extra replication summary is sent at the time of the configuration change to transition to the new schedule.

To edit properties for a replication group

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Servers**.
- 3 Expand the replication server, and then expand the folder the replication group is in.
- 4 Right-click on the replication group to be modified and then click **Properties**. The **Properties** dialog box appears



- 5 Edit the general properties. The options are the same as for adding a new replication group. For more information, see Adding a Replication Group on page 208.
- 6 Click **OK**. The replication group's properties are updated.

Deleting a Replication Group

You can delete a replication group through the System Management Console.

If you have configured replication tags in a replication group, you must first remove the replication tags from the group before you can delete the replication group.

If the replication group contains replication entities, you cannot delete the replication group.

WARNING! Be very certain that you are deleting the right replication group and that you have backed up data and tag information appropriately.

To delete a replication group

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Servers**.
- 3 Expand the replication server you want to delete the group from.
- 4 Select the group in the details pane and perform any of the following:



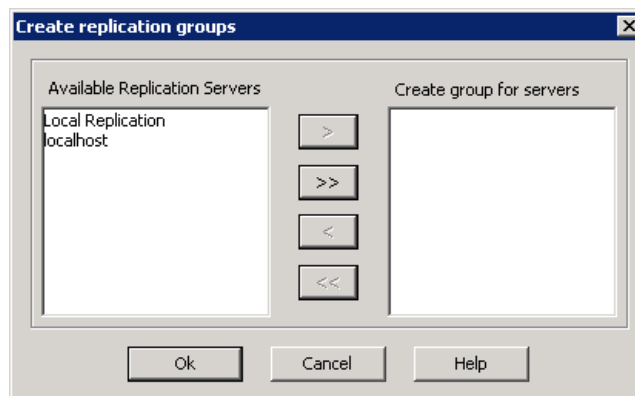
- Click the **Delete** button on the toolbar.
- On the **Action** menu, click **Delete**.
- Right-click on the tag and then click **Delete**.

Creating a Replication Group for Multiple Servers

You can quickly create the same replication group for multiple servers. The replication group is based on a replication schedule that you select.

To create a replication group for multiple servers

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Replication**.
- 3 Select **Replication Schedules**.
- 4 In the details pane, right-click on the desired schedule and then click **Create replication groups**. The **Create replication groups** dialog box appears.



- 5 Use the arrow buttons to move one or more replication servers from the **Available Replication Servers** window to the **Create group for servers** window.
- 6 Click **OK**.

Adding Summary Tags

Summary replication takes information from a source tag on a tier-1 historian and summarizes the tag data to a tier-2 historian in one of two types of summary tag: an analog summary tag or a state summary tag. For a discussion of how the summary tags work and how to use them, see Chapter 9, "Replication Subsystem," in your *Wonderware Historian Concepts Guide*.

You can add analog or state summary tags one at a time or in multiples.

State summary replication is not supported for scaled tags.

Adding a Single Summary Tag

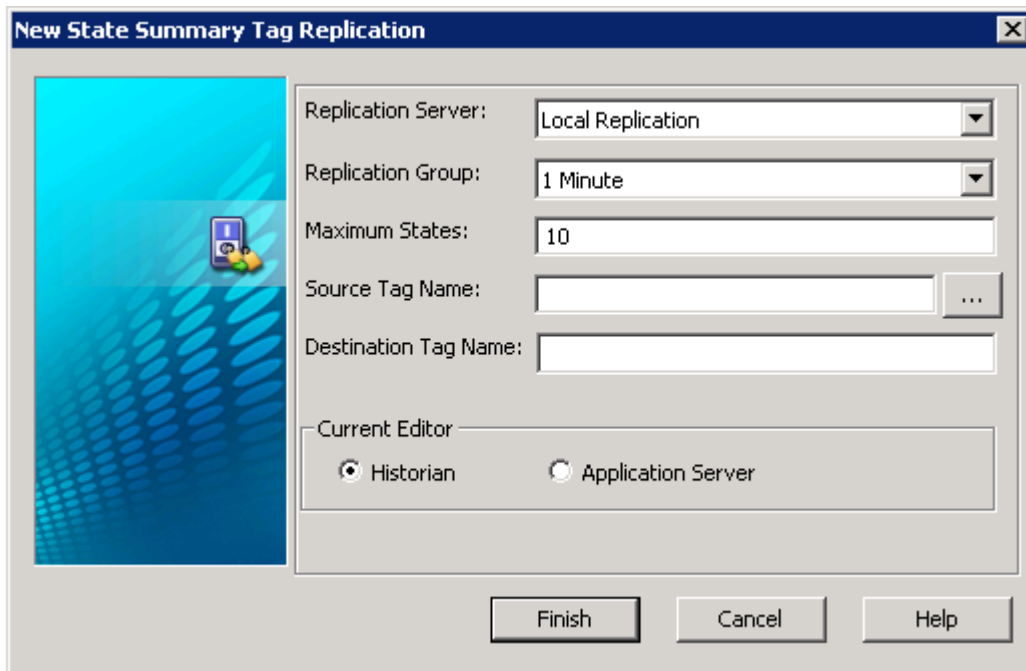
You can add a single analog or state summary tag. This is particularly useful if you have added or modified a tag and simply need to add a summary tag for that one tag.

WARNING! If you are replicating from multiple source tags to the same summary tag on a replication server, the tier-2 logger does not log a message of the naming conflict. As a result, it is possible to have multiple source tags overwriting each other in the same summary tag. Make sure you have a naming convention for your destination tags that avoids potential name collisions.

To add a single summary tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Servers**.
- 3 Expand the replication server, then expand the **Analog Summary Replication** or **State Summary Replication** folder.

- 4 Right-click the replication group and select **Add Single Tag**. The **New Analog Summary Tag Replication** dialog box or **New State Summary Tag Replication** dialog box appears.



- 5 In the **Replication Server** box, select the replication server to create the tag on.
- 6 In the **Replication Group** box, select the replication group to assign the tag to.
- 7 If you are defining a state summary tag, in the **Maximum States** box, type the maximum number of states allowed in the same reporting period. The default number of maximum states is 10. The replication subsystem will calculate summaries for the first 10 distinct states, in the order in which they occur in the data (not in numeric or alphabetic order). The higher the number of maximum states, the more system resources are used to keep track of the time-in-state for each distinct state.
- 8 In the **Source Tag Name** box, type the name of the tier-1 tag that provides the source data for the summary tag. For more information on finding a tag, see [Finding Source Tags](#) on page 215.

- 9 In the **Destination Tag Name** box, type the name of the new tier-2 summary tag. By default, the destination tag name appears as configured for the SummaryReplicationNamingScheme system parameter or as configured for the replication server.

Note The **Current Editor** option is reserved for future use.

- 10 Click **Finish**. The new summary tag appears in the selected replication group.

Finding Source Tags

If you aren't sure of the exact tag name or need to verify which tag to use, you can search for tags as part of the process of adding summary tags.

To find a tag to use as the source tag

- 1 Click the button to the right of the **Source Tag Name** box. The **Tag Finder** dialog box appears.

- 2 In the **Tag Name** box, select an option from the drop-down list. Check **Not** to negate the search option in the **Tag Name** box. Type the search string in the box to the right.

- 3 If you also want to search using a description, select an operator in the Operator box and then make entries in the **Description** boxes.
- 4 Click **Find Now** to start the search. Results matching the criteria appear in the **Found Tags** box.
- 5 Double-click a tag in the **Found Tags** box to move it to the **Target Tags** box. You can also use the > and < buttons to move tags between the boxes.
- 6 Click **OK**. The selected tag appears in the **Source Tag Name** box on the **Add Analog Summary Tag Replication** dialog box or the **Add State Summary Tag Replication** dialog box.

If you prefer, you can search for tags using a SQL query.

- 1 Click the button to the right of the **Source Tag Name** box. The **Tag Finder** dialog box appears.
- 2 Click the **SQL Query** tab.

Tag Finder

Form Query SQL Query

select TagName, TagType, Description, wwTagKey, IDServerKey from dbo.Tag

where

Find Now

Clear

Found Tags:

Tag Name	Description

Target Tags:

Tag Name	Tag Type

>

<

>>

<<

OK Cancel Help

- 3 Type a SQL query in the box and then click **Find Now**. The qualifying tags appear in the **Found Tags** box.

If you want an example of how this works for your system, use the preceding procedure to select tags based on a string and/or description, then look at the **SQL Query** tab. The search criteria appear in a SQL query. For example, the following screen shows the results of searching for tags containing the string “KC” and a description containing the string “level.”

The screenshot shows the 'Tag Finder' dialog box with the 'SQL Query' tab selected. The query text area contains: `select TagName, TagType, Description, wwTagKey, IOserverKey from dbo.Tag where (TagType = 1) and (TagName like N'%KC%' and (Description like N'%Level%' or`. Below the query area are 'Find Now' and 'Clear' buttons. The 'Found Tags' table lists three results:

Tag Name	Description
KC_ProdLevel	Product storage
KC_ReactLevel	Reactor level
KC_\$AccessLevel	AccessLevel

The 'Target Tags' table is currently empty. Navigation buttons (>, <, >>, <<) are located between the two tables. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

- 4 Select a tag and click **OK** as described in the previous procedure. The selected tag appears in the **Source Tag Name** box on the **New Analog Summary Tag Replication** dialog box or the **New State Summary Tag Replication** dialog box.

Adding Multiple Summary Tags

When you are setting up a new replication server or incorporating a new set of tags from an application, it is easier to add summary tags all at once rather than singly.

To add multiple summary tags

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Servers**.
- 3 Expand the replication server, then expand the **Analog Summary Replication** or **State Summary Replication** folder.
- 4 Right-click the replication group you want to add the tag to and select **Add Multiple Tags**. The **Add Multiple Tags - Step 1 of 2 - Select Tags to Replicate** dialog box appears.

- 5 In the **Tag Name** box, select an option from the drop-down list. Check **Not** to negate the search option in the **Tag Name** box. Type the search string in the box to the right.
- 6 If you also want to search using a description, select an operator in the Operator box and then make entries in the **Description** boxes.
- 7 Click **Find Now** to start the search. Results matching the criteria appear in the **Found Tags** box.

- 8 Move tags from the **Found Tags** box to the **Target Tags** box by double-clicking them or highlighting the tags and using the buttons to the right of the **Found Tags** box.
- 9 Click **OK**. The **Add Multiple Tags - Step 2 of 2 - Create replicated tags** dialog box appears.

Destination Tag Name	Source Tag Name	Status
KC_Batch%Conc.15M	KC_Batch%Conc	
KC_Cursor.15M	KC_Cursor	
KC_Cursor2.15M	KC_Cursor2	
KC_HorizontalMove.15M	KC_HorizontalMove	
KC_MouvHorizontal.15M	KC_MouvHorizontal	
KC_MouvVertical.15M	KC_MouvVertical	
KC_ProdLevel.15M	KC_ProdLevel	
KC_ReactLevel.15M	KC_ReactLevel	
KC_ReactTemp.15M	KC_ReactTemp	
KC_Speed.15M	KC_Speed	
KC_VerticalMove.15M	KC_VerticalMove	
KC_Vitesse.15M	KC_Vitesse	
KC \$ApplicationChangqd.15M	KC \$ApplicationChangqd	

- 10 Check the tag names. You can edit the destination tag names in this dialog box by selecting the specified tag and clicking the name to modify in the **Destination Tag Name** column. By default, the destination tag specified by the system parameter appears in this dialog box. The destination tagname can be modified by editing it directly in the **Destination Tag Name** column.
- 11 Click **Apply**. The system adds the tags to the specified replication group. A status indicating the outcome of operation appears for each tag in the **Status** column.

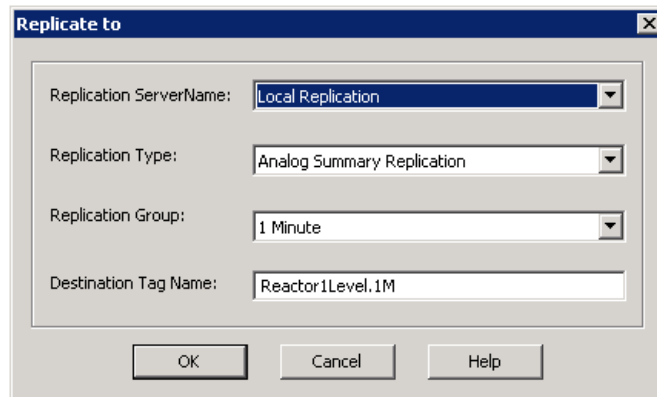
If you prefer, you can search for tags using a **SQL query**. Click the **SQL Query** tab, then use the same procedure as for adding a single summary tag using the **SQL Query** tab. For more information, see Adding a Single Summary Tag on page 213.

Creating a Summary Tag Quickly using Default Settings

You can select an existing tag on the tier-1 server and then quickly configure a summary tag.

To create a replication tag

- 1 In the System Management Console, expand a server group, and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select the appropriate folder. For example, **Analog Tags**.
- 4 In the details pane, right-click on the source tag for which you want to create an associated summary tag and then click **Replicate To**. The **Replicate To** dialog box appears.



- 5 In the **Replication Server Name** list, click the replication server.
- 6 In the **Replication Type** list, click the type of replication, either **Analog Summary Replication** or **State Summary Replication**.
- 7 In the **Replication Group** list, click the replication group.
- 8 In the **Destination Tag Name** box, type the name of the summary tag. By default the destination name appears as configured for the replication server.
- 9 Click **OK**. The **Operation Result** dialog box appears, showing the details of the source tag, destination tag, and the status of the operation.
- 10 Click **Close**.

Editing Summary Tag Properties

You can edit the properties for a summary tag. The general procedure is similar to the procedure for adding a summary tag.

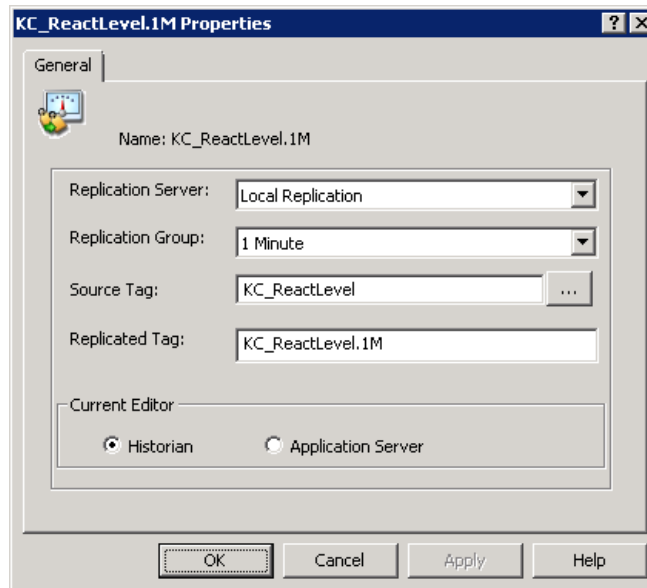
In case of a change that would result in a tag name collision with tags defined on the same tier-1 historian going to the same tier-2 historian, the change is discarded and an error message appears. Collisions with replication tags configured from other tier-1 historians are overwritten without an error message from the tier-2 historian. Be careful not to create or modify a replicated tag on a tier-1 historian to have the same tagname that already exists on a tier-2 historian. The system does not prevent you from having a replicated tag on a tier-2 historian receiving data from two or more different tier-1 historians. However, when you retrieve data for that replicated tag on the tier-2 historian using the tagname, an incorrect blend of data from the two (or more) data sources is returned. Collisions of non-replication tags on the tier-2 historian fail at connection time and are logged to the ArcestrA Logger.

When you change the replication server node name or replication group, the replication tag is removed from the old group and added to the new group. Replication tags that are changed to a new replication server or group do not have their changes logged to the new server or group until changes are committed.

To edit properties for a summary tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Servers**.
- 3 Expand the replication server, expand the **Analog Summary Replication** folder or **State Summary Replication** folder, and then expand the replication group containing the summary tag.

- 4 Double-click the summary tag you want to edit properties for. The **Properties** dialog box appears



- 5 In the **Replication Server** list, click the replication server to edit.
- 6 In the **Replication Group** list, click the replication group.
- 7 In the **Source Tag** box, type the name of the tag that provides the source data for the summary tag. For more information on finding a tag, see Finding Source Tags on page 215.
- 8 In the **Replicated Tag** box, type the name of the summary tag.

Note The **Current Editor** option is reserved for future use.

- 9 Click **OK**.

Deleting Replication for a Summary Tag

You can delete replication for a summary tag through the System Management Console.

The data of the summary tag at the tier-2 historian is not deleted when you delete a summary tag at the tier-1 historian. You can query for the summary tag on the tier-2 historian for data as long as the summary tag exists on the tier-2 historian.

WARNING! Be very certain that you are deleting the right summary tag.

To delete replication for a summary tag

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, expand **Replication**, then expand **Replication Servers**.
- 3 Expand the replication server, expand the **Analog Summary Replication** folder or the **State Summary Replication** folder, and then expand the replication group containing the summary tag.
- 4 Select the tag in the details pane and perform any of the following:
 - Click the **Delete** button on the toolbar.
 - On the **Action** menu, click **Delete**.
 - Right-click on the tag and then click **Delete**.

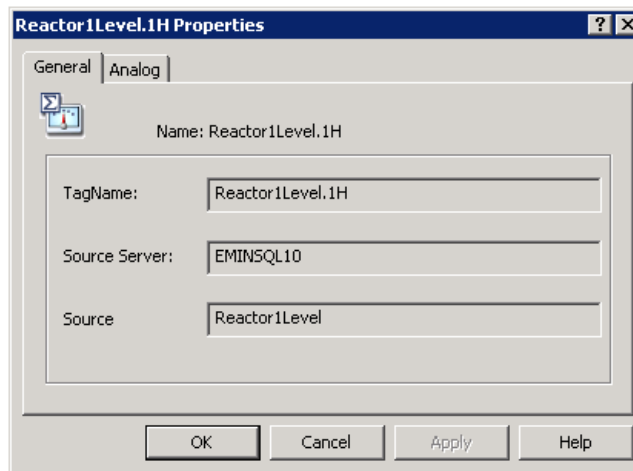


Viewing Source Details for a Summary Tag

You can view the source details for an analog or state summary tag, such as the source tag, source historian, and the engineering unit and raw value information of the source tag from a tier-2 historian.

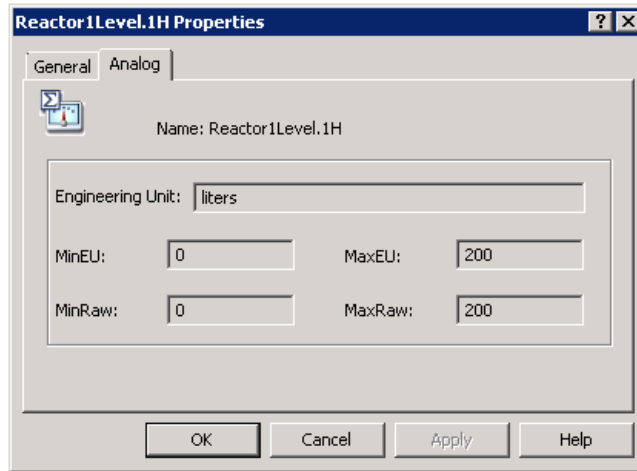
To view details for a summary tag from a tier-2 historian

- 1 In the System Management Console on the tier-2 historian, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Click either the **Analog Summary Replication** folder or the **State Summary Replication** folder.
- 4 In the details pane, right-click on the summary tag for which you want to view details. The **Properties** dialog box appears.



- 5 Click the **General** tab. The following properties are shown:
 - The **TagName** box shows the name of the summary tag.
 - The **Source Server** box shows the name of the tier-1 historian from which the source data originates.
 - The **Source** box shows the name of the tag that provides the source data for the summary tag.

- 6 If you have selected an analog summary tag, click the **Analog** tab and view the properties.



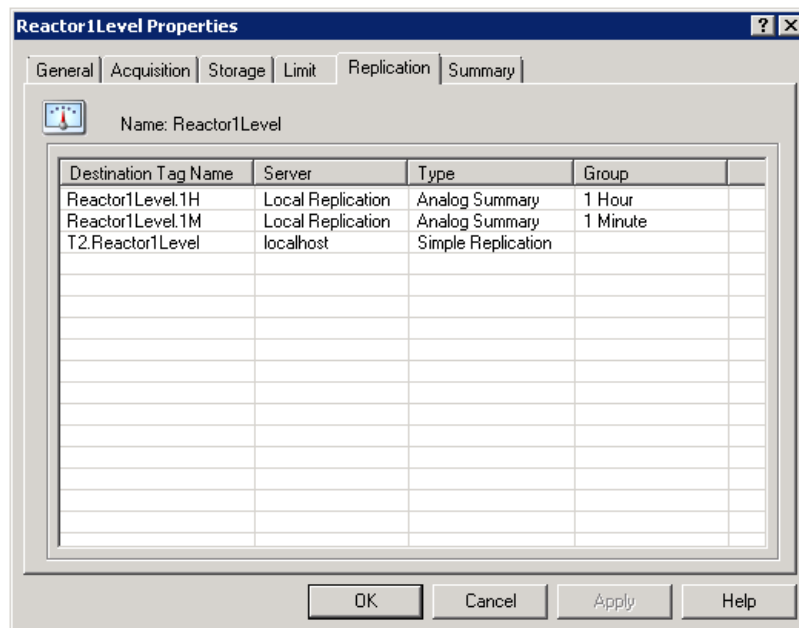
- The **Engineering Unit** box shows the unit of measure. Examples are mph, grams, and pounds.
 - The **MinEU** box shows the minimum value of the tag, measured in engineering units.
 - The **MaxEU** box shows the maximum value of the tag, measured in engineering units.
 - The **MinRaw** box shows the minimum value of the raw acquired value.
 - The **MaxRaw** box shows the maximum value of the raw acquired value.
- 7 Click **OK**.

Viewing the List of Associated Replicated Tags for a Tag

You can view the list of all of the replicated tags that are configured/based on a particular source tag from a tier-1 historian.

To view the list of replicated tags for a source tag

- 1 In the System Management Console on the tier-1 historian, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select the type of tag for which you want to view the summary tags.
- 4 In the details pane, double-click on the tag. The **Properties** dialog box appears.
- 5 Click the **Replication** tab.



A list of all of the simple replicated, analog summary, and state summary tags that use the tag as a source are shown.

- 6 Click **OK**.

Chapter 8

Managing Security

Security is managed using the following tools.

- Microsoft SQL Server Management Studio. Use this application to manage access to the SQL Server and databases.
- ArcestrA Change Network Account utility. Use this utility to modify the Windows login for the historian services.

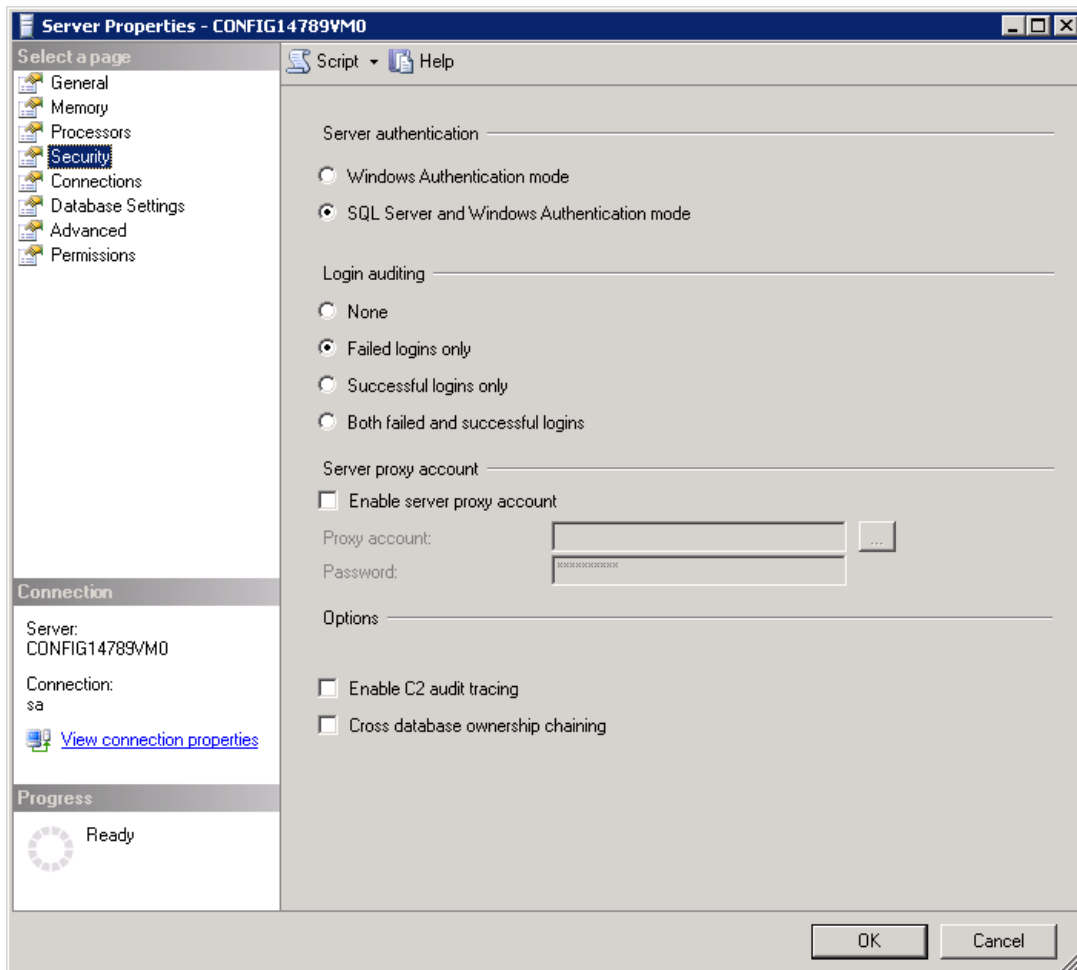
For information about the different levels of security, as well as default Wonderware Historian logins, see "Security" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

Verifying the Authentication Mode for a SQL Server

The Wonderware Historian is compatible with either Windows authentication mode or mixed mode (Windows authentication and SQL Server authentication). Windows authentication is recommended.

To verify the authentication mode

- 1 Start SQL Server Management Studio.
- 2 In the console tree, right-click on the SQL Server.
- 3 In the shortcut menu that appears, click **Properties**. The **SQL Server Properties** dialog box appears.

4 Click the **Security** tab.

5 Verify the authentication mode.

The **SQL Server and Windows** option corresponds to mixed mode authentication. If you change the authentication mode, you must stop and restart the SQL Server. Also, modification tracking in the historian, if enabled, will not occur until you restart the historian.

The Wonderware Historian services log on to SQL Server using the ArcestrA user account, which is a Windows account. For information, see "Default Windows Login for Wonderware Historian Services" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

6 Click **OK**.

Managing Logins

A login account must be added to the Microsoft SQL Server before a user can access a SQL Server. By default, only members of the sysadmin and securityadmin server roles can add SQL Server logins. Logins are managed using SQL Server Management Studio.

Note Creating individual login accounts for each user is not required if Windows authentication mode is used in SQL Server. You can map Windows user accounts and groups to SQL Server logins using the SQL Server Management Studio. For more information, see "Adding a User to a Role" on page 237.

A member of the sysadmin server role can add logins and configure certain login options, such as a username (login ID), password, a default database, and a default language. If the user is not assigned a username in the default database, the user's login name is used.

In addition to the default Microsoft SQL Server logins, four more default logins are created during Wonderware Historian installation: aaAdmin, aadbo, aaPower, and aaUser.

If a large number of users will be connecting to the database with the same set of permissions, creating a single database role to grant access for all of these users will reduce the work involved in account management. The individual users can then be added to the database role. For more information, see your Microsoft documentation.

Four Windows security groups are created when you install the historian: aaAdministrators, aaPowerUsers, aaReplicationUsers, and aaUsers. These groups are mapped to SQL Server database roles of the same name. You can assign different levels of capability to users by adding the users to the Windows groups.

For more information about default Wonderware Historian Wonderware Historian logins and Windows security groups, see "Security" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

If you are a member of the sysadmin server role, you can add, modify, and remove logins, as well as administer database roles. For detailed information on managing logins, see your Microsoft documentation.

Viewing Login Properties

To view properties for a login

- 1 In SQL Server Management Studio, expand the server group and then expand the SQL Server associated with the Wonderware Historian.
- 2 Expand **Security** and then click **Logins**. The default logins appear in the details pane.
- 3 Double-click the login for which you want to see the properties. The **SQL Server Login Properties** dialog box appears.

For information on configuring login properties, see your Microsoft documentation.

Adding a Login

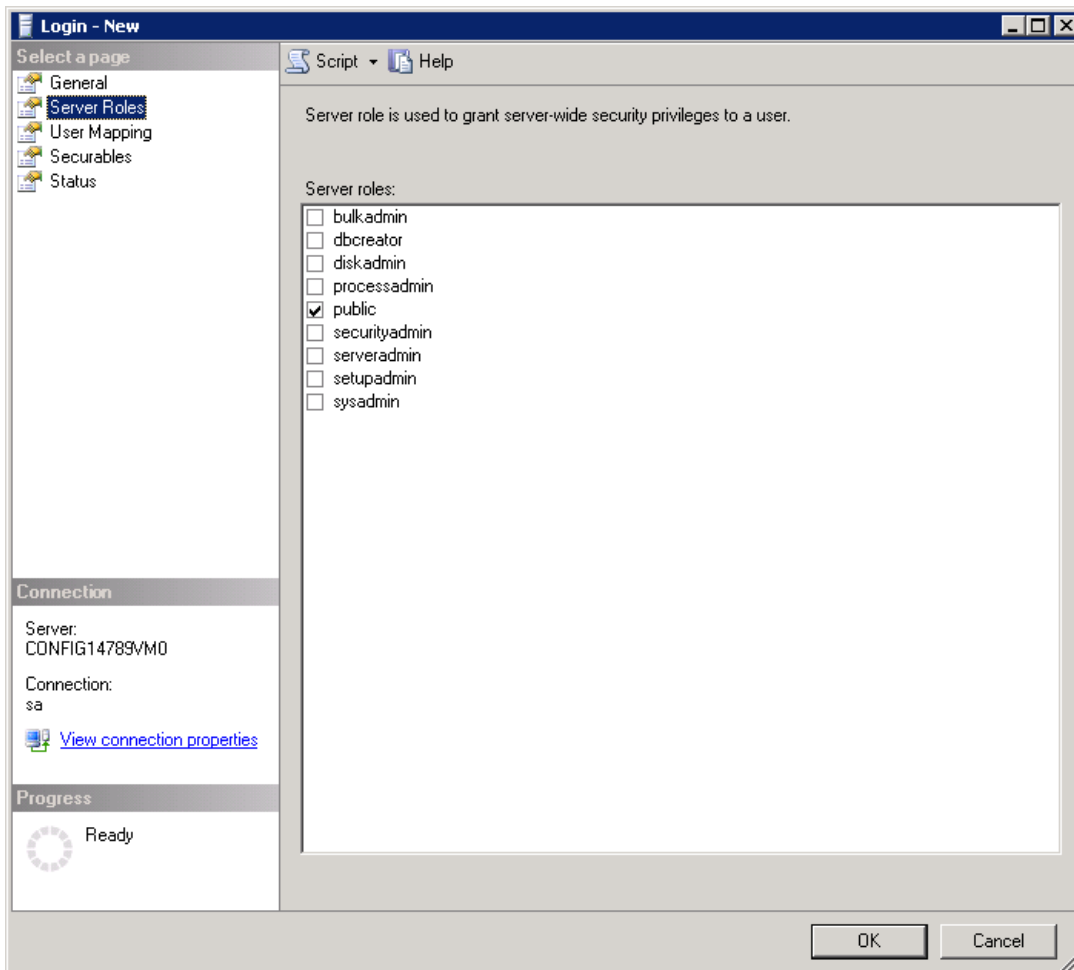
You can add a login that uses either Windows authentication (recommended) or SQL Server authentication.

To add a login

- 1 In SQL Server Management Studio, expand the server group and then expand the SQL Server associated with the Wonderware Historian.
- 2 Expand **Security** and then right-click on the **Logins** folder.

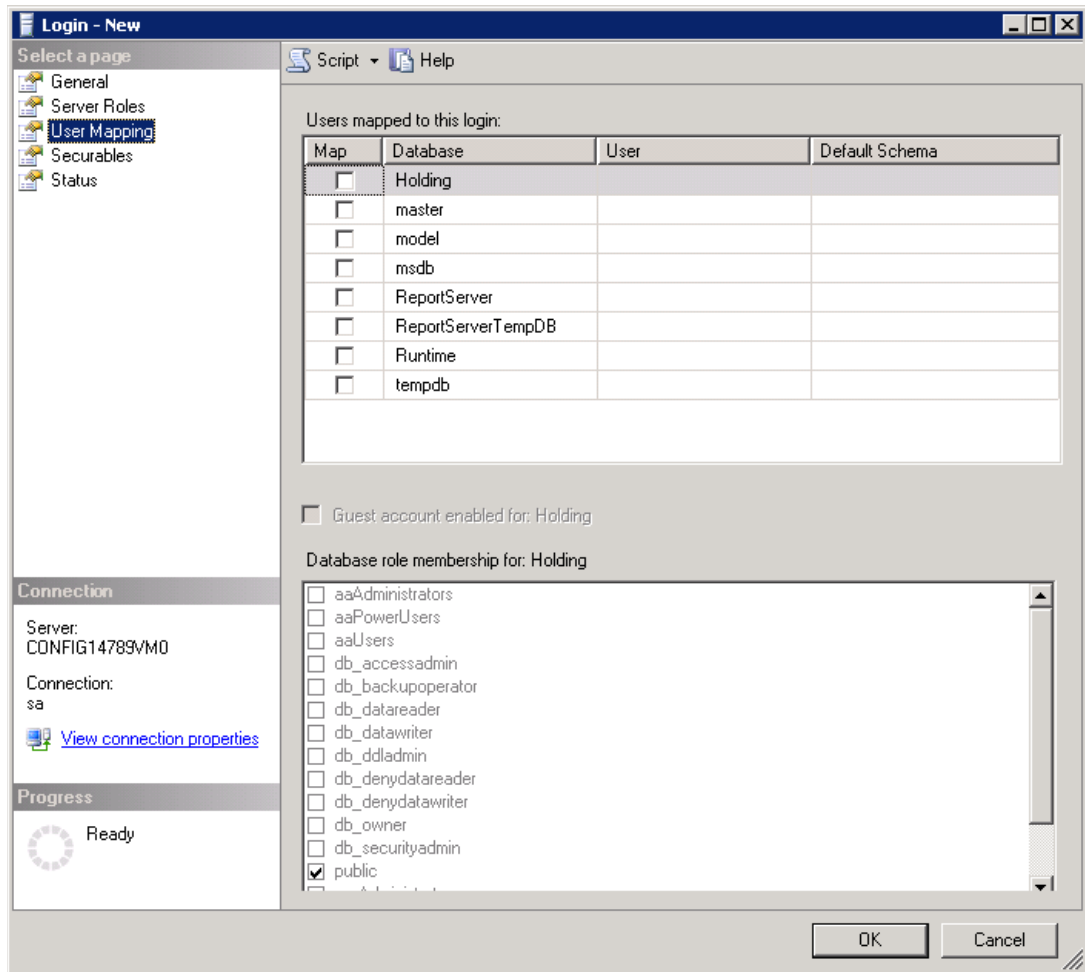
- 3 In the shortcut menu that appears, click **New Login**. The **SQL Server Login Properties** dialog box appears.

- 4 Do the following:
- In the **Name** box, type the name of the new login. If you are using Windows authentication, click **Search** and browse the network for a Windows user account.
 - In the **Authentication** group, configure the new login to use Windows authentication or SQL Server authentication. If you use SQL Server authentication, you must enter a password for the login.
 - In the **Database** list, select the database that the login will use by default.
 - Select a language from the **Language** list, or leave as <Default> to use United States English.

5 Click Server Roles.

- 6 To assign the new login to an existing server role(s), select the appropriate check box in the list. This will probably not be necessary unless you are defining a power user who will require specific administrative capabilities on the server.

7 Click the **User Mapping** tab.



- 8 The **User** column contains the username to map to the login ID. The default username is the same as the login name.
- 9 Select the databases that can be accessed by the new login. Wonderware Historian users generally require access to the Runtime and Holding databases. They only need access to the master database if they are to be granted administrative (or higher) privileges.
When you select a database, available database roles for that database appear in the **Database Roles** list.
By default, all new logins are a member of the **Public** database role. You can select an additional or different role for the login for a particular database.
- 10 When you have configured the login, click **OK**.
- 11 If you created a login with a SQL Server password, you are prompted to confirm the new password. Confirm the password and then click **OK**.

Local Times and System Times

The Historian Console is date/time format sensitive, but the historian server is not. However, SQL Server handles converting string values to dates and vice versa in queries and as a result, is sensitive to the date/time format. For example, SQL Server bases its interpretation of "12/30/09" as DMY, MDY, or YMD based on the "default date order" associated with the "Default Language" for the SQL Server login used by the database connection.

Note You cannot directly set the default date order for a login. You can only set the default language, which has an associated default date order.

If you are using SQL authentication for your logins or you are using Windows authentication and you have an explicit SQL login, changing the date format is straightforward using SQL Management Studio.

If you are using Windows authentication with a Windows group login such as BUILTIN/Administrators, it is not always apparent which group applies to a particular Windows account. If all the logins can use the same date order/language, change them all to that one.

If you need differing date formats, set the default language for new logins with the langid value in the syslanguages table (sys.syslanguages in Transact-SQL). The initial default language is based on the language version of the SQL Server installation. You can use the SET LANGUAGE or SET DATEORDER statements or sp_addlogin or sp_defaultlanguage in Transact-SQL to override the default language for a particular login for a session.

Managing Users and Roles

To make managing a large number of database users easier, each username can be assigned to a Microsoft SQL Server role. All members of a role inherit the permissions that are assigned to that role. For example, if the user "MaryH" is added to the "aaPowerUsers" role, that user is automatically granted the permissions for that role. If a role name is not specified, the user is added only to the public role, which includes all users. There are two types of roles: server roles and database roles.

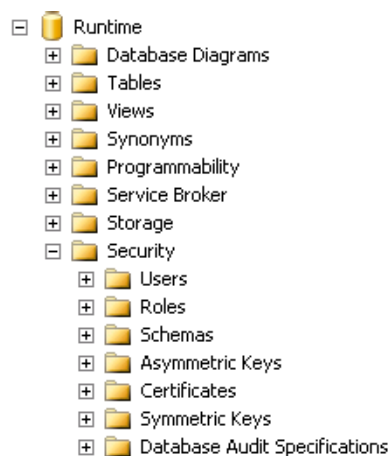
You can assign Windows users and user groups, as well as Microsoft SQL Server users and roles, to roles.

For more information about default Wonderware Historian users and roles, see "Security" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

Viewing All Users and Roles for a Database

To view all users and roles

- 1 In SQL Server Management Studio, expand the server group and then expand the SQL Server associated with the Wonderware Historian.
- 2 Expand **Databases**, expand the database for which you want to view all users and roles; for example, the Runtime database, then expand **Security**.

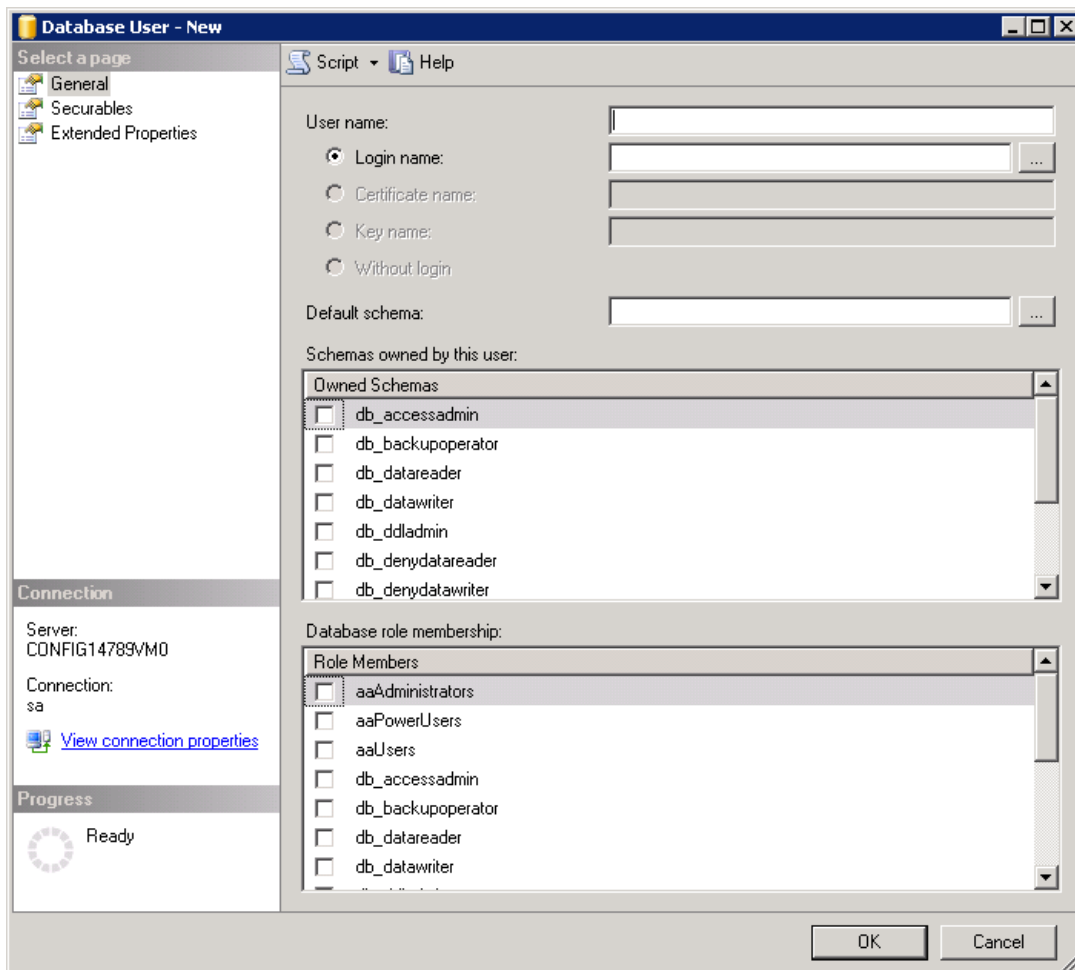


- 3 To view all users, click **Users**. All users appear in the details pane.
- 4 To view all roles, click **Roles**. All roles appear in the details pane.

Adding a New Database User

To add a database user

- 1 In SQL Server Management Studio, expand the server group, and then expand the SQL Server associated with the Wonderware Historian.
- 2 Expand **Databases**, expand the database to which you want to add the new user, then expand **Security**.
- 3 Right-click **Users** and then click **New Database User**. The **Database User Properties** dialog box appears.



- 4 In the **User name** box, type the new user name.

- 5 In the **Login name** list, select the login ID to associate with the user name. You can also select **<new>** and then type a new login ID to be added to the system at the same time as the database user.
- 6 In the **Default schema** list, select the default schema for the user. This schema owns all the objects this user creates, unless a different schema is specified.
- 7 In the **Owned Schemas** window, check the owned schemas for this user. (Schemas can only be owned by a single user.)
- 8 In the **Database role membership** window, select the database role to make the user a member of.

Note All users are also included in the public role. Membership in this role is permanent and cannot be altered.

- 9 Click **OK**.

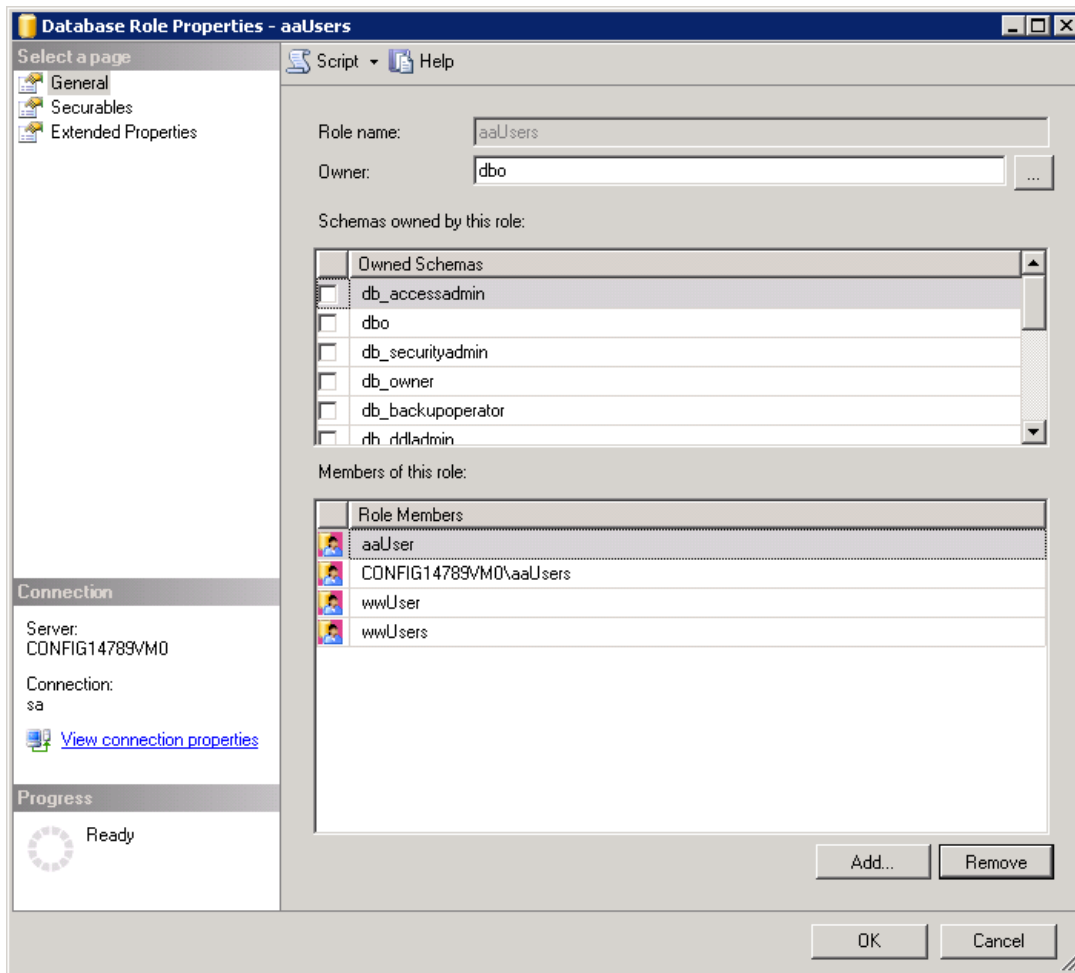
Adding a User to a Role

To add a user to a role, you must have system administrator permissions.

To add a user to a role

- 1 In SQL Server Management Studio, expand the server group and then expand the SQL Server instance associated with the Wonderware Historian.
- 2 Expand **Databases** and then expand the database to which you want to add the user to a role.

- 3 Click **Roles**. In the details pane, right-click on the role to which you want to add a user and then click **Properties**. The **Database Role Properties** dialog box appears.



- 4 Click **Add**. In the dialog box that appears, select the user from the list and then click **OK**.
- 5 Click **OK**.

Managing Permissions

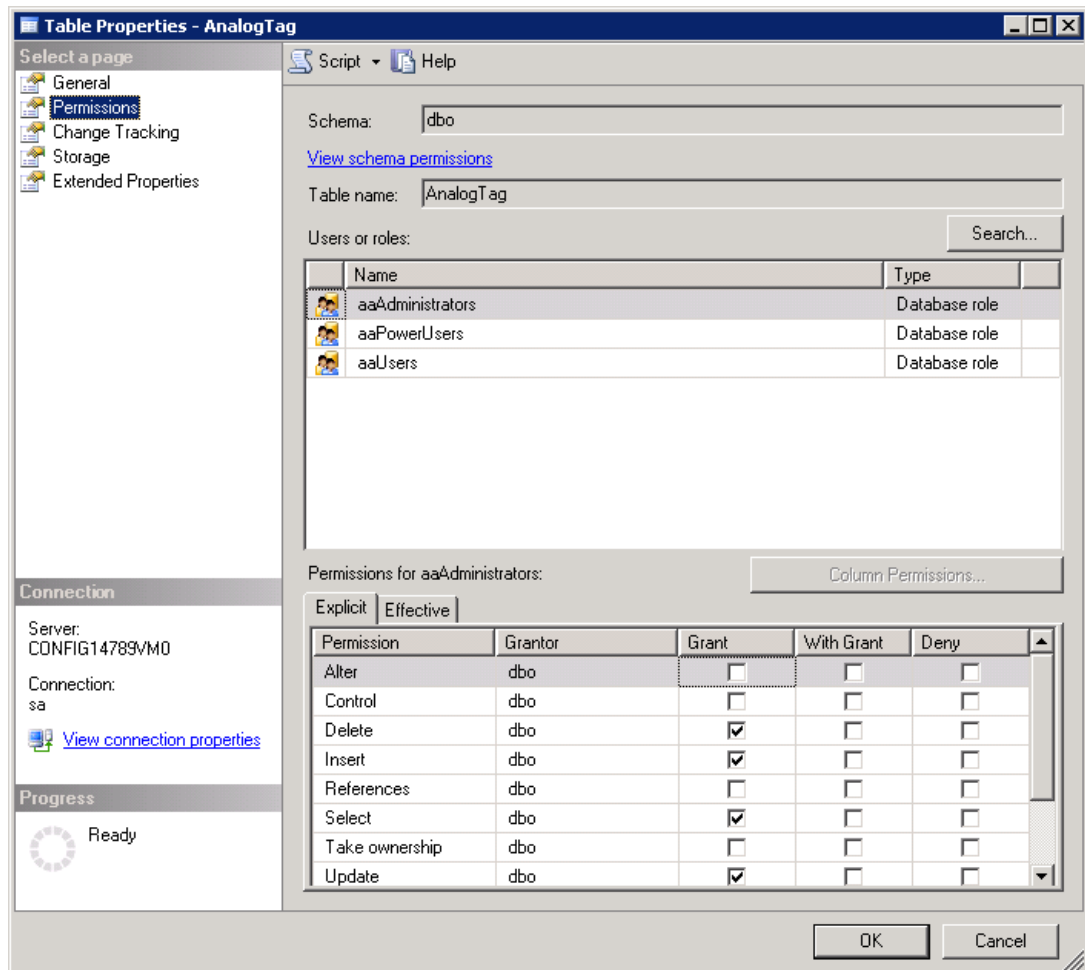
Permissions are the allowed actions that a user can perform in a designated SQL Server database. You can give object or statement permissions to any user or database role. Users inherit the permissions of any roles to which they belong.

Setting Object Permissions

Object permissions control the actions that a user can perform on database objects, such as tables, indexes, views, defaults, triggers, rules, and procedures. You must be the owner (creator) of an object to grant and revoke permissions. You can grant object permissions by user and role, and by object.

To grant object permissions by object

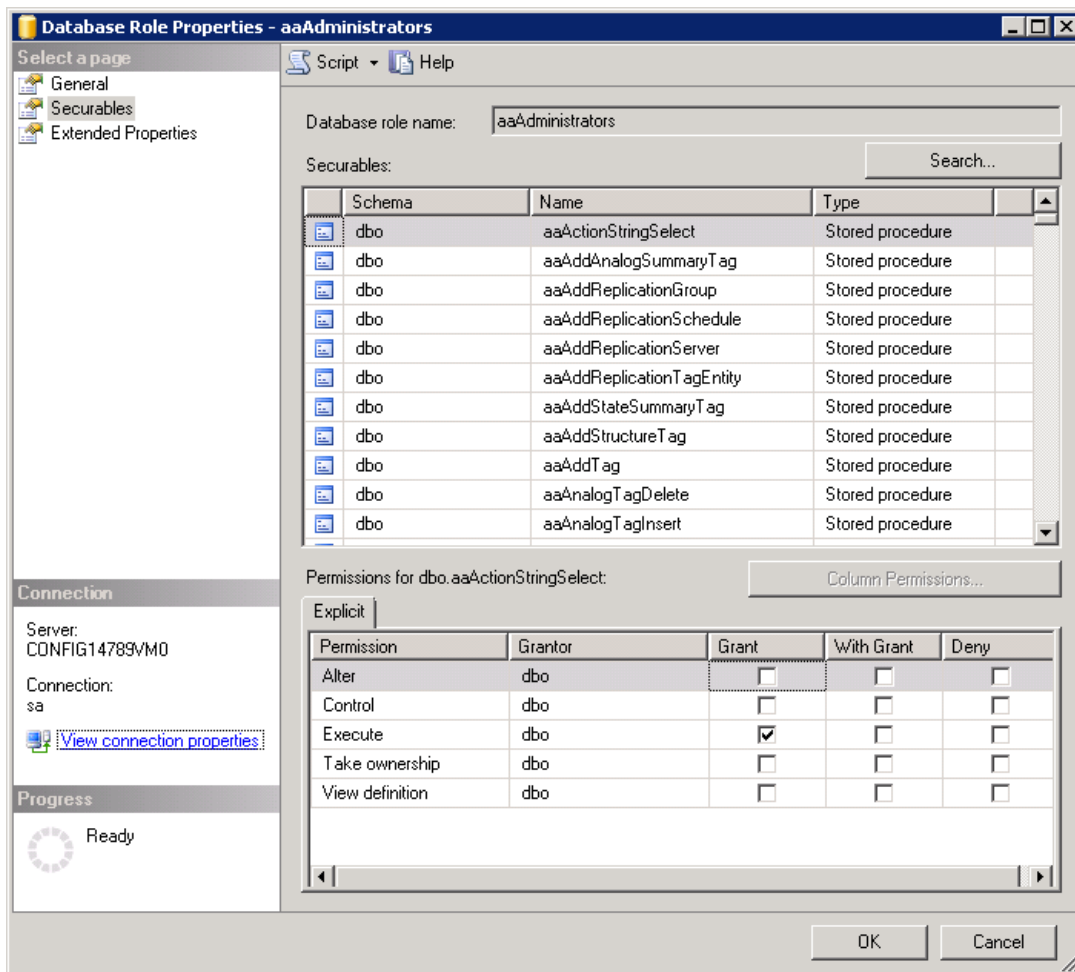
- 1 In SQL Server Management Studio, expand the server group and then expand the SQL Server associated with the Wonderware Historian.
- 2 Expand **Databases** and then expand the database to which you want to add the object permission. For example, expand the Runtime database.
- 3 Right-click on the object and then click **Properties**. The **Properties** dialog box appears.
- 4 Click **Permissions**. The **Permissions** dialog box appears.



- 5 For each user or role, select permissions to grant for the object.
- 6 Click **OK**.

To grant object permissions by user or database role

- 1 In SQL Server Management Studio, expand the server group and then expand the SQL Server associated with the Wonderware Historian.
- 2 Expand **Databases** and then expand the database to which you want to add the object permission. For example, expand the Runtime database.
- 3 Click **Security**.
- 4 Click either **Users** or **Roles**.
- 5 If you are selecting a role, click **Database Roles** or **Application Roles**.
- 6 Right-click the user or role and then click **Properties**. The **Properties** dialog box for the user or role appears.
- 7 Click **Securables**. The **Securables** page appears.



- 8 Select the object for which you want to grant permissions, and then select the permissions to grant listed in the **Explicit** tab.
- 9 Click **OK**.

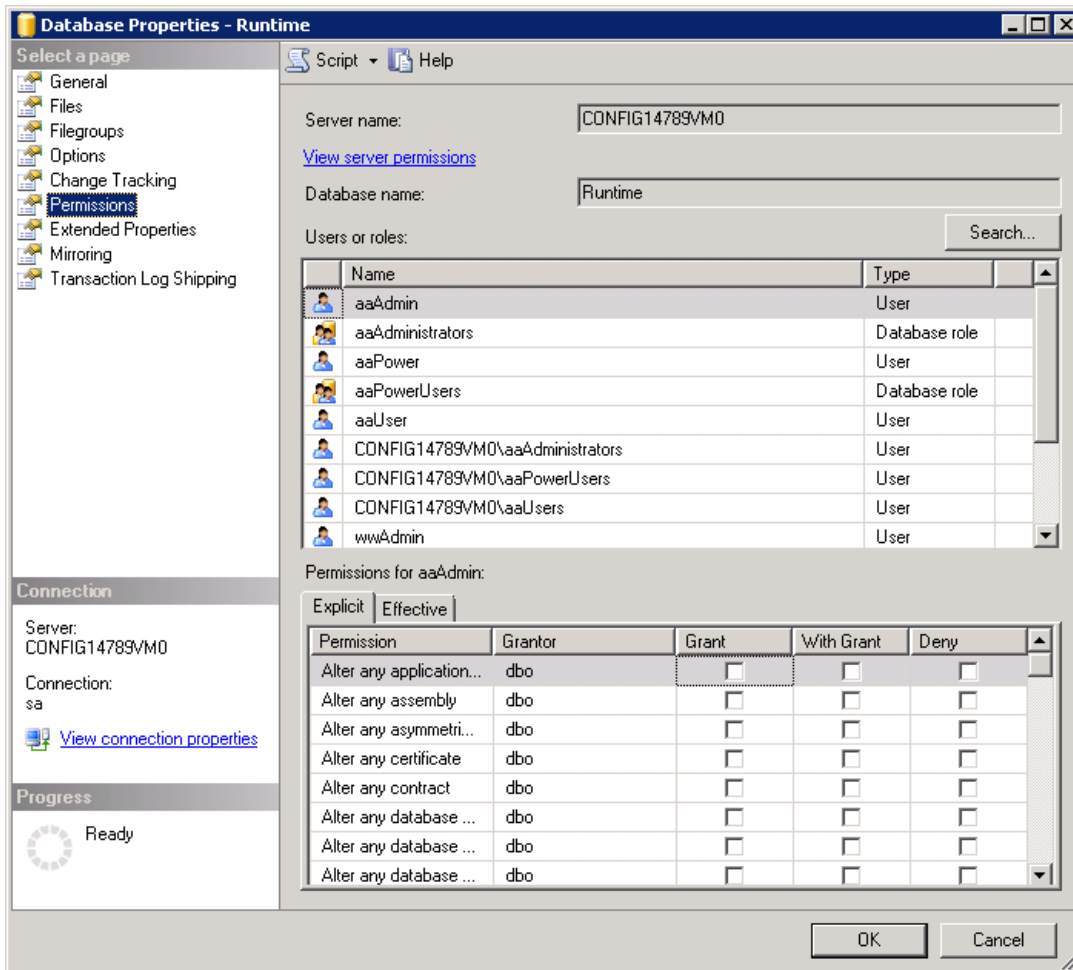
Setting Statement Permissions

Statement permissions control who can issue particular Transact-SQL statements, such as **SELECT**, **INSERT**, or **DELETE**. You must be a member of the **sysadmin** or **db_owner** roles to grant and revoke statement permissions.

Note **CREATE DATABASE** permissions can only be set from the master database.

To set statement permissions

- 1 In SQL Server Management Studio, expand the server group and then expand the SQL Server associated with the Wonderware Historian.
- 2 Expand **Databases** and then right-click the database for which you want to set statement permissions. For example, right-click the Runtime database.
- 3 Click **Properties**. The **Database Properties** dialog box appears.

4 Click **Permissions**. The **Permissions** page appears..

- 5 Select the user or role to which you want to grant permissions, and then select the permissions to grant.
- 6 Click **OK**.

Managing Passwords

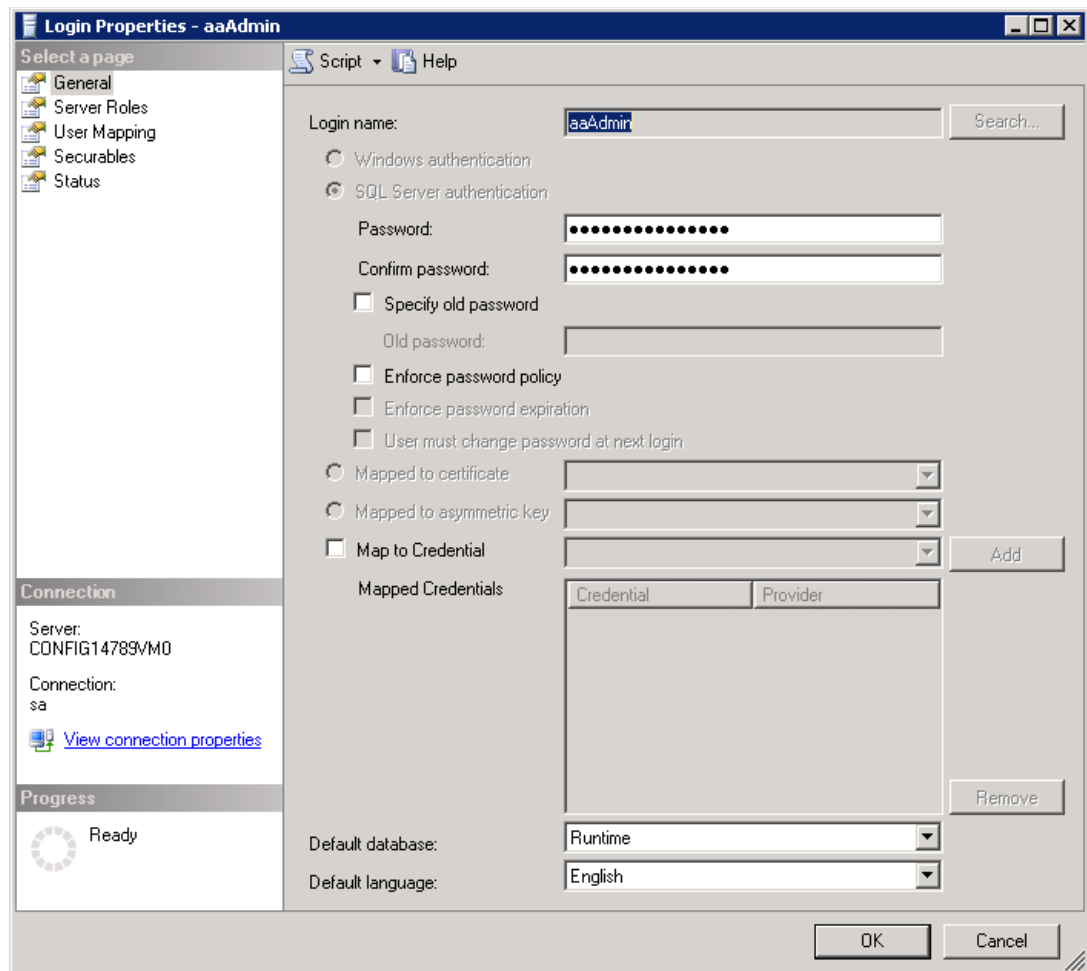
The default passwords for all pre-configured Wonderware Historian users are based on user names. For example, the password for "aaUser" is "pwUser."

Important If you are using mixed mode authentication, it is very important to have a password for the system administrator (sa) for the Microsoft SQL Server. If any user does not have a password, Wonderware reserves the right to refuse Technical Support services.

If you are a member of the sysadmin role, you can change the password for any login. If you are not a member of the sysadmin role, you can modify only your own password.

To change a password

- 1 In SQL Server Management Studio, expand the server group and then expand the SQL Server associated with the Wonderware Historian.
- 2 Expand **Security** and then click on **Logins**.
- 3 In the details pane, right-click the user for which you want to change the password and then click **Properties**. The **Login Properties** dialog box appears.



- 4 In the **Password** box, type the new password and then confirm it.
- 5 Click **OK**.

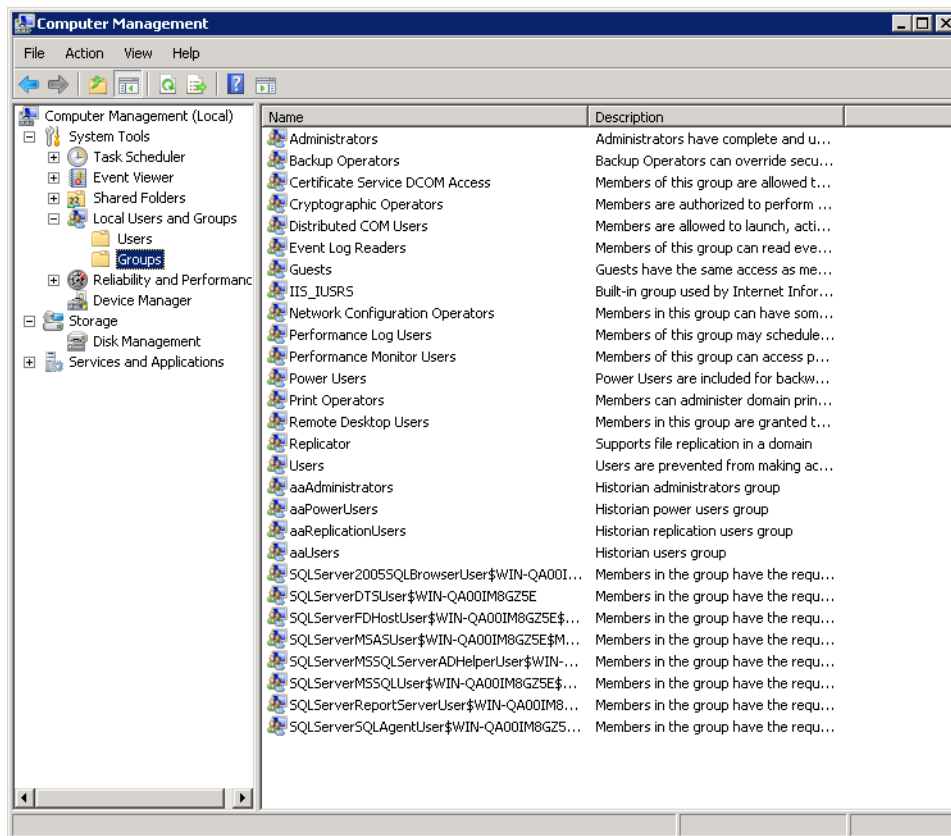
Adding a User to a Windows Operating System Group

When the Wonderware Historian is installed, default Windows security groups are created on the server computer and are automatically configured to be members of the database roles with the same names. If Windows authentication mode is used with SQL Server, you can simply add Windows users to these groups.

You must be an administrator to add a user to a group.

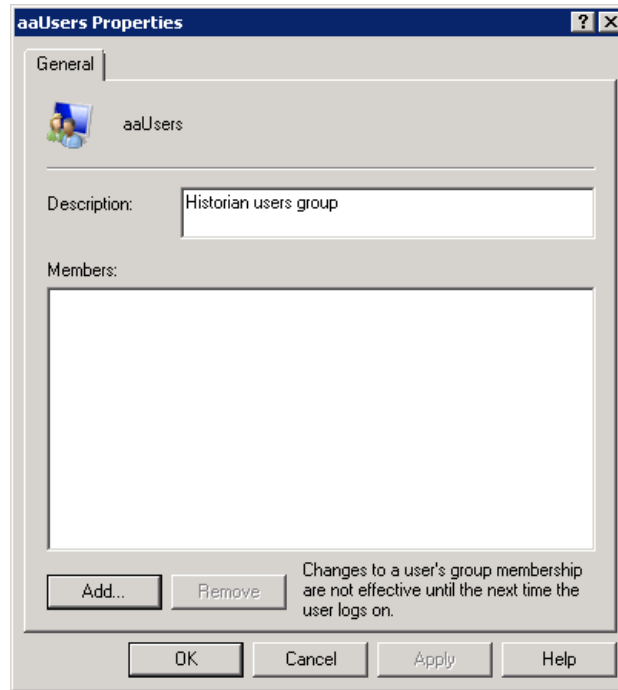
To add a user to a group

- 1 On the Windows **Start** menu, point to **Programs**, point to **Administrative Tools**, and then click **Computer Management**. The **Computer Management** console appears.

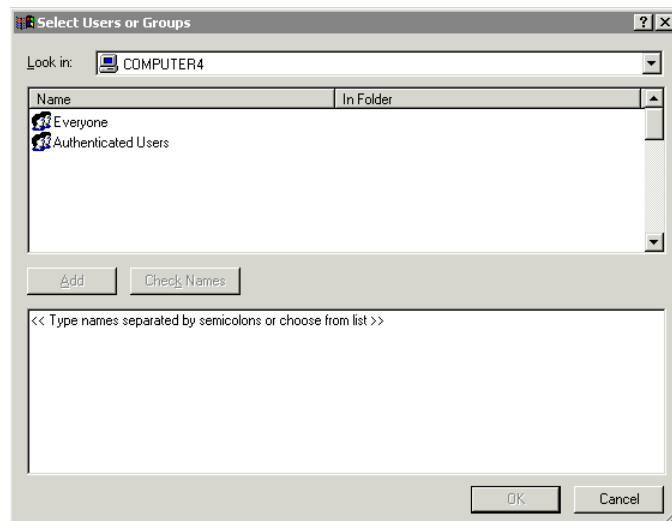


- 2 Expand **System Tools**, expand **Local Users and Groups**, and then click **Groups**.
- 3 In the details pane, right-click on the name of the historian group to which you want to add a user.

- In the shortcut menu that appears, click **Add to Group**. The **<Group Name> Properties** dialog box appears.



- Click **Add**. The **Select Users or Groups** dialog box appears.



- Select the users or other groups to add to the historian group.
- Click **Add**.
- Click **OK**. The **<Group Name> Properties** dialog box appears, showing the new users or groups in the **Members** window.
- Click **OK**.

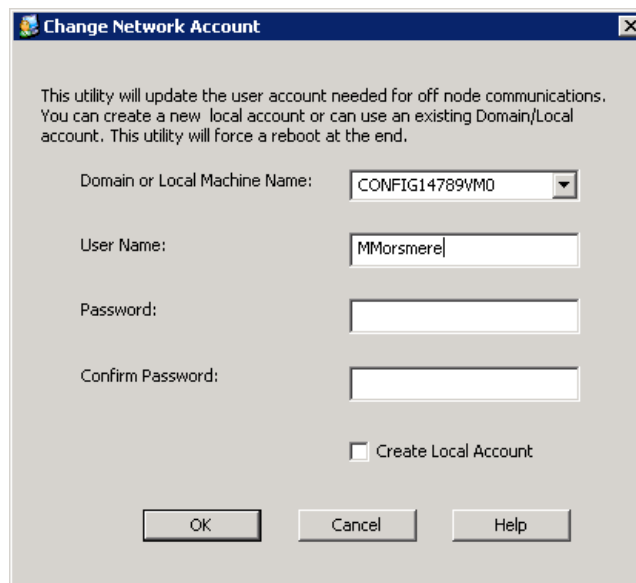
Changing the Windows Login for Wonderware Historian Services

Use the Arcestra Change Network Account Utility to change the Windows login for Wonderware Historian services.

WARNING! Changing the Windows login account affects all Arcestra components that run as services, not just historian services. If you change the account, you will be required to restart the computer.

To change the Windows login ID

- 1 On the Windows **Start** menu, point to the **Wonderware** program group, point to **Common**, and then click **Change Network Account**. The **Change Network Account** dialog box appears.



- 2 Enter the parameters for the Windows login.
For more information, see the Change Network Account Utility documentation.
- 3 Click **OK**.

Chapter 9

Viewing or Changing System-Wide Properties

Some administrative tasks apply to the entire Wonderware Historian system, such as configuring system parameters or committing configuration changes. You can also view a system report that includes information such as tag counts and data acquisition details.

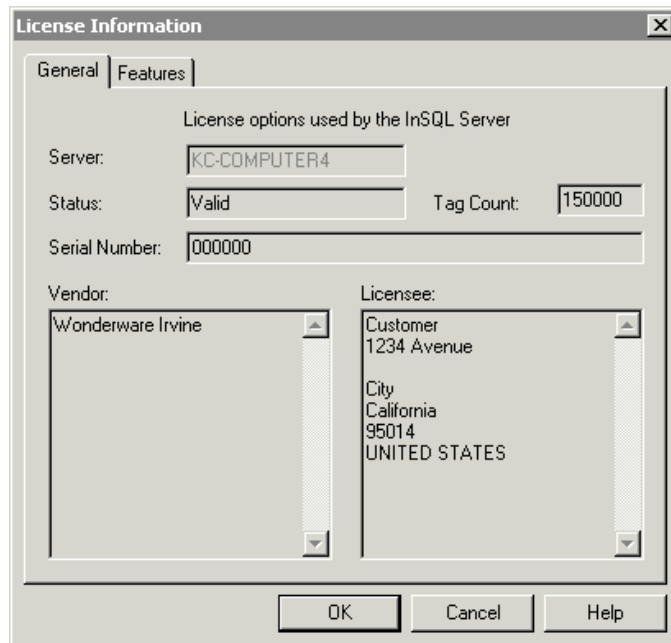
Viewing License Information

For more information on licensing, see "Licensing" in Chapter 1, "Requirements and Recommendations," in your *Wonderware Historian Installation Guide*.

To view license information

- 1 In the System Management Console, expand a server group, then expand a server.
- 2 Right-click on **Management Console**, point to **All Tasks**, and then click **View License Information**. The **License Information** dialog box appears.

- 3 Click the **General** tab.



- 4 Review the general license options:

Server

The Wonderware Historian to which the options apply.

Status

The status of license validation.

Tag Count

The total number of tags for which the historian will acquire and store data. The tag count does not apply to system and event tags.

Serial Number

A unique number that is associated with the purchase of a license by a customer.

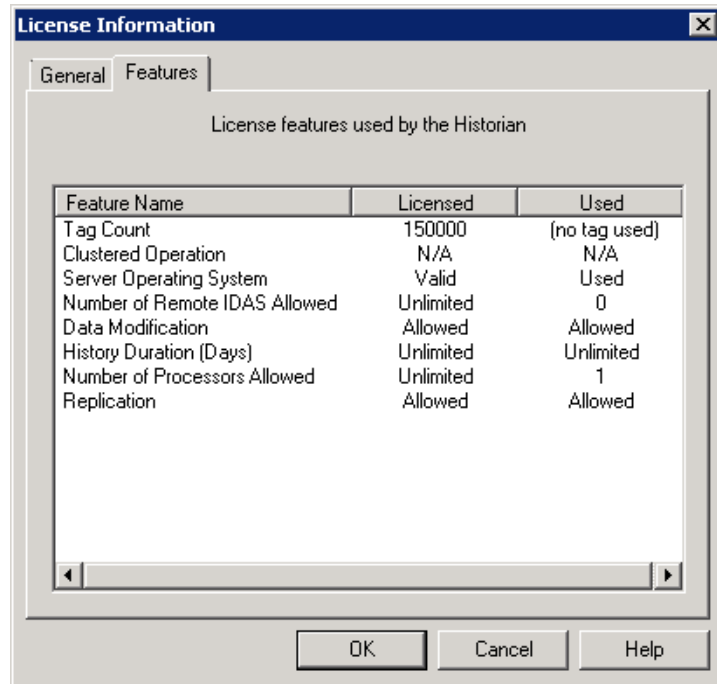
Vendor

The name of the company that sold the license.

Licensee

The name under which the license is registered.

- 5 Click the **Features** tab.



- 6 Review the features available for the license.

Tag Count

The total number of tags for which the historian will acquire and store data. The tag count does not apply to system and event tags.

Clustered Operation

Indicates whether the historian is licensed to run on a Microsoft failover cluster. If the historian is running on a cluster and this feature line exists, "Valid" is shown. If the feature line does not exist, "Unlicensed" is shown. If the historian is not running on a cluster, "N/A" is shown.

Server Operating System

Indicates whether the historian is licensed to run on a particular Microsoft Server operating system. If the historian is running on a licensed server operating system and this feature line exists, "Valid" is shown. If the feature line does not exist, "Unlicensed" is shown. If the historian is not running on a server operating system, "N/A" is shown.

Number of Remote IDAS Allowed

The maximum number of remote IDASs allowed.

Data Modification

Indicates whether modifications to historical data using a CSV import, SQL statement, or the Historian Toolkit is allowed.

History Duration (Days)

The maximum duration, in days, for which historical data can be retrieved.

Number of Processors Allowed

The maximum number of processor packages (CPUs) allowed in the historian computer. A "dual core" processor counts as 1.

Replication

If replication is allowed with this license, "Allowed" is shown. If it is not covered by this license, "Not Allowed" is shown.

- 7 Click **OK**.

Refreshing the License Information

The Configuration Manager provides updated license information according to the refresh rate for the Wonderware Historian status display, if enabled. However, you can manually force the Configuration Manager to read the license file and refresh the license information.

Note Reading the license file can take several minutes if you have drastically changed your tag counts since the last read.

To refresh the license information

- 1 In the System Management Console, expand a server group, then expand a server.
- 2 Right-click on **Management Console**, point to **All Tasks**, and then click **Refresh License Information**. A confirmation dialog box appears.
- 3 Click **OK**.

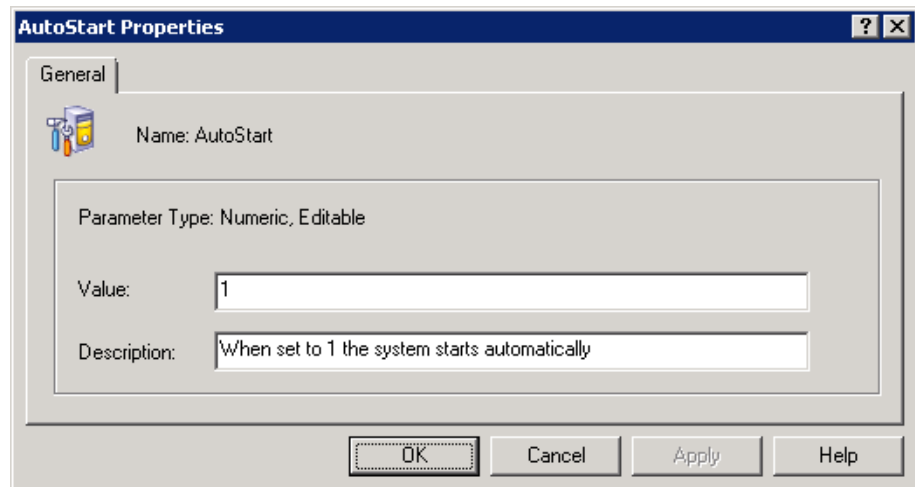
Editing System Parameters

Note Not all system parameters are editable.

For a list of system parameters, see "System Parameters" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

To edit a system parameter

- 1 In the System Management Console, expand a server group, expand the server, and then expand Configuration Editor.
- 2 Expand **System Configuration** and then click **Parameters**. A list of all of the system parameters appears in the details pane.
- 3 Double-click the system parameter you want to edit. The **System Parameter Properties** dialog box appears.



- 4 In the **Value** box, type a new value of the system parameter.
- 5 (Optional) In the **Description** box, type a new description of the system parameter.
- 6 Click **OK**.

Adding a System Parameter

You can create your own named system parameters for the Wonderware Historian by adding rows to the *SystemParameter* table using a SQL script.

Committing Configuration Changes

After you make a change to the database (for example, add a tag), you must commit the change to the Wonderware Historian system. All database changes are immediately implemented. However, database modifications are not applied to the system until you commit them. You are committing the changes to the system, not the database.

The system reconfigures itself with no interruption for unaffected objects in the database.

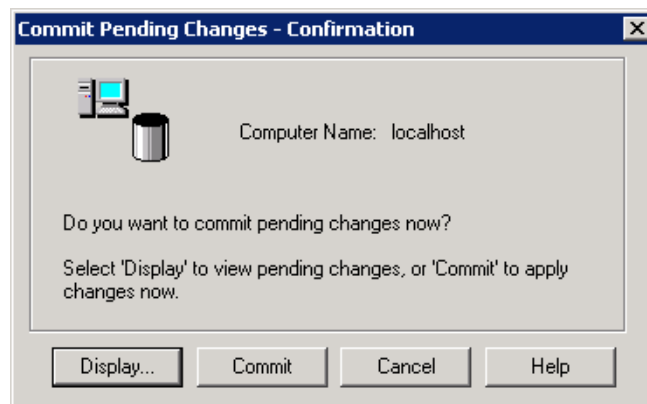
Changes cannot be committed:

- During the first five minutes after starting the historian.
- During the creation of a new data block because of a prior change.

For more information, see "Dynamic Configuration" in Chapter 3, "Configuration Subsystem," in your *Wonderware Historian Concepts Guide*.

To commit configuration changes to the system

- 1 In the System Management Console, expand a server group and then expand a server.
- 2 Right-click on **Configuration Editor** (or any sub-items in the console tree) and then click **Commit Pending Changes**. The **Commit Pending Changes - Confirmation** dialog box appears.



- To view a list of the pending changes, click **Display**.

Object Type	Status	Object Key	Item
1 - IO Server	Deleted	5	
1 - IO Server	Inserted	7	10.2.88.53\VIEW
10 - Replication T...	Inserted	1	KC_ReactLevel.1M
10 - Replication T...	Inserted	2	KC_ReactLevel.5M
10 - Replication T...	Inserted	4	KC_Batch%Conc.15M
10 - Replication T...	Inserted	5	KC_Cursor.15M
10 - Replication T...	Inserted	6	KC_Cursor2.15M
10 - Replication T...	Inserted	7	KC_HorizontalMove.15M
10 - Replication T...	Inserted	8	KC_MouvHorizontal.15M
10 - Replication T...	Inserted	9	KC_MouvVertical.15M
10 - Replication T...	Inserted	10	KC_ProdLevel.15M
10 - Replication T...	Inserted	11	KC_ReactLevel.15M
10 - Replication T...	Inserted	12	KC_ReactTemp.15M
10 - Replication T...	Inserted	13	KC_Speed.15M
10 - Replication T...	Inserted	14	KC_VerticalMove.15M
10 - Replication T...	Inserted	15	KC_Vitesse.15M
10 - Replication T...	Inserted	16	KC_\$ApplicationChanged.15M
10 - Replication T...	Inserted	17	KC_\$ApplicationVersion.15M
10 - Replication T...	Inserted	18	KC_\$DateTime.15M
10 - Replication T...	Inserted	19	KC_BatchNumber.15M
10 - Replication T...	Inserted	20	KC_Counter.15M
10 - Replication T...	Inserted	21	KC_Cycle.15M
10 - Replication T...	Inserted	22	KC_SetPoint.15M
10 - Replication T...	Inserted	23	KC_Step1.15M
10 - Replication T...	Inserted	24	KC_\$AccessLevel.15M
10 - Replication T...	Inserted	25	KC_\$Date.15M
10 - Replication T...	Inserted	26	KC_\$Day.15M
10 - Replication T...	Inserted	27	KC_\$Hour.15M

Column descriptions are as follows:

Object Type

Used to indicate the type of object to which the modifications apply.

Status

Used to indicate the type of modification.

Object Key

The unique identifier of the modified object. If the modified object is a system parameter, the value will be 0. For all other object types, the value is from one of the following tables and columns: IODriver.IODriverKey; IOServer.IOServerKey; Topic.TopicKey; Tag.wvTagKey; StorageLocation.StorageType; SnapshotDetail.StorageSize.

Item

The key identifier for the column modified in the table. For example, TagName for the Tag table, Name for the Topic table, and so on.

- To commit the outstanding changes, click **Commit**.
- An information box appears, showing the status of the reconfiguration.
- Click **OK**.

Turning Modification Tracking On/Off

Use the `ModLogTrackingStatus` system parameter to configure modification tracking. The following table describes the allowable values:

Value	Type of Modification(s) Tracked
1	inserts
2	updates
3	inserts + updates
4	deletions
5	inserts + deletions
6	updates + deletions
7	inserts + updates + deletions

For information on editing system parameters, see "Editing System Parameters" on page 251.

For more information on modification tracking, see "Modification Tracking" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

Viewing Database Modifications

For more information on modification tracking, see "Modification Tracking" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

You can search for all database modifications or apply filtering to return modifications for only those tables and columns you specify.

Note To view database modifications, you must enable modification tracking. For more information, see "Turning Modification Tracking On/Off" on page 254.

To view a current list of modifications

- 1 In the System Management Console, expand a server group, and then expand a server.
- 2 Right-click on **Configuration Editor** (or any sub-items in the console tree) and then click **Track Modifications**. The **Modification Tracker - Selection** dialog box appears.

- 3 In the **Modification Date** area, configure the time span for the search.

All Modification Dates

Returns all changes to table columns made since modification tracking was first enabled.

Between

Returns all modifications between the start date and end date that you specify. Click the date arrow to access a calendar in which you can pick the date.

During the Previous

Returns all modifications for a recent time period. Durations can be in minutes, hours, days, weeks, or months.

- 4 In the **Modification Type** area, select the types of modifications to search for.

- 5 In the **Object Type** area, set the type of modifications to search for.

Table Name

Returns modifications for all tables in the database or for a specified table. Only tables that currently have modifications appear in the list.

Column Name

Returns modifications for a specified column in the selected table. This option is only available if you select to filter on a single table.

Object Key

The key identifier for the column modified in the table. For example, TagName for the Tag table, Name for the Topic table, and so on.

- 6 To reset the dialog box options back to the defaults, click **Clear**.
- 7 Click **Search** to search for database modifications according to the filter options you select. A list of all matching modifications appears.

Modification Tracker - 1 Rows		
Date And Time	Table	Column
2009/08/12 09:48:00 AM	SystemParameter	Value

Column descriptions are as follows:

Date and Time

The timestamp of when the modification occurred.

Table

The name of the modified object.

Column

The name of the modified column.

Modification Type

The type of modification.

Row Key

The key identifier for the column modified in the table. For example, TagName for the Tag table, Name for the Topic table, and so on.

New Value

The new value stored in the column, if the modification was to a configuration table. For modifications to history data, this column contains the total count of consecutive value updates attempted.

Old Value

The value stored in the column before the modification was made, if the modification was to a configuration table. For modifications to history data using SQL INSERT and UPDATE statements, this column contains the timestamp of the earliest data affected by the INSERT or UPDATE operation. If multiple changes are made to the same data, then only the most recent change will be contained in this column. This column is not used for modifications made to history data using a CSV file.

User

The name of the database user that made the modification. The value of this column reflects the Windows authentication user name (for example, DOMAIN\user_login_name) or the SQL Server authentication user name (for example, dbo), depending on how the user is logged into the SQL Server when the modification is made. In the case of a CSV file import, this column contains the user name as it appears in the CSV file.

- 8 To sort on a column, click the column name at the top of the window.
- 9 Click **Cancel** to close the dialog box.

Viewing the Runtime Database Report

The Runtime database report includes information such as:

- System parameters
- Total number of licensed tags
- Number of cyclically-stored tags for each storage rate
- Number of analog tags for each storage type (delta, cyclic, or "forced")
- Acquisition subsystem details
- Event tag definitions
- Summary information

To view the database report

- 1 In the System Management Console, expand a server group, and then expand a server.
- 2 Click **Configuration Editor**. The report appears in the details pane.



Server: localhost

Date: 09/03/2009 05:44:09 AM

Click on an item to expand or collapse

- **System Parameters**

- **Tag Counts**

- **Analog Tag Storage Detail**

- **Cyclic Storage Detail**

- 3 Click on a major heading in the report to view a list of objects for that category.
- 4 To select, copy, or print the information, right-click in the window and then click the appropriate command from the shortcut menu.

Changing the Default Network Protocol

Wonderware Historian client/server connections are set in the same way as Microsoft SQL Server connections. No additional configuration is required to run client applications against the Wonderware Historian if you are using the default named pipes protocol.

However, you can change the client configuration parameters by using the SQL Server Client Network Utility. The historian supports clients using Net-Libraries for named pipes, IPX/SPX, TCP/IP sockets, and any other protocol supported by Microsoft SQL Server.

For more information changing the network protocol used by clients, see the documentation for the Microsoft SQL Server Client Network Utility.

Chapter 10

Monitoring the System

Performance of the Wonderware Historian can be considered in two conceptual contexts; as processes running within the Windows operating system, and as software modules acquiring and storing data.

Monitoring the General Status of Wonderware Historian

To monitor the status

- 1 In the console tree, expand a server group and then expand a server.
- 2 Expand **Management Console** and then click **Status**. The overall status information appears in the details pane.
 - A snapshot of the current system status. For more information, see "Viewing the Current System Status" on page 262.
 - The status of different components of the system. For more information, see "Viewing the Status of System Modules" on page 264.
 - A log of status messages. For more information, see "Viewing System Status Messages" on page 265.

Note The information in the details pane is refreshed according to the rate specified in the registration properties for the server. For more information, see "Registering Wonderware Historian Servers" on page 20.

Viewing the Current System Status

The system status window of the details pane shows the current values for key system tags.

Status	
Item	Value
System time	10/23/2009 4:02:01 PM
Time of last start	10/23/2009 12:25:35 PM
Elapsed time since last start	3 hrs 36 mins
Time of last stop	10/23/2009 12:24:59 PM
Time of last reconfiguration	10/23/2009 12:24:59 PM
Configuration status	Normal
System status	Running
License status	Valid
Total number of tags in database	148
Number of licensed tags in database	0
License tag count	150,000
Total number of data values received	1,103,548
Overall data rate (per sec.)	83.00
Fatal errors	0
Critical errors	0
Errors	0
Warnings	4
Time of last error reset	10/23/2009 12:24:59 PM
Space available on circular path	27.5 GB
Space available on alternative path	Undefined or invalid path
Space available on buffer path	27.5 GB
Space available on permanent path	27.5 GB
System version	10,0,0,0697








Many of the items in the display are self-explanatory. All timestamps reflect the time of the Wonderware Historian computer, which may be different than the System Management Console running on a remote computer. However, all timestamps are formatted according to the Windows regional settings for the local computer. Descriptions for some of the items are as follows:

Time of last reconfiguration

The time that the last reconfiguration of the system was committed. For more information, see "Dynamic Configuration" in Chapter 3, "Configuration Subsystem," in your *Wonderware Historian Concepts Guide*.

System status

The current status of the system. The icon for the corresponding server in the console tree shows the current state.

Icon	State
	Connecting
	Unchecked
	Starting
	Running
	Stopping
	Stopped
	Disconnected

License status

The status of license validation. For more information on licensing, see "Licensing" in Chapter 1, "Requirements and Recommendations," in your *Wonderware Historian Installation Guide*.

Number of tags in database

The total number of all tags in the database.

Number of licensed tags in database

The total number of tags for which the historian will acquire and store data. The tag count does not apply to system and event tags.

Total number of data values received

The number of tag values received since the System Management Console was started up. This value is continuously updated as long as the system is running.

Overall data rate

Average rate (per second) at which data values are acquired by the system.

Fatal errors, critical errors, errors and warnings

The number of errors detected since the Wonderware Historian was restarted or since an error reset was performed. For more information on errors, see "System Messages" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

Time of last error reset

The time that the error count was reset back to 0. For more information, see "Resetting Error Counts" on page 264.

Space available on XXX path

The total amount of space for historical data storage in the storage location. For more information about storage locations, see "History Block Storage Locations" in Chapter 5, "Data Storage Subsystem," in your *Wonderware Historian Concepts Guide*.

System version

The current version of the Wonderware Historian.

Resetting Error Counts

Error counts are automatically set to zero at system startup and shutdown. You can also set the error counts back to zero at any time.

To reset error counts

- 1 In the console tree, expand a server group and then expand a server.
- 2 Right-click on **Management Console**, point to **All Tasks**, and then click **Reset Error Counts**. The **Reset Wonderware Historian Error Counts** confirmation box appears.
- 3 Click **OK**. The number of errors shown in the system status window resets to 0.

Viewing the Status of System Modules

The module status window of the details pane indicates whether or not the module is started.

Module	Status
Storage	Started
Manual storage	Started
Tier-2 storage	Started
Replication	Started
Event system	Started
Retrieval	Started
Indexing	Started
OLE-DB provider	Started
Historian I/O server	Started
MDAS Server	Started
System driver	Started
Data acquisition on \\CONFIG...	Started

See the following table to find out more about each of these modules.

Module	For more information, see
Storage, manual storage, and indexing	Chapter 5, "Data Storage Subsystem," in your <i>Wonderware Historian Concepts Guide</i> .
Event system	Chapter 10, "Event Subsystem," in your <i>Wonderware Historian Concepts Guide</i> .
Retrieval, OLE DB provider, Historian I/O Server, and MDAS Server	Chapter 6, "Data Retrieval Subsystem," in your <i>Wonderware Historian Concepts Guide</i> .
Tier-2 storage, and Replication	Chapter 9, "Replication Subsystem," in your <i>Wonderware Historian Concepts Guide</i> .
System driver	Chapter 2, "System-Level Functionality," in your <i>Wonderware Historian Concepts Guide</i> .
Data acquisition	Chapter 4, "Data Acquisition Subsystem," in your <i>Wonderware Historian Concepts Guide</i> .

Viewing System Status Messages

Status messages are shown in the bottom window of the details pane. These messages are also written to the ArchestrA Log Viewer (not all messages written to the Log Viewer are shown here). For more information on the Log Viewer, see "Monitoring System Messages" on page 269.

Time	Message
6/19/2001 6:53:40.593 AM	Data acquisition watchdog thread started;KC-COMPUTER1
6/19/2001 6:53:38.984 AM	Started data acquisition on;KC-COMPUTER1
6/19/2001 6:53:38.984 AM	Starting service;InSQLIOServer
6/19/2001 6:53:37.953 AM	Started system driver on;KC-COMPUTER1
6/19/2001 6:53:33.546 AM	Starting service;InSQLManualStorage
6/19/2001 6:53:28.375 AM	Prepared new history block;C:\InSQL\DATA\Circular\A010619_001
6/19/2001 6:53:28.375 AM	Moved to new history block;C:\InSQL\DATA\Circular\A010619_001
6/19/2001 6:53:23.343 AM	Starting service;InSQLStorage
6/19/2001 6:53:22.656 AM	Configuring real-time data acquisition
6/19/2001 6:53:22.218 AM	Registry information acquired
6/19/2001 6:53:22.218 AM	Configuring system driver
6/19/2001 6:53:22.203 AM	Configuration information acquired
6/19/2001 6:53:22.203 AM	Reading registry information
6/19/2001 6:53:20.375 AM	Reading configuration information from database

Monitoring Data Acquisition

You can monitor the status of data acquisition from all configured data sources. You can monitor how individual data sources are performing compared to past history or to another data source.

For more information on data acquisition, see Chapter 4, "Data Acquisition Subsystem," in your *Wonderware Historian Concepts Guide*.

To view data acquisition status

- 1 In the console tree, expand a server group and then expand a server.
- 2 Expand **Management Console** and then click **Data Acquisition**. Data acquisition information appears in the details pane.

Computer	Topic	Protocol	Tags	Status	Values	Rate	Connections
INSQL10	\\INSQL10\SysDrv\System	SuiteLink	153	Receiving	7,372,738	90.56	1
INSQL10	\\insql9\aaahIOSvrSvc\tagname	SuiteLink	2	Disconnected	0	0.00	0
INSQL10	\\insql10\aaahIOSvrSvc\tagname	SuiteLink	3	Receiving	86,005	0.98	1
INSQL10	\\was\WIEW\!TagName	SuiteLink	107	Disconnected	0	0.00	0
MDAS	\\INSQL10\aaahReplicationSvc14	MDAS	288	Receiving	390,491	3.00	1
MDAS	\\INSQL10\aaahReplicationSvc13	MDAS	518	Receiving	216,290	0.25	1

Tier-1 historian sources appear in this pane when you view the data acquisition for a tier-2 historian.

Note The information in the details pane is refreshed according to the rate specified in the registration properties for the server. For more information, see "Registering Wonderware Historian Servers" on page 20.

Column descriptions are as follows:

Computer

The name of the computer on which the data source runs.

Topic

The name of the topic.

Protocol

The protocol used by the Wonderware Historian to communicate with the data source.

Tags

The total number of tags associated with the data source.

Status

The status of data acquisition from the data source.

Values

The total number of tag values received from the data source.

Rate

Average number of data values received from the topic per second.

Connections

Number of connections to the I/O Server for the topic. This number is incremented.

Monitoring Replications

You can monitor the status of replications, including how well data is being replicated on the servers.

For more information on replication, see Chapter 9, "Replication Subsystem," in the *Wonderware Historian Concepts Guide*.

To view replication status

- 1 In the console tree, expand a server group and then expand a server.
- 2 Expand **Management Console** and then click **Replication**. Replication information appears in the details pane.

Replication Server	Status	Total Tags	Values / Sec	Sync Queue Values / Sec	Total Values
Local Replication	Idle	0	0.00	0.00	0

Note The information in the details pane is refreshed according to the rate specified in the registration properties for the server. For more information, see "Registering Wonderware Historian Servers" on page 20.

Column descriptions are as follows:

Replication Server

The name of the replication server.

Status

The status of replication to the replication server.

Total Tags

The total number of tags being replicated to the replication server.

Values/Sec

The average number of data values replicated per second.

Sync Queue Values/Sec

The average number of synchronization queue values replicated per second.

Total Values

The total number of values being replicated.

Monitoring Client Connections

To view the client connection status

- 1 In the console tree, expand a server group and then expand a server.
- 2 Expand **Management Console** and then click **Clients**. The client connection information will appear in the details pane.

ID	Application	Computer	User	Connected At	Duration
6	aahEventSvc	CONFIG1478...	NT AUTHORITY\SYSTEM	8/17/2009 2:13:13 PM	2 wks 2 dys 15 hr...
5	aahEventSvc	CONFIG1478...	NT AUTHORITY\SYSTEM	8/17/2009 2:13:13 PM	2 wks 2 dys 15 hr...
4	aahReplicationSvc	CONFIG1478...	sa	8/17/2009 2:13:05 PM	2 wks 2 dys 15 hr...
1	sqlservr	CONFIG1478...	NT AUTHORITY\SYSTEM	8/17/2009 2:12:10 PM	2 wks 2 dys 15 hr...

Note The information in the details pane is refreshed according to the rate specified in the registration properties for the server. For more information, see "Registering Wonderware Historian Servers" on page 20.

Column descriptions are as follows:

ID

Unique number that the Wonderware Historian assigns to the client.

Application

The executable name of the application that is accessing the historian.

Computer

The name of the computer on which the application is running.

User

The Windows login name under which the client application is running.

Connected At

The start time of the connection.

Duration

The length of time that the client has been connected.

For the **Connected At** and **Duration** columns, the timestamp reflects the time of the historian, shown using the Windows regional settings for the local computer.

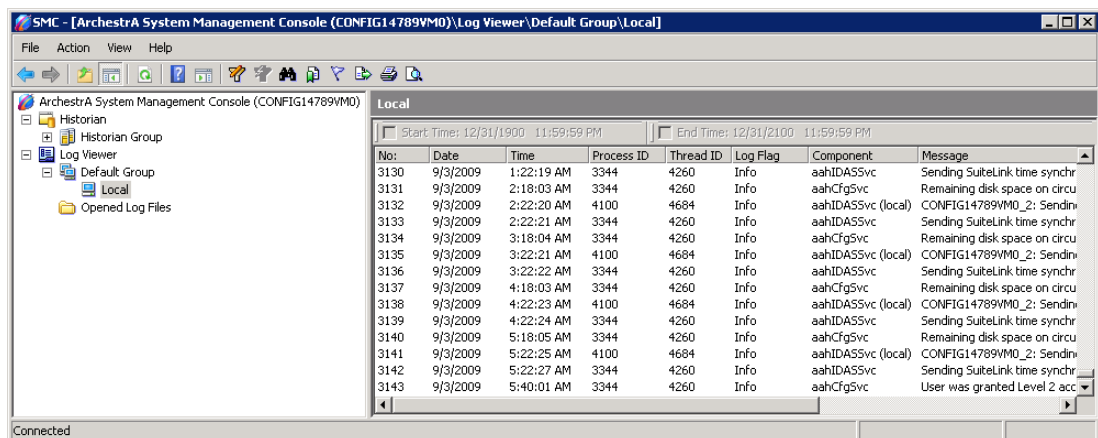
Monitoring System Messages

System messages provide information about the state of the Wonderware Historian as it starts up, runs, or shuts down. For more information about system messages, see "System Messages" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

From within the System Management Console, you can view the system messages generated by the Wonderware Historian using the Log Viewer.

To view system messages

- 1 In the console tree, expand **Log Viewer** and then expand **Default Group**.
- 2 Click **Local**. All of the messages appear in the details pane.



For more information on the Log Viewer, see the Log Viewer documentation.

Viewing Errors in the Windows Event Viewer

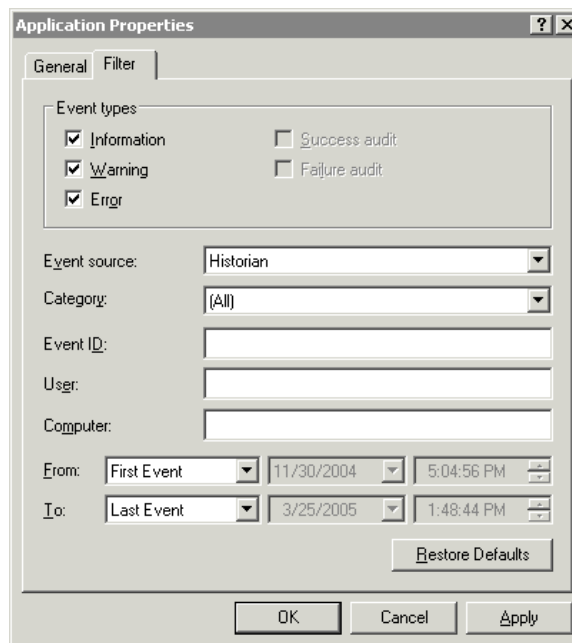
The Event Viewer is a Windows administrative tool for managing error log files. It allows the logs on any workstation or server to be viewed from any other workstation or server that is connected by a network. The Event Viewer can be used to check the logs for the following type of messages:

- Error messages from the operating system.
- Messages confirming that scheduled Windows events occurred correctly.
- Error messages from Wonderware Historian.

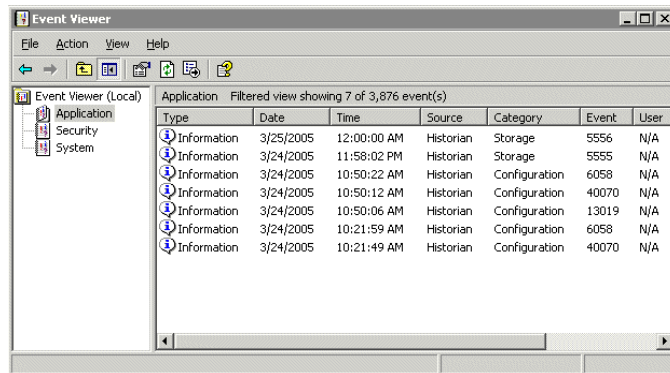
There are hundreds of messages that can appear in the logs, depending on how your system is configured and how healthy it is. It is important to know what the messages mean and what action is required.

To view errors in the Event Viewer

- 1 Start up the Event Viewer.
- 2 In the console tree, click **Application**. Messages from all applications appear in the details pane.
- 3 On the **View** menu, click **Filter**. The **Application Properties** dialog box appears.
- 4 Click the **Filter** tab.



- 5 In the **Event source** list, click **Historian**.
- 6 Click **OK**. The details pane shows only Wonderware Historian errors.



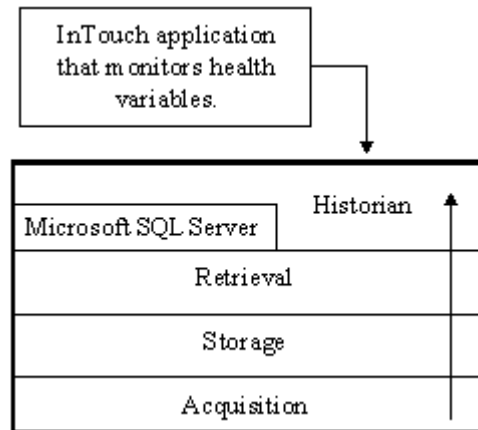
- 7 To view the message text, double-click on the message in the details pane.

Monitoring System Tags from within InTouch HMI Software

The overall health of an Wonderware Historian is monitored continuously by a dedicated system driver. Critical system variables (throughput rates, errors, remaining disk space, and so on) and timing counters are acquired by the system driver and stored in the same manner as plant tags. This driver allows remote monitoring of the current and historical state of the historian, and alerts users to problems in the system.

For more information on the system tags, see "The System Driver and System Tags" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.

For example, you can write an InTouch application that monitors the historian system health tags. Monitoring the overall health by means of system tags is done from the "top" of the system, ensuring that each layer of the system is working properly, from the acquisition layer up through the historian:



Using Windows Performance Logs and Alerts

You can use Microsoft Performance Logs and Alerts console to monitor system variables that pertain to your computer's operating system and hardware. Performance Logs and Alerts allows you to view different types of counters that have been incorporated into the Windows operating system.

In Performance Logs and Alerts, "counters" are associated with objects and with instances of objects. Objects include memory, processes, servers, system, and so on. Instances of objects identify, for example, specific processes. Counters include such measurements as percentage of processor time, private bytes, available memory, and so on. The available counters depend on the object and the instances selected.

You can select one or more process instances so that the Performance Logs and Alerts provides measurements of counters for, for example, all the Wonderware Historian processes running within the Windows operating system.

Using counters within Performance Logs and Alerts can provide valuable information to assist in system tuning and to identify bottlenecks in a sluggish system. Using the Pool Non-paged Bytes counter of the memory object, for instance, can identify memory leaks that contribute to a poorly responsive system.

For information on using Performance Logs and Alerts, see the documentation for your Windows operating system.

Chapter 11

Configuring Events

You can use the event subsystem to set up the detection of events and associate actions with those events. At a basic level, anything that can be determined by looking at historical or system data can be used as an event.

Important The event system is not a real-time system; rather, it operates on historical data. For real-time alarming, use an application such as the InTouch HMI.

When setting up an event, you must provide the following information:

- The criteria for the event. For example, the value of an analog tag being equal to 1500 could be an event. Also, the system clock on the Wonderware Historian computer reaching 9:30 a.m. on Monday morning could be an event.
- How often you want the event subsystem to check if an event occurred. This is called event detection.
- Whether or not you want information about the event detection saved to the database.
- Whether or not you want to execute an action as a result of a successful event detection and the type of action. For example, send an e-mail message.

The configuration information for the detection and action for a particular event must be given a unique name, which is stored as an event tag.

For conceptual information on the event system, see Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

Accessing Event Information

To access event information

- 1 In the console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Click **Event Tags**. All configured event tags appear in the details pane.

Adding an Event Tag

To add an event tag

- 1 In the console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Click **Event Tags**.
- 4 Start the Event Tag wizard by doing any of the following:

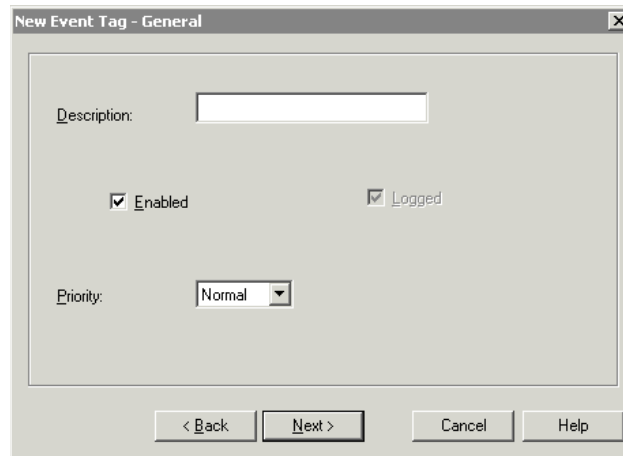


- Click the **Add** button on the toolbar.
- On the **Action** menu, click **New Tag**.
- Right-click **Event Tags**, and then click **New Tag**.

The **New Event Tag** wizard appears.

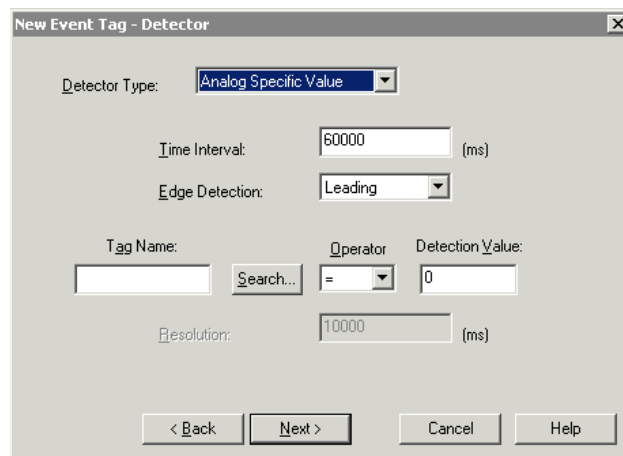
A screenshot of the 'New Event Tag' wizard dialog box. The dialog has a title bar with 'New Event Tag' and a close button. On the left is a decorative panel with a yellow background and a lightning bolt icon. On the right is a text input field labeled 'Unique Tag Name:'. At the bottom are three buttons: 'Next >', 'Cancel', and 'Help'.

- 5 In the **Unique Tag Name** box, type a unique name for the event tag. For information on allowable tagnames, see "Naming Conventions for Tags" in Chapter 2, "System-Level Functionality," in your *Wonderware Historian Concepts Guide*.
- 6 Click **Next**. You are prompted to define general information for the event tag.



The screenshot shows the 'New Event Tag - General' dialog box. It has a title bar with a close button. The main area contains a 'Description:' label followed by a text input field. Below this are two checked checkboxes: 'Enabled' and 'Logged'. Underneath is a 'Priority:' label followed by a dropdown menu currently set to 'Normal'. At the bottom of the dialog are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

- 7 Configure the general options for the event tag. For more information, see "Editing General Information for an Event Tag" on page 279.
- 8 Click **Next**. You are prompted to configure the detector for the event tag.



The screenshot shows the 'New Event Tag - Detector' dialog box. It has a title bar with a close button. The main area contains a 'Detector Type:' label followed by a dropdown menu set to 'Analog Specific Value'. Below this are two input fields: 'Time Interval:' with the value '60000' and '(ms)' to its right, and 'Edge Detection:' with a dropdown menu set to 'Leading'. Further down are three input fields: 'Tag Name:' with an empty text box and a 'Search...' button to its right, 'Operator:' with a dropdown menu set to '=', and 'Detection Value:' with the value '0'. At the bottom are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

- 9 Configure the detector for the event tag. Detectors are external, generic SQL, analog specific value, discrete specific value, and schedule. The lower portion of the dialog box changes based on the detector type that you select.

For information on configuring an external detector, see "Configuring an External Detector" on page 284.

For information on configuring an analog or discrete specific value detector, see "Configuring a Specific Value Detector" on page 281.

For information on configuring a schedule detector, see "Configuring a Schedule Detector" on page 283.

For information on configuring a generic SQL detector, see "Configuring a Generic SQL Detector" on page 284.

- 10 Click **Next**.
- 11 You are prompted to configure the action for the event tag.

The screenshot shows a dialog box titled "New Event Tag - Action". At the top, there is a dropdown menu for "Action Type" currently set to "Snapshot", and a text input for "Post Detector Delay" set to "0" with "(ms)" next to it. Below this is a section labeled "Snapshot Tag List" containing a table with three columns: "Tag Name", "Tag Type", and "Tag Description". The table is currently empty. To the right of the table are "Add" and "Delete" buttons. At the bottom of the dialog are four buttons: "< Back", "Finish", "Cancel", and "Help".

- 12 Configure the action for the event tag. Actions are none, generic SQL, snapshot, e-mail, deadband, and summary. The lower portion of the dialog box changes based on the action type that you select.

For information on configuring a generic SQL action, see "Configuring a Generic SQL Action" on page 288.

For information on configuring a snapshot action, see "Configuring a Snapshot Action" on page 287.

For information on configuring an e-mail action, see "Configuring an E-mail Action" on page 290.

For information on configuring a deadband action, see "Configuring a Deadband Action" on page 285.

For information on configuring a summary action, see "Configuring a Summary Action" on page 293.

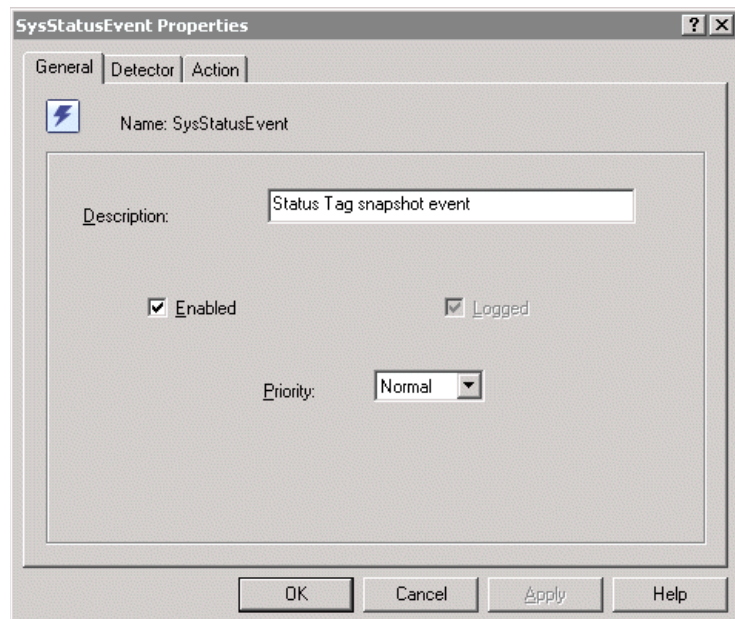
- 13 Click **Finish**.

Editing General Information for an Event Tag

General information for an event tag includes information about the tag definition. Event detectors and actions are defined separately and then associated with an event tag.

To edit general information for an event tag

- 1 In the console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Click **Event Tags**.
- 4 In the details pane, double-click on the event tag to edit. The **Properties** dialog box appears.
- 5 Click the **General** property tab.



- 6 In the **Description** box, type a description of the tag.
- 7 Click **Enabled** to allow the detector and action for this event tag to run.
- 8 Click **Logged** to specify whether or not to log events for this tag into the EventHistory table. Event logging can only be turned off if no associated actions are configured.
- 9 In the **Priority** list, select a priority level for the action, either critical or normal. The priority level determines the sorting queue to which the action will be sent. The critical queue is used for highly important events. If a system overload condition occurs, events that are given a critical priority will always be processed first. Events that are given a normal priority will be processed after any critical events and may possibly be dropped (that is, not performed) on an overloaded system. For more information, see "Event Action Priorities" in Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.
- 10 Click **OK**.

Configuring Detectors

You can set up the following types of detectors: analog specific value, discrete specific value, schedule, generic SQL, and external.

Note If you change an event tag from using any SQL based detector to a time based detector, or vice versa, stop and restart the event system. Or, delete the existing event tag and recreate it using the desired detector.

Configuring a Specific Value Detector

The configuration is basically the same for analog and discrete specific value detectors, with only a few small differences.

To configure a specific value detector

- 1 In the **Detector Type** list, select **Analog Specific Value** or **Discrete Specific Value**.

The screenshot shows a configuration window for a detector. The 'Detector Type' is set to 'Analog Specific Value'. The 'Time Interval' is 60000 ms. The 'Edge Detection' is set to 'Leading'. The 'Tag Name' is 'SysTimeMin', the 'Operator' is '=', and the 'Detection Value' is 0. The 'Resolution' is 0 ms.

- 2 In the **Time Interval** box, type the interval, in milliseconds, at which the system checks to see if the event conditions specified by the detector occurred. This value must be greater than or equal to 500 milliseconds, and less than or equal to 1 hour (3600000 ms).

Be careful when assigning time intervals to event tags. For more information, see "Time Intervals for SQL-Based Detectors" in Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

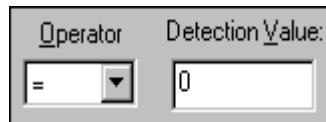
- 3 In the **Edge Detection** list, select the "edge" for the event detection.

A leading edge detection returns only rows that are the first to successfully meet the criteria (return true) after a row did not successfully meet the criteria (returned false). A trailing edge detection returns only rows that are the first to fail the criteria (return false) after a row successfully met the criteria (returned true). For an edge detection of "both," all rows satisfying both the leading and trailing conditions are returned.

For more information, see "Edge Detection for Events (wwEdgeDetection)" in Chapter 7, "Data Retrieval Options," in your *Wonderware Historian Concepts Guide*.

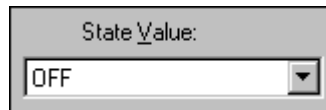
- 4 In the **Tag Name** box, type the name of the tag to which the event criteria will be applied. To search the database for a tag, click **Search**. The **Tag Finder** dialog box appears, in which you can query the database for tags. For more information, see "Using the Tag Finder" on page 297.
- 5 Set the value criteria for the tag.

If you are configuring an analog specific value detector, in the **Operator** box, select an operator for the criteria. Then, in the **Detection Value** box, type a value against which the stored values for the tag are compared to determine if the event occurred.



The image shows a configuration dialog box with two fields. The first field is labeled "Operator" and contains a dropdown menu with the "=" symbol selected. The second field is labeled "Detection Value:" and contains a text input box with the number "0" entered.

If you are configuring a discrete specific value detector, in the **State Value** list, select the target state of the discrete tag that causes the event to occur.



The image shows a configuration dialog box with one field labeled "State Value:". It contains a dropdown menu with "OFF" selected.

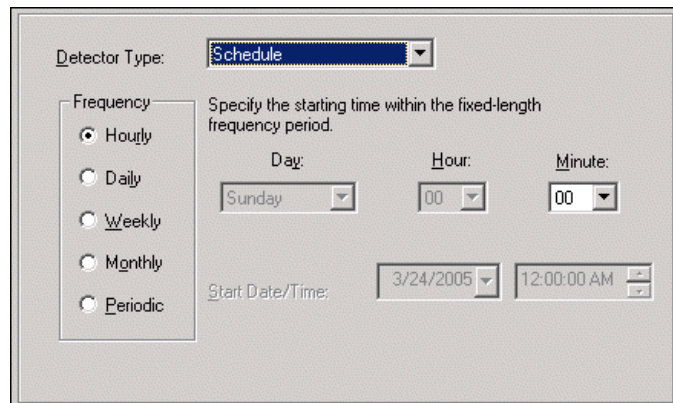
- 6 If you selected **None** in **Edge Detection** list, you can specify a resolution for the data. In the **Resolution** box, type a sampling rate, in milliseconds, for retrieving the data in cyclic mode. The system returns values stored over the requested time period at the interval specified by the resolution. For example, if you specify a 5000 ms resolution, the system queries for all data during the time period and then only returns those values that occur at each 5000 ms interval, starting with the start date and ending with the end date.

Configuring a Schedule Detector

This feature is included only for backward compatibility. You should instead use summary tags and replication. For more information on configuring replication, see Chapter 7, "Managing and Configuring Replication."

To configure a schedule detector

- 1 In the **Detector Type** list, select **Schedule**.



The screenshot shows a configuration dialog box for a Schedule Detector. At the top, the "Detector Type" dropdown menu is set to "Schedule". Below this, there is a "Frequency" section with five radio button options: "Hourly" (selected), "Daily", "Weekly", "Monthly", and "Periodic". To the right of the frequency options, there is a text prompt: "Specify the starting time within the fixed-length frequency period." Below this prompt are three dropdown menus for "Day" (set to "Sunday"), "Hour" (set to "00"), and "Minute" (set to "00"). At the bottom, there is a "Start Date/Time" section with two dropdown menus: "Start Date/Time" (set to "3/24/2005") and "Time" (set to "12:00:00 AM").

- 2 In the **Frequency** area, select how often you want the event to occur.
When you select a frequency, different options to the right of the **Frequency** group become available.
- 3 Configure the time specific for the selected frequency.

Configuring a Generic SQL Detector

The Wonderware Historian does not validate SQL query syntax. First, test the SQL query using a tool such as Microsoft SQL Server Query Analyzer.

To configure a generic SQL detector

- 1 In the **Detector Type** list, select **Generic SQL**.

Detector Type: Generic SQL

Detector Query: Time Interval: 60000 (ms)

```

Set Quoted_Identifier OFF
SELECT DateTime
FROM AnalogHistory, Limit
WHERE AnalogHistory.TagName = <'YourTag'>
AND AnalogHistory.DateTime >= '@StartTime'
AND AnalogHistory.DateTime < '@EndTime'
AND AnalogHistory.TagName = Limit.TagName
AND AnalogHistory.Value IS NOT NULL
AND AnalogHistory.Value > Limit.Value
AND ContextKey = 1
AND LimitNameKey = 3
  
```

Templates

Clear

- 2 In the **Time Interval** box, type the interval, in milliseconds, at which the system checks to see if the event conditions specified by the detector occurred. This value must be greater than or equal to 500 milliseconds, and less than or equal to 1 hour (3600000 ms).
Be careful assigning time intervals to event tags. For more information, see "Time Intervals for SQL-Based Detectors" in Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.
- 3 In the **Detector Query** window, enter the ad-hoc query that detects the event. To open a list of SQL templates to use for your query, click **Templates**.
- 4 To clear the window, click **Clear**.

Configuring an External Detector

An external detector is triggered using the Wonderware Historian ActiveEvent control. The detector is a COM component and has an external interface. An **InTouch** or Visual Basic script can trigger a historian event by using the ActiveEvent methods, which are similar to functions. Using the **InvokeEventEx()** method causes an external event to be detected within the event system.

After you select "External" as your detector type, you need to configure the security attributes for the ActiveEvent control and write the script that invokes the event. For more information, see "Using ActiveEvent" on page 303.

Configuring Actions

You can set up the following types of actions: deadband, snapshot, generic SQL, e-mail, and summary.

Configuring a Deadband Action

To configure a deadband action

- 1 In the **Action Type** list, select **Deadband**.

Action Type: Deadband Post Detector Delay: 0 (ms)
 Tag List:

Tag Name	Tag Type	Time Deadband	Value Deadband (%)

Add
Properties
Delete

- 2 To add one or more tags for which to set a new deadband, click **Add**. The **Tag Finder** dialog box appears, in which you can query the database for tags. For more information, see "Using the Tag Finder" on page 297.
- 3 Select a tag in the **Tag List** list, and then click **Properties**. The **Deadband Properties** dialog box appears.

ReactLevel Deadband Properties

Apply Time Deadband: 0 (ms)
 Apply Value Deadband: 0 (% EU)

OK Cancel Help

- 4 Configure the appropriate deadbands for the tag.

Apply Time Deadband

The minimum time, in milliseconds, between stored values for a single tag. Any value changes that occur within the time deadband are not stored. The time deadband applies to delta storage only. A time deadband of 0 indicates that the system will store the value of the tag each time it changes.

Apply Value Deadband

The percentage of the difference between the minimum and maximum engineering units for the tag. Any data values that change less than the specified deadband are not stored. The value deadband applies to delta storage only. A value of 0 indicates that a value deadband will not be applied. The value deadband applies only to analog tags.

- 5 Click **OK**. The changes appear in the **Tag List** window.
- 6 To delete a tag from the **Tag List** window, select the tag and then click **Delete**.
- 7 (Optional) In the **Post Detector Delay** box, type the amount of time, in milliseconds, that must elapse after an event is detected before the event action can be executed.

Note If the tag list contains a tag that is deleted from the Runtime database, then the word "Deleted" appears as the tag type for the tag.

Configuring a Snapshot Action

A snapshot action records the values of a selected mix of analog, discrete, and string tags at the time that the event occurred.

To configure a snapshot action

- 1 In the **Action Type** list, select **Snapshot**.

Snapshot configuration dialog box showing the following details:

- Action Type: Snapshot
- Post Detector Delay: 0 (ms)
- Snapshot Tag List:

Tag Name	Tag Type	Tag Description
SysSpaceMain	Analog	Space left on Circular Data
SysPerfCPUTotal	Analog	%CPU total processor load

Buttons: Add, Delete

All tags included in the snapshot are listed in the **Snapshot Tag List** list. Snapshots can include analog, discrete, and string tags.

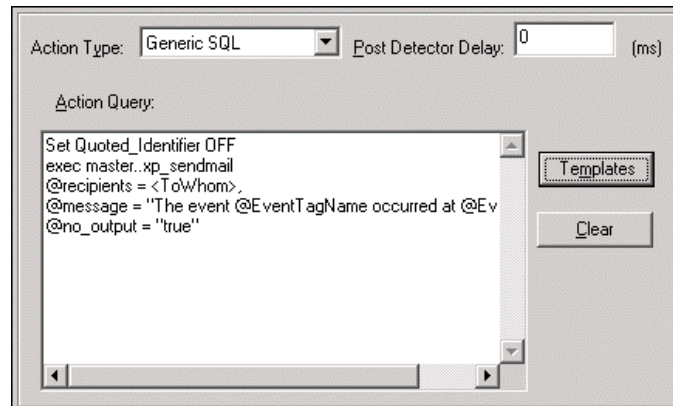
- 2 To add one or more tags, click **Add**. The **Tag Finder** dialog box appears, in which you can query the database for tags. For more information, see "Using the Tag Finder" on page 297.
- 3 To delete a tag, select the tag in the **Snapshot Tag List** list and then click **Delete**.
- 4 (Optional) In the **Post Detector Delay** box, type the amount of time, in milliseconds, that must elapse after an event is detected before the event action can be executed.

Configuring a Generic SQL Action

The Wonderware Historian does not validate the SQL query syntax. First test the SQL query using a tool such as Microsoft SQL Server Query Analyzer.

To configure a generic SQL action

- 1 In the **Action Type** list, select **Generic SQL**.



- 2 In the **Action Query** window, enter an ad-hoc query that detects the event. To access a list of SQL templates to use for your query, click **Templates**.

For information on using event system variables in your query, see Chapter 10, "Event Subsystem," in your *Wonderware Historian Concepts Guide*.

- 3 To clear the window, click **Clear**.
- 4 (Optional) In the **Post Detector Delay** box, type the amount of time, in milliseconds, that must elapse after an event is detected before the event action can be executed.

Generic SQL Action Template for Executing a Command

To configure a generic SQL statement that executes a command, select the "Invoke an External Application" option in the list of generic SQL action templates:

```
master..xp_cmdshell '<Your Command>', no_output
```

In the syntax, replace **<Your Command>** with the desired command. Be sure to enclose the command in single quotes. For example:

```
master..xp_cmdshell 'dir *.exe', no_output
```


The **xp_cmdshell** extended stored procedure does not start a Windows application. You can only execute simple DOS commands, batch files or executables (.EXEs) that do not display a user-interface window.

You must have the correct permissions set for the **xp_cmdshell** extended stored procedure for it to run. For more information, see your Microsoft SQL Server documentation.

Generic SQL Action Templates for E-mail

To configure a generic SQL statement that sends an e-mail message, select one of the "Send an E-mail message..." options (one with a query and one without) in the list of generic SQL action templates. For example:

```
master..xp_sendmail
@recipients = <ToWhom>,
@message = 'The event @EventTagName occurred at
           @EventTime',
@query = <"Your query">,
@no_output = 'true'
```

In the second line of the syntax, replace <ToWhom> with the e-mail display name or complete e-mail address of the intended recipient or recipients. Assign the e-mail message to the @message variable. Be sure to enclose the recipient(s) and the message in single quotes. For example:

```
master..xp_sendmail
@recipients = 'John Doe',
@message = 'Check this out',
@query = 'SELECT TagName, DateTime FROM EventHistory
         WHERE TagName = "SysStatusEvent"
         AND DateTime = (SELECT Max (DateTime)
         FROM EventHistory
         WHERE TagName = "SysStatusEvent")',
@no_output = 'true'
```

You must have the Microsoft SQL Server and the SQL Mail component set up properly in order for the **xp_sendmail** extended stored procedure to work correctly.

For more information, see "Configuring an E-mail Action" on page 290.

Configuring an E-mail Action

An e-mail action sends a pre-configured e-mail message when an event occurs. For the event system to support e-mail actions, you must properly configure all of the following:

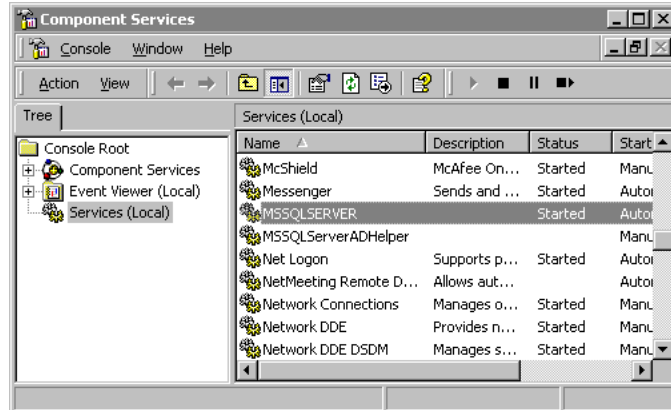
- SQL Server login
- Microsoft Outlook Mail Client
- SQL Mail functionality for Microsoft SQL Server
- E-mail action for the event system

Note The exact steps may vary depend on what version of the Windows operating system you are using.

Setting Up Microsoft SQL Server

For Microsoft SQL Mail to work correctly, Microsoft SQL Server must be configured to log on with a user account that has a valid MAPI mail profile. Perform these steps on the computer running the Microsoft SQL Server Service that will process the e-mail event.

- 1 On the Windows **Start** menu, point to **Programs**, point to **Administrative Tools**, and then click **Component Services**. The Component Services console appears.



- 2 In the console tree, click **Services**.
- 3 In the results pane, right-click on **MSSQLServer** and then click **Properties**. The **Properties** dialog box appears.
- 4 Click the **General** tab.
- 5 In the **Startup Type** list, click **Automatic**.
- 6 Click the **Log On** tab.

- 7 In the **Log On As** area, click **This account**. Enter the user account (domain or local) or click **Browse** to browse for a valid account. The user account you select needs to have a valid MAPI mail profile set up.

For information on determining the MAPI mail profile, see "Determining the Microsoft Outlook Mail Profile" on page 291.

- 8 In the **Password** and **Confirm Password** boxes, enter the password for the user account.
- 9 Click **OK**.
- 10 Right-click the MSSQL Server service in the results pane, and then click **Stop** to stop the service.
- 11 After the MSSQL service stops, right-click the MSSQL Server service in the results pane, and then click **Start** to restart the service.
- 12 Close the Component Services console.

The next step in setting up an e-mail action is to determine the Microsoft Outlook profile. For more information, see "Determining the Microsoft Outlook Mail Profile" on page 291.

Determining the Microsoft Outlook Mail Profile

To properly set up the Microsoft SQL Server e-mail configuration, you need to know the name of the MAPI mail profile for the MSSQL Server service logon account. You must determine the MAPI profile name on the computer running MSSQL Server.

To determine the MAPI profile name

- 1 In Control Panel, double-click Mail.
- 2 Click **Show Profiles**.
- 3 Determine the MAPI mail profile.

The mail profile is commonly set to "MS Exchange Settings" so that the user's profile on an Exchange Server is used.

- 4 Click **OK**.

For more information on configuring user accounts for the Exchange Client, see your Microsoft documentation.

The next step in setting up an e-mail action is to configuring SQL mail in SQL Server Management Studio. For more information, see "Setting Up SQL Mail in SQL Management Studio" on page 292.

Setting Up SQL Mail in SQL Management Studio

SQL mail is set up using the SQL Server Management Studio. Make sure that the Microsoft SQL Server is running. For more information on configuring mail profiles, see your Microsoft SQL Server documentation.

Configuring the E-mail Action

Note Only Microsoft Outlook addresses can be used. Internet addresses are not directly supported.

To configure an e-mail action

- 1 In the **Action Type** list, select **E-mail**.

The screenshot shows a configuration dialog box for an E-mail action. At the top, 'Action Type' is set to 'E-mail' and 'Post Detector Delay' is set to 0 (ms). Below this are four input fields: 'To:', 'Cc:', 'Subject', and 'Message:'. The 'Message:' field is a large text area with scrollbars.

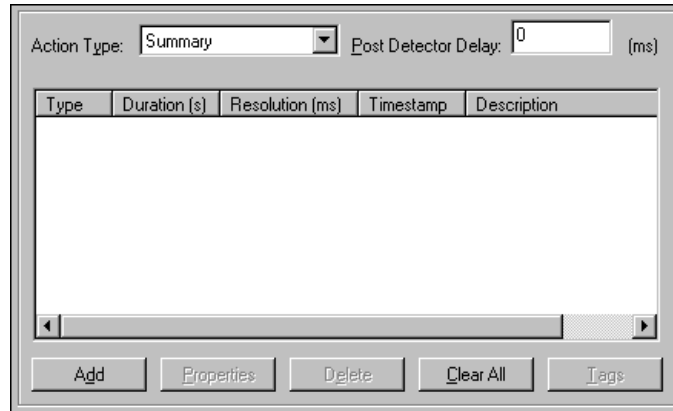
- 2 In the **To** line, enter the Outlook e-mail address of one or more persons to whom you want to send an e-mail message when an event occurs. You can also send a copy of the e-mail to one or more persons in the **Cc** line.
You can access the address book of the e-mail account by clicking the **To** or **Cc** button.
- 3 In the **Subject** line, enter a synopsis of the e-mail. If you do not provide text for the subject line, "SQL Server Message" is used by default.
- 4 Enter the e-mail text in the **Message** window.
- 5 (Optional) In the **Post Detector Delay** box, type the amount of time, in milliseconds, that must elapse after an event is detected before the event action can be executed.

Configuring a Summary Action

If you only need scheduled data summaries, you should instead use summary tags and replication. However, if you want to trigger summaries based on events in history, you must use the event subsystem. For more information on configuring replication, see Chapter 7, "Managing and Configuring Replication."

To configure a summary action

- 1 In the **Action Type** list, select **Summary**.



- 2 To add a new summary operation, click **Add** and define the operation. For more information, see "Adding a Summary Operation" on page 294.
- 3 To assign analog or discrete tags to a summary operation, select the summary operation in the list and then click **Tags**. For more information on adding a summary tag, see "Assigning a Tag to a Summary Operation" on page 295.
- 4 To delete a summary action, select the summary operation in the window and then click **Delete**.
- 5 To clear the window of all summary operations, click **Clear All**.
- 6 To modify a summary action, select the summary operation in the window and then click **Properties**. For more information on the dialog box that appears, see "Adding a Summary Operation" on page 294.

If you modify a summary operation, you may see inconsistencies between old summary data and new summary data. You can not save the modified summary operation if its criteria is identical to an existing summary operation associated with the current event tag.
- 7 (Optional) In the **Post Detector Delay** box, type the amount of time, in milliseconds, that must elapse after an event is detected before the event action can be executed.

Adding a Summary Operation

You can add multiple summary operations for a single summary action, as long as no two summary operations have the exact same configuration.

To add a summary operation

- 1 In the summary action options, click **Add**. The **Summary Operation Properties** dialog box appears.

- 2 In the **Calculation Type** list, select the type of calculation to be performed: SUM, MAX, MIN, or AVG.
- 3 In the **Time Stamp** list, select the timestamp to use when storing the result of the calculation. The timestamp can be either the time when the calculation period starts or ends.
- 4 In the **Resolution** box, enter sampling rate, in milliseconds, for retrieving the data in cyclic mode. The system returns values stored over the requested time period at the interval specified by the resolution. For example, if you specify a 5000 ms resolution, the system queries for all data during the time period and then only returns those values that occur at each 5000 ms interval, starting with the start date and ending with the end date.

In general, the higher the resolution, the more accurate the result, because you are including more values into your aggregation. However, the calculation takes longer and consume more server resources. Avoid very fine resolutions for summary actions associated with schedule detectors that cover long periods of time, such as weekly.

Resolution is also very useful when calculating SUMS. For example, setting the resolution to 60,000 milliseconds for a flow in gallons per minute automatically produces a result that is the total volume.

- 5 In the **Duration** group, select the period for which the calculation must be performed.
For example, if you are associating a summary action with a duration of 1 hour with a detector that is scheduled for 3:00 a.m. every Monday, then the system performs the aggregation on values stored between 2:00 a.m. and 3:00 a.m. on Mondays.
- 6 In the **Description** box, type a description of the summary operation.
- 7 Click **OK**.

The new summary operation now appears in the summary action grid.

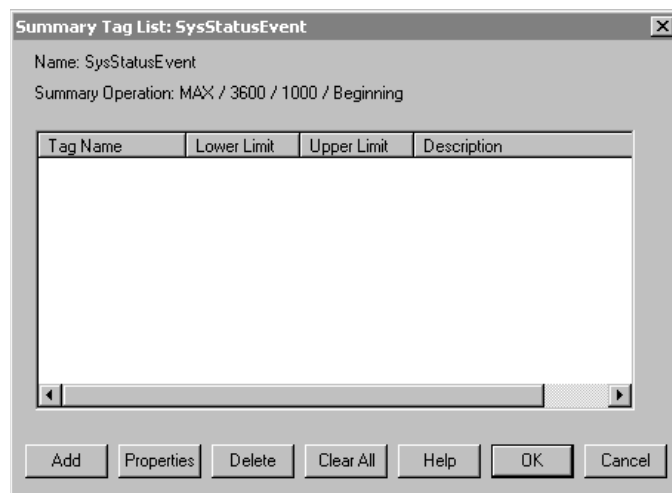
Assigning a Tag to a Summary Operation

You can add more than one tag to a single summary.

Note You cannot add string tags to a summary operation.

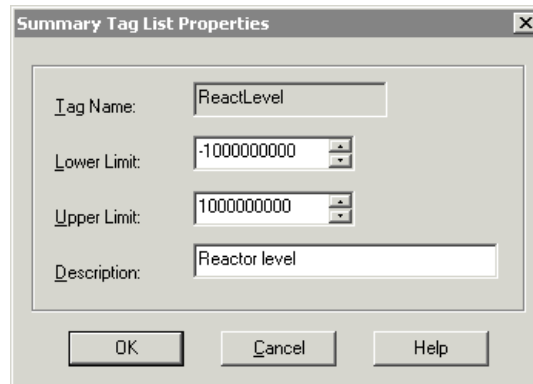
To assign a tag to a summary operation

- 1 In the summary action options, select the summary operation in the list and then click **Tags**. The **Summary Tag List** dialog box appears.



- 2 To search for a tag in the database, click **Add**. The **Tag Finder** dialog box appears, in which you can query the database for tags. For more information, see "Using the Tag Finder" on page 297.

- 3 After you add a tag, select the tag in the list and then click **Properties**. The **Summary Tag List Properties** dialog box appears.



- 4 In the **Lower Limit** and **Upper Limit** boxes, set the validity range for the summary tag. Setting a validity range allows you to control the lower or higher limits at which the calculation is performed.

Upper Limit

The upper limit of validity for the tag's value. Values higher than this limit are not used in the calculation. By default, this value is set to 1000000000.

Lower Limit

The lower limit of validity for the tag's value. Values lower than this limit are not used in the calculation. By default, this value is set to -1000000000.

For example, if the lower validity limit is 1000, the calculation algorithm ignores all returned data with a value lower than 1000 when performing the aggregation.

- 5 In the **Description** box, type a description of the summarized tag. This normally describes the result of the operation, although this description can be the same as that of the tag on which the operation is performed.
- 6 Click **OK**. The new summary operation tag will appear in the **Summary Tag List** dialog box.
- 7 To delete a summary tag from the list, select the tag and then click **Delete**.
- 8 To delete all of the summary tags, click **Clear All**.

Using the Tag Finder

You can search the database for tags using the **Tag Finder** dialog box. This dialog box can be accessed, for example, by clicking the **Search** or **Add** button in a dialog box.

Using the Tag Finder, you can quickly search the database for tags that match a particular search pattern for either a tagname or a tag's description. You can either search for tags by using the point-and-click interface or by typing in your own SQL statement. After the Tag Finder returns a set of tags that match the query, you can select the ones you want to include.

Using the Form Query Tab

Use the **Form Query** tab of the **Tag Finder** dialog box to select the criteria to search the database.

The screenshot shows the 'Tag Finder' dialog box with the 'Form Query' tab selected. The 'Tag Name' section has a dropdown set to 'Contains', a 'Not' checkbox, and an empty text field. The 'Operator' dropdown is set to 'And'. The 'Description' section has a dropdown set to 'Contains', a 'Not' checkbox, and an empty text field. Under 'Tag Types', 'Analog' is unchecked, 'String' is checked, 'Discrete' is checked, and 'Event' is unchecked. Below are two tables: 'Found Tags' with columns 'Tag Name' and 'Description', and 'Target Tags' with columns 'Tag Name' and 'Tag Type'. Navigation buttons (>, <, >>, <<) are between the tables. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

To form and execute the query

- 1 In the **Tag Name** list, choose the phrase for the search criteria for the tagname. For example, "Ends with."
- 2 Enter the tagname search parameters for the query. For example, "level". When searching for tags, you only need to specify wildcard characters to exclude a middle portion of the search word. For example, "le%el".
- 3 To exclude the parameter for a search, click **Not**.
- 4 To add search parameters for a tag's description, select a logical operator from the **Operator** list.
- 5 In the **Description** list, choose the phrase for the search criteria for the tag description. This field is optional.

- 6 Enter the tag description search parameters for the query. This field is optional. When searching for tags, you only need wildcard characters to exclude a middle portion of the description.
- 7 To exclude the parameter for a search, click **Not**.
- 8 In the **Tag Types** area, select a tag group to search.
- 9 After you set the query parameters, click **Find Now** to run the query.

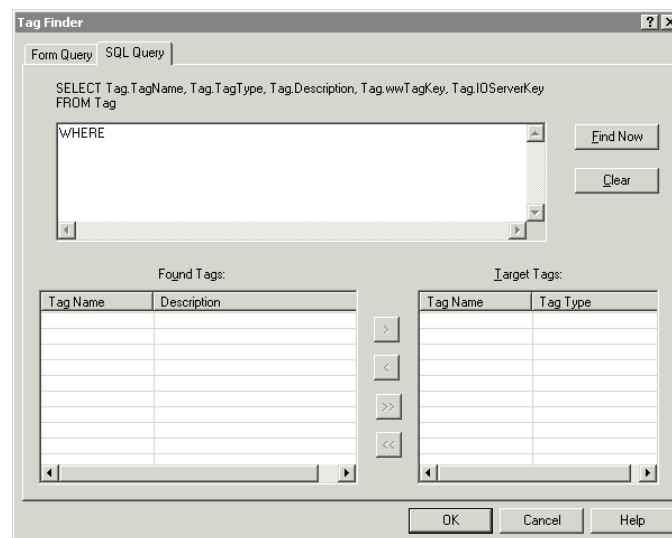
The results of a tag search appears in the **Found Tags** window of the **Tag Finder** dialog box.

- 10 To add a tag, select the tag in the **Found Tags** window and then use the arrow button to move the selected tag into the **Target Tags** window.
- 11 Click **OK**.

To view the syntax used to query the database, click the **SQL Query** tab.

Using the SQL Query Tab

Use the **SQL Query** tab of the **Tag Finder** dialog box to enter and run your own SQL queries against the database.



To form and execute the query

- 1 In the query window, type in the WHERE clause parameters for the SQL query.

Note You cannot change the SELECT statement. The required tables and columns for the query result are already entered for you.

- 2 After you enter the query parameters, click **Find Now** to run the query.
The results of a tag search appears in the **Found Tags** area of the **Tag Finder** dialog box.
- 3 To add a tag, select the tag in the **Found Tags** window and then use the arrow button to move the selected tag into the **Target Tags** window.
- 4 Click **OK**.

Retrieving Logged Event Data

When an event is detected, the event system logs the following into the EventHistory table: 1) the name of the event tag to which the criteria is associated; 2) the date/time stamp of the event occurrence; 3) the time the event is detected, and 4) the detection criteria information.

The detection criteria information, shown in the *Edge* column, is as follows:

Value	Description
0	Trailing Edge Detection (SQL Detectors)
1	Leading Edge Detection (SQL Detectors)
2	Detection on Both Edges (SQL Detectors)
3	No Edge Detection (SQL Detectors)
4	Schedule Detection
5	External Detection

If a snapshot action was configured for the event, the snapshot data is logged between the SnapshotTag table and the snapshot table for the tag type (for example, the AnalogSnapshot table). If a summary action is configured for the event, the aggregated data is stored in the SummaryHistory and SummaryData tables.

To view the event history, perform a query on EventHistory table. For example, an event tag, "EventTag1" detects when the value of "ReactLevel" was equal to 2000. The query to retrieve the event history on January 1, 2001, between 12:36 p.m. and 12:41 p.m. is:

```
SELECT * FROM EventHistory
WHERE TagName = 'EventTag1'
AND DateTime >= 'Jan 1 2001 12:36 PM'
AND DateTime <= 'Jan 1 2001 12:41 PM'
```

To view action snapshot information for an event tag (no wildcards allowed), use the v_EventSnapshot view and specify the name of the event tag as the event in the WHERE clause. For example:

```
SELECT * FROM v_EventSnapshot
WHERE Event = 'EventTag1'
```

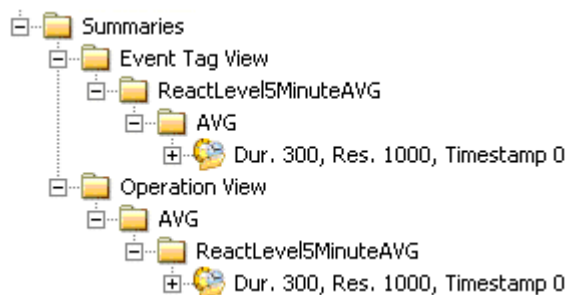
This query returns the name of the event tag, the time of the event occurrence, and the detection time, as well as the name, value, and quality for each tag in the snapshot. One row is returned for each tag value.

Viewing Summary Information

If you configure summary actions in the event system, you can view information pertaining to them in the console tree. You can also view the summary history.

To view summary information

- 1 In the console tree, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Expand **Summaries**.



- 4 To view all summaries sorted according to name of the event tag, expand **Event Tag View**.
- 5 To view all summaries grouped by summary operation (AVG, MIN, MAX, SUM), expand **Operation View**.

Viewing Summary Tag Properties

If you select the summary operation details item ("Dur. xxxx, Res. xxxx, Timestamp x") in the console tree, the summary tag properties appear in the details pane. The columns for the properties are as follows:

Tag Name

The name of the tag to be summarized.

Description

The description of the summarized tag. This normally describes the result of the operation, although this description can be the same as that of the tag on which the operation is performed.

Upper Limit

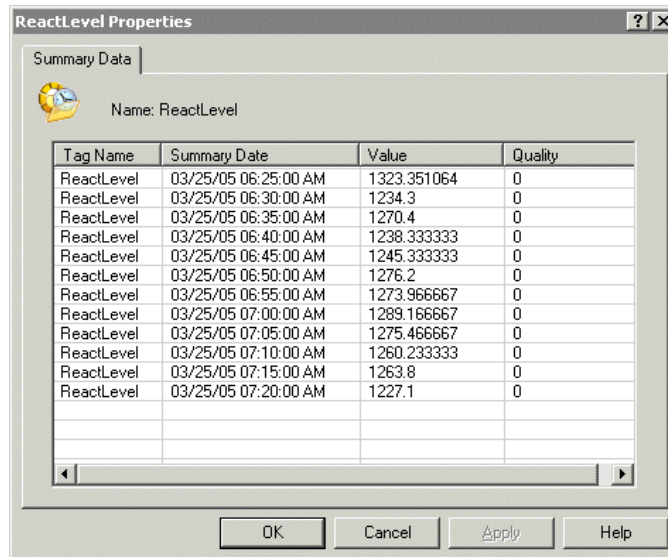
The upper limit of validity for the tag's value. Values higher than this limit are not used in the calculation. By default, this value is set to 1000000000.

Lower Limit

The lower limit of validity for the tag's value. Values lower than this limit are not used in the calculation. By default, this value is set to -1000000000.

Viewing Data for a Summary Tag

To view the summary data for a event tag, click the summary operation details item ("Dur. xxxx, Res. xxxx, Timestamp x") in the console tree. The summary tag properties appear in the details pane. Double-click on a summary tag in the pane.



The screenshot shows a dialog box titled "ReactLevel Properties" with a "Summary Data" tab. The dialog displays the name "ReactLevel" and a table with the following data:

Tag Name	Summary Date	Value	Quality
ReactLevel	03/25/05 06:25:00 AM	1323.351064	0
ReactLevel	03/25/05 06:30:00 AM	1234.3	0
ReactLevel	03/25/05 06:35:00 AM	1270.4	0
ReactLevel	03/25/05 06:40:00 AM	1238.333333	0
ReactLevel	03/25/05 06:45:00 AM	1245.333333	0
ReactLevel	03/25/05 06:50:00 AM	1276.2	0
ReactLevel	03/25/05 06:55:00 AM	1273.966667	0
ReactLevel	03/25/05 07:00:00 AM	1289.166667	0
ReactLevel	03/25/05 07:05:00 AM	1275.466667	0
ReactLevel	03/25/05 07:10:00 AM	1260.233333	0
ReactLevel	03/25/05 07:15:00 AM	1263.8	0
ReactLevel	03/25/05 07:20:00 AM	1227.1	0

The columns are as follows:

TagName

The unique name of the tag within the Wonderware Historian system.

Summary Date

The date applicable to the results of the calculation. It is either the time of the beginning or end of the calculation period, as specified by the summary operation definition.

Value

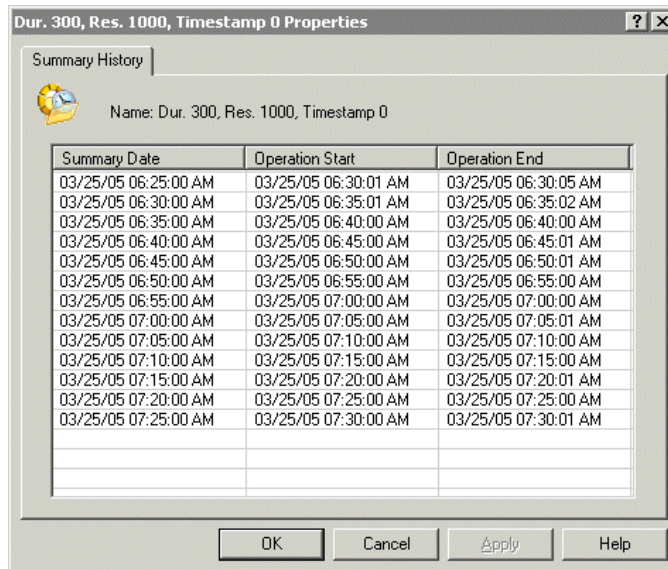
The value of the summary.

Quality

The basic data quality indicator associated with the data value.

Viewing History for a Summary Operation

To view the summary history for a particular operation, right-click on the summary operation details item ("Dur. xxxx, Res. xxxx, Timestamp x") in the console tree and click **Properties**.



The Summary History columns are as follows:

Summary Date

The date applicable to the results of the calculation. It is either the time of the beginning or end of the calculation period, as specified by the summary operation definition.

Operation Start

The timestamp when the calculation started for the operation.

Operation End

The timestamp when the calculation completed for the operation.

Using ActiveEvent

ActiveEvent is an ActiveX control that notifies the event subsystem when an event occurs in another application, such as InTouch HMI software. ActiveEvent is script-based. You can use it in any application that uses a COM-enabled scripting language to detect an event for that application. COM-enabled scripting languages include InTouch scripting and Visual Basic.

After you install the ActiveEvent control on an InTouch computer using the Wonderware Historian installation program, ActiveEvent does not automatically appear in the list of available ActiveX objects for use within WindowMaker™. You need to run the Wizard/ActiveX installation from within WindowMaker, as well. For more information on performing a Wizard/ActiveX installation, see your InTouch documentation.

To enable external event detection for the historian, you must:

- 1 Create an event tag in the historian to store the event occurrence information. Make sure that the detection type is set to External.

You can define the event tag so that the event is associated with an action that is triggered from the historian, such as executing a SQL script, sending an e-mail message, or recording the values of a set of tags at the time the event occurred.

For more information, see "Adding an Event Tag" on page 276.

- 2 Install the ActiveEvent control so that it can be used in the ActiveX container application (for example, in InTouch HMI software).

For more information on installing the ActiveEvent control, see "Configuring Databases and Data File Locations" in Chapter 2, "Installation," in your *Wonderware Historian Installation Guide*.

- 3 Configure the DCOM security attributes for the external detector to be used with ActiveEvent. Security attributes must be set up on the Wonderware Historian computer.

For information, see "Configuring Security Attributes for ActiveEvent" on page 304.

- 4 Write a script that notifies the historian event system of the external event.

For more information, see "ActiveEvent Methods" on page 308.

Important You cannot use ActiveEvent in an InTouch version 7.0 SP2 application.

Synchronize the system time for the ActiveEvent computer with the system time for the historian. If the ActiveEvent computer time is ahead, the event system may generate NULL values for snapshot data.

Configuring Security Attributes for ActiveEvent

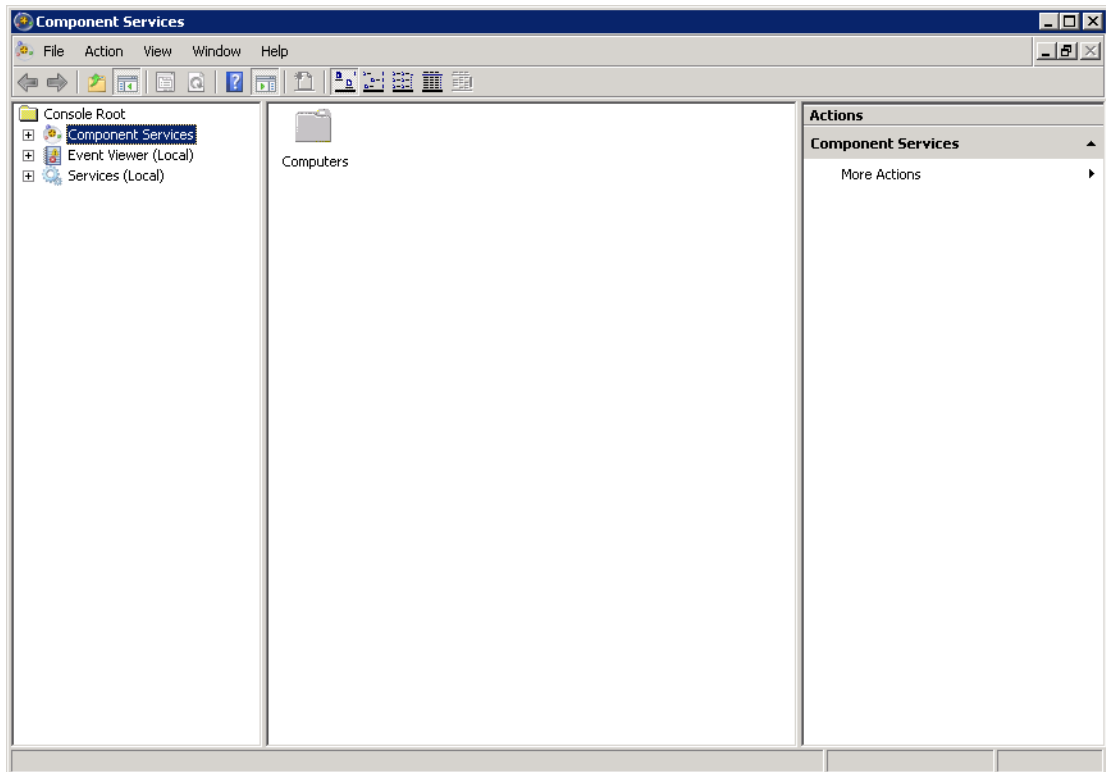
For ActiveEvent to work, security attributes (for example, permission to launch) must be correctly configured.

Configure the security attributes on the Wonderware Historian computer using the DCOMCnfg.Exe program.

To configure security attributes for ActiveEvent

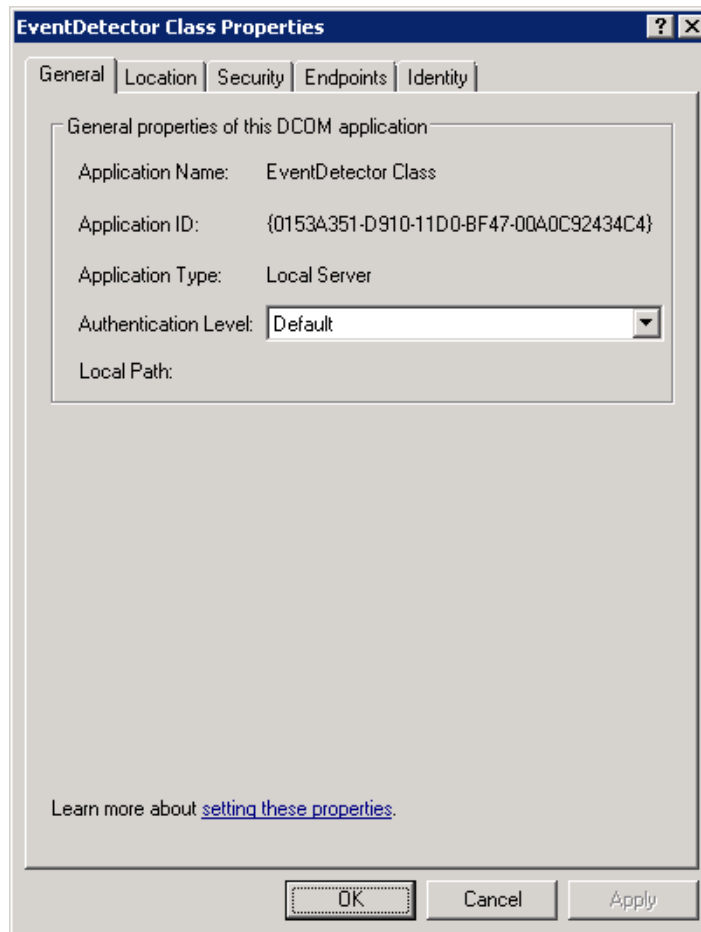
- 1 On the Windows **Start** menu, click **Run**. The **Run** dialog box appears.
- 2 In the **Open** box, type DCOMCnfg.Exe.

- 3 Click **OK**. The **Distributed COM Configuration Properties** dialog box appears.

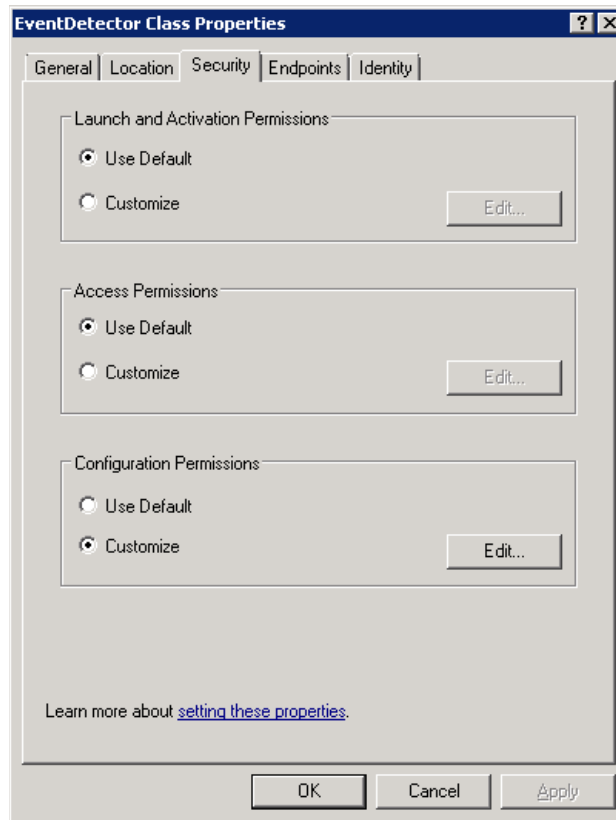


- 4 Click **Computers**, then **My Computer**, and then **DCOM Config**, and then select **EventDetector Class**.

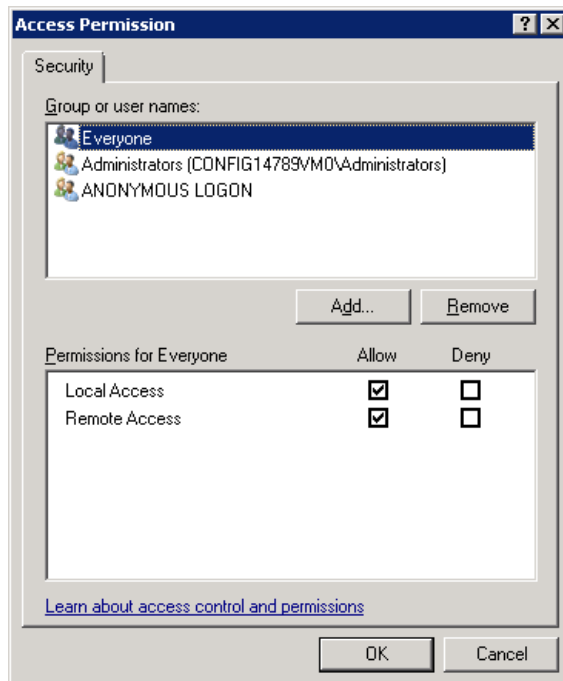
- 5 Click **Properties**. The **EventDetector Class Properties** dialog box appears.



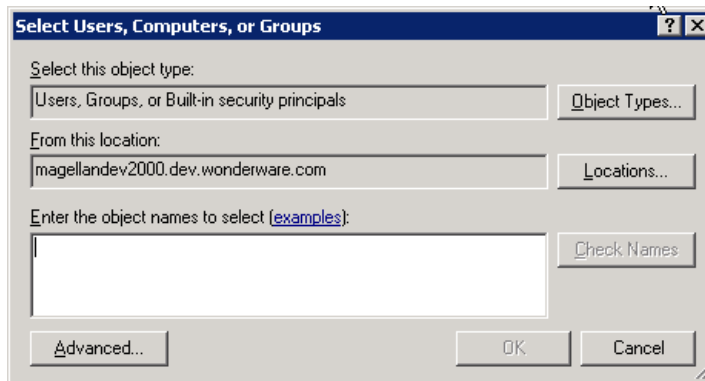
6 Click the **Security** tab.



7 Select **Access permissions - Customize** and then click **Edit**. The **Access Permission** dialog box appears.



- 8 Click **Add**. The **Select Users, Computers, and Groups** dialog box appears.



- 9 In the **Names** list, type **Everyone**.
- 10 Click **OK**. The **Access Permission** dialog box now shows the **Everyone** group with allowed access.
- 11 Click **OK** to return to the **EventDetector Class Properties** dialog box.

Repeat the general procedure to add **Everyone** to the launch permissions.

- 1 Select **Launch and Activation permissions - Customize** and then click **Edit**.
- 2 Repeat steps 8 through 11 to add the **Everyone** group to the list of users who have launch permissions.
- 3 Click **OK** to close the **EventDetector Class Properties** dialog box.
- 4 Click **OK** to close the DCOMCnfg.Exe program.

ActiveEvent Methods

Use ActiveEvent's methods in scripts to connect to an Wonderware Historian and trigger an event. The ActiveEvent control aids the remote triggering of events on the historian by first initializing with the historian computer name and event tag, and then calling the InvokeEventEx() method.

ActiveEvent can be scripted using any scripting language that supports COM. For example, an InTouch script can trigger an Wonderware Historian event if you use this control in an InTouch application. You can also trigger an event from a Visual Basic script.

Note ActiveEvent does not work in asynchronous mode in an InTouch application.

The following example InTouch script connects to a server named "WWHistorianServer1," adds the event tag called "ExternalEvent," and logs an "ExternalEvent" event tag event.

```
{ Connect ActiveEvent to your Wonderware
  Historian--only needs to be done once.}
intResult = #WWHistEvent1.InitializeEx(
  "WWHistorianServer1");

{Was initialization successful or are we already
  initialized? }
IF intResult == 0 OR intResult == 4 THEN

  intResult =
  #WWHistEvent1.AddEventTag("ExternalEvent");
  IF intResult == 0 THEN
    intResult =
    #WWHistEvent1.InvokeEventEx("ExternalEvent");

    IF intResult == 0 THEN
      sDisplayResult = "Logged event";
    ELSE
      sDisplayResult = "Failed to log event";
    ENDIF;
  ENDIF;
ENDIF;
```

AddEventTag()

Adds an event tag to the active event tag list

Method

AddEventTag(string *EventTag*)

Parameter

EventTag

Name of the event tag with which the ActiveEvent event detector is associated. ActiveEvent is used with an external type event detector.

Returns Value

0 = Success.

2 = Unable to execute method because ActiveEvent is not initialized.

7 = Remote function call failed.

InitializeEx()

Creates a connection to the Wonderware Historian.

Method

```
InitializeEx(string ComputerName)
```

Parameter

ComputerName

Name of the computer on which the historian is running. If you are not connecting to the historian over a network, use a blank string ("") for the computer name.

Note You cannot use an Wonderware Historian alias for this parameter.

Returns Value

0 = Success.

1 = Unknown failure.

3 = Unable to initialize ActiveEvent.

4 = ActiveEvent is already initialized.

7 = Remote function call failed.

8 = Unable to determine local computer name.

Remarks

After you initialize the historian, use the `IsConnected` property to determine if the connection was successful. Also, you only need to initialize with the server one time. You can invoke an unlimited number of events after initialization has occurred.

If you are using the InTouch HMI software, initialization does not occur unless the ActiveEvent ActiveX control is part of an open window. This limits the use of the `InvokeEventEx` method within InTouch Application Scripts, Condition Scripts, or Data Change Scripts.

When you close an InTouch window, all ActiveX controls are automatically uninstantiated.

`IsConnected`
`InvokeEventEx()`

InvokeEventAtTimeEx()

Triggers the event at a specified date/time.

Method

```
InvokeEventAtTimeEx(string TagName, string
    EventDateTime)
```

Remarks

You can invoke an unlimited number of events after you initialize with an Wonderware Historian.

Parameter

TagName

Name of the event tag with which the ActiveEvent event detector is associated. ActiveEvent is used with an external type event detector.

EventDateTime

Date/time that you want the event triggered. This date is in local time for the historian. The event date and time must be formatted as:

```
YYYY-MM-DD hh:mi:ss.mmm
```

Returns Value

0 = Success.

1 = Unknown failure.

2 = Unable to execute method because ActiveEvent is not initialized.

5 = Unable to perform date/time conversion due to invalid format.

6 = Date/time cannot be a future date.

7 = Remote function call failed.

InitializeEx()

InvokeEventEx()

InvokeEventEx()

Triggers the event at the time this method is called.

Method

```
InvokeEventEx(string EventTag)
```

Remarks

You can invoke an unlimited number of events after you initialize with a Wonderware Historian.

Parameter

EventTag

Name of the event tag with which the ActiveEvent event detector is associated. ActiveEvent is used with an external type event detector.

Returns Value

0 = Success.

1 = Unknown failure.

2 = Unable to execute method because ActiveEvent is not initialized.

7 = Remote function call failed.

InitializeEx()

InvokeEventAtTimeEx()

IsConnected

Determines whether a connection to the Wonderware Historian exists.

Method

IsConnected

Returns Value

1 = Connected to the historian; 0 = Not connected.

InitializeEx()

RemoveEventTag()

Removes an event tag from the active event tag list.

Method

RemoveEventTag(*string EventTag*)

Parameter

EventTag

Name of the event tag to remove from the list of external events for the ActiveEvent control.

Returns Value

0 = Success.

2 = Unable to execute method because ActiveEvent is not initialized.

7 = Remote DCOM call failed.

Scripting Example: Triggering Events within an InTouch Application

To trigger an event within an InTouch application, include these methods in an InTouch script, similar to the following:

```
#WWHistEvent1.InitializeEx("Historian01"); {Initialized
  the server}

#WWHistEvent1.AddEventTag("ASVTag");

#WWHistEvent1.AddEventTag("SysStatusEvent"); {Added
  event tag}

#WWHistEvent1.InvokeEventEx("ASVTag");

#WWHistEvent1.InvokeEventEx("SysStatusEvent"); {Invoked
  event}
```

where:

- WWHistorianEvent1 is the name of the instantiation of the ActiveEvent ActiveX control
- Historian01 is the computer name for the Wonderware Historian (not an alias)
- ASVTag is the name of the event tag that is associated with this external detector

To add more tags to be detected, use the **AddEventTag()** method and use **InvokeEventEx()** specifying the tagname. A single ActiveEvent control handles many tags.

Scripting Example: Triggering Multiple Events within Visual Basic

In this Visual Basic script, the initialization occurs with Wonderware Historian running on a specified computer, and more than one event is invoked:

```
Private Sub Command1_Click()
  Dim ComputerName As String
  ComputerName = "Computer1"
  Dim TagName As String
  Dim Connected As Long
  TagName = "Event1"
  WWHistEvent1.InitializeEx ComputerName
  WWHistEvent1.AddEventTag TagName
  Connected = WWHistEvent1.IsConnected
  If Connected = 1 Then
    WWHistEvent1.InvokeEventEx TagName
    WWHistEvent1.InvokeEventEx TagName
    WWHistEvent1.InvokeEventEx TagName
    MsgBox ("Sent off three events")
  Else
    MsgBox ("Failed To Connect")
  End If
End Sub
```

Chapter 12

Browsing the ArcestrA Model View Using Historian Clients

You can configure WinPlatforms and AppEngines in Wonderware Application Server so that the ArcestrA model view for objects and attributes hosted by these objects can be replicated to the Wonderware Historian. Galaxies and objects in ArcestrA are represented in the historian as groups in the public namespace.

You can then browse the model view representation using any historian client application that shows the historian public groups, such as the Historian Client Trend.

Model View Representation in the Historian Namespace

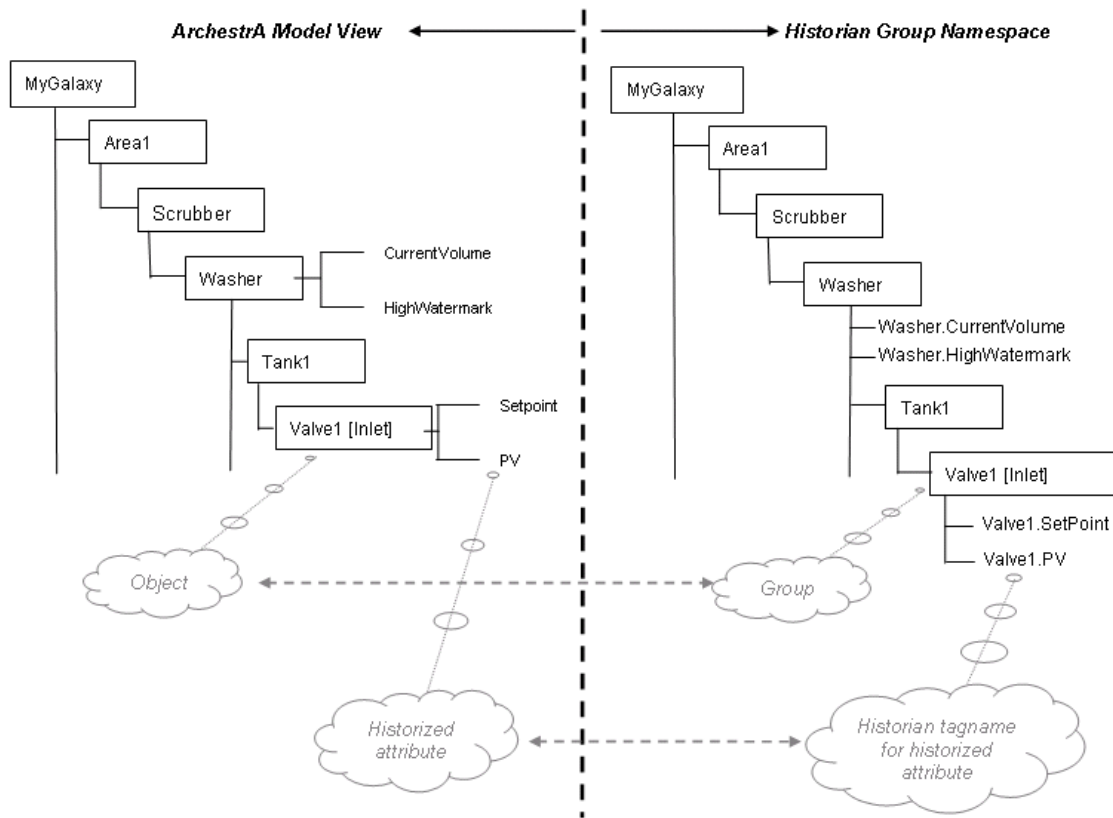
The ArcestrA model view namespace is represented in the Wonderware Historian database as a public group namespace. Each Galaxy and object in the model view is represented as a namespace group in the database.

The top-level group reflects the name of the Galaxy. The top-level Galaxy group contains a group for every child Area and object, so that the ArcestrA object hierarchy is accurately reflected in the group/sub-group structure. Only one Galaxy can be represented in a single historian.

Each group under the Galaxy group is named according to the object in the model view that it represents. Each group can contain:

- Additional child groups.
- Historian tagnames for the historized attributes of the object that the group represents.
- Groups that represent objects without any historized attributes, if the objects contain child objects with historized attributes or if they contain special types of objects, such as traceability objects.

The following illustrates the mapping between a sample ArcestrA model view namespace and the corresponding group namespace in the historian:



Model View Replication to the Historian

Model view replication is the process of sending the model view hierarchy information to the Wonderware Historian and incorporating it into the public group namespace. Replication is initiated by ArcestrA.

Replication is a two-step process:

- 1 The historian is checked to see if there is a need to update the public group namespace with information from the model view.

Replication only occurs when the public group namespace is determined to be out of sync with the model view, in terms of objects with historized attributes and/or special types of objects, such as traceability objects.

- 2 The required model view changes are transmitted to the historian and incorporated into the public namespace.

During replication, only the object/attribute information that needs to change in the historian is transmitted and processed, with the exception of Area objects. For example, if one object is added to a Galaxy of 1000 objects, the new object will be the only entity transmitted to the historian and incorporated into the public group namespace. Because the amount of data for Area objects is small, all Area information is transmitted and processed, without negatively impacting performance.

ArcestrA objects and attributes that can be replicated include:

All historized attributes.

- All objects that contain historized attributes.
- All objects that contain other objects with historized attributes. This allows for representation of the complete hierarchy from the Galaxy level down to lowest-level object that has historized attributes, even if objects at intermediate levels do not have any historized attributes.
- Some special types of objects that do not typically have historized attributes, such as traceability objects. Also, their parent objects are replicated, as needed, to fill out the entire hierarchy.

Attributes that are not historized do not appear in the historian namespace.

Replication occurs when:

- Objects with historized attributes and/or traceability objects are deployed.
- Objects with historized attributes and/or traceability objects are redeployed.
- The historian starts up, and there was a relevant change to the model view while the historian was offline. There may be a delay in the replication.

If you undeploy or delete an object, the changes will not be replicated until you perform a redeploy.

If replication fails to complete (for example, due to a network failure), ArcestrA will try to send the model information again during the next scan cycle, until the replication succeeds. No error message is logged to the ArcestrA Logger if replication fails; however, you can log a custom message using the "ModelViewSync" custom log flag.

If you replicate objects with more historized attributes than the allotment of "headroom" tags in the Wonderware Historian, and the attributes do not already exist in the historian, then the historian will create a new history block. You will not see the complete model view hierarchy replicated in the historian until the new history block is complete, which can take up to five minutes. For more information on headroom tags, see "Pre-allocating Memory for Future Tags" on page 82.

Replication Configuration using the IDE

Use the ArcestrA IDE to enable or disable the automatic replication of the ArcestrA model view to the Wonderware Historian computer.

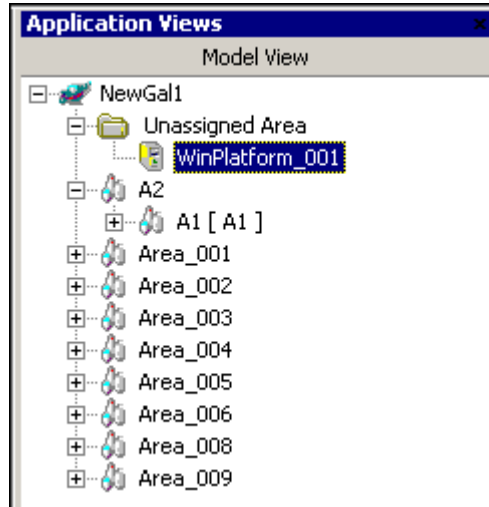
Replication is configured at the platform and engine levels.

Configuring Replication for a WinPlatform

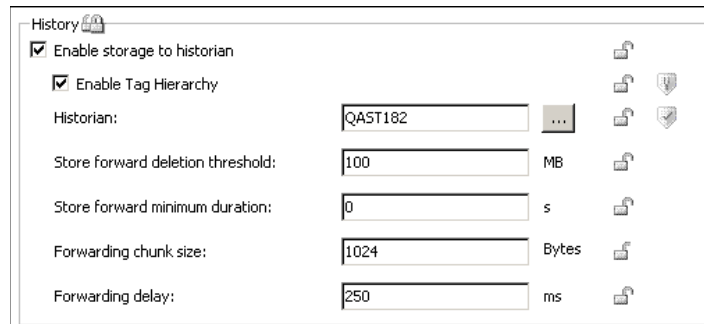
Configuring replication at the platform level simply enables any WinPlatform attributes, marked for historization, to be associated with the WinPlatform in the historian namespace.

To configure model view replication for a WinPlatform

- 1 Start the IDE.
- 2 In the model view, browse to the WinPlatform that you want to configure.



- 3 Open the object editor for the selected WinPlatform.
- 4 Click the **Engine** tab.



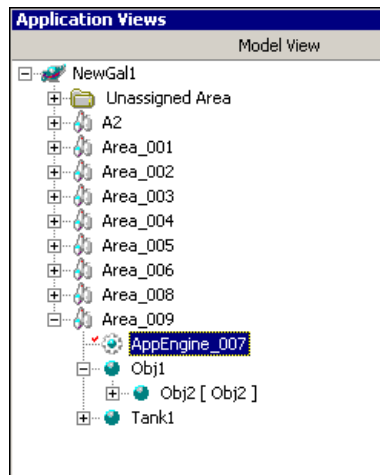
- 5 Select the **Enable storage to historian** check box, if not already checked.
- 6 Select the **Enable Tag Hierarchy** check box.
- 7 In the **Historian** box, specify the name of the Wonderware Historian computer.
- 8 Configure other history settings as required.
- 9 Close the editor, saving your changes.
- 10 Close the IDE.

Configuring Replication for an AppEngine

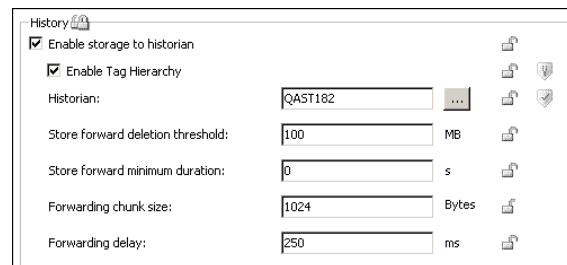
Configuring replication at the engine level enables the replication of AppEngine attributes marked for historization, as well as the replication of all qualifying objects hosted by the AppEngine, and their attributes.

To configure model view replication for an AppEngine

- 1 Start the IDE.
- 2 In the model view, browse to the AppEngine that you want to configure.



- 3 Open the object editor for the selected AppEngine.
- 4 Click the **General** tab.



- 5 Select the **Enable storage to historian** check box, if not already checked.
- 6 Select the **Enable Tag Hierarchy** check box.
- 7 In the **Historian** box, specify the name of the Wonderware Historian computer.
- 8 Configure other history settings as required.
- 9 Close the editor, saving your changes.
- 10 Close the IDE.

Enabling Replication at Runtime

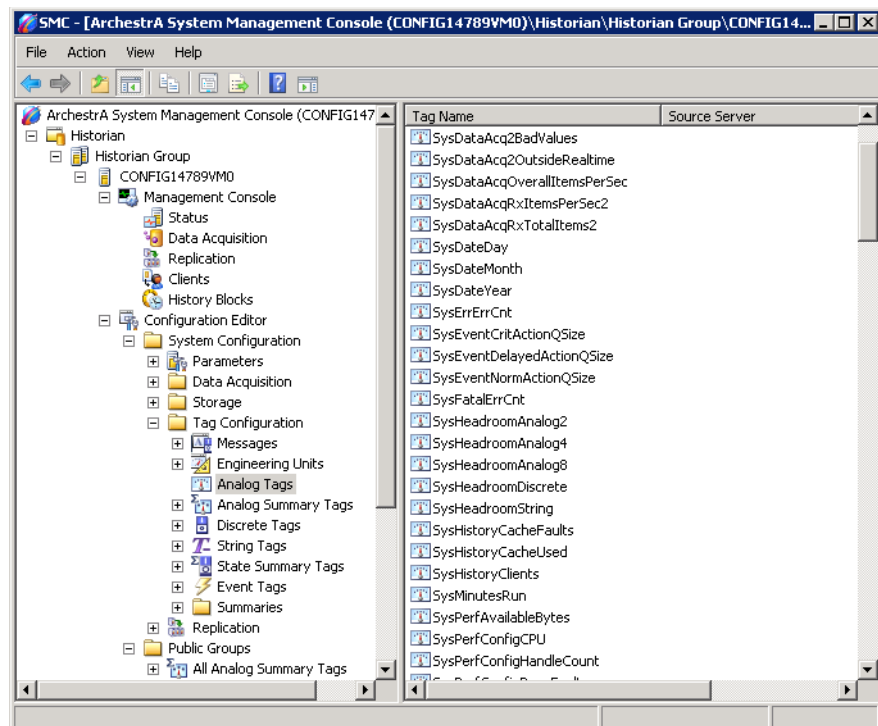
You can enable or disable replication at run time without having to undeploy and redeploy the engine of any affected objects. To do this, set the `Engine.Historian.EnableTagHierarchy` attribute to `True`. This attribute is available for both `WinPlatform` and `AppEngine` objects.

Viewing Historized Attributes in the Wonderware Historian Configuration Editor

Note You cannot view the model hierarchy in the Wonderware Historian System Management Console.

To view historized attributes

- 1 In the Wonderware Historian System Management Console, expand a server group and then expand a server.
- 2 Expand **Configuration Editor**, expand **System Configuration**, and then expand **Tag Configuration**.
- 3 Select any of the tag type groups, such as **Analog Tags**.
- 4 In the details pane shows all tags of that type, including historized attributes from Wonderware Application Server.



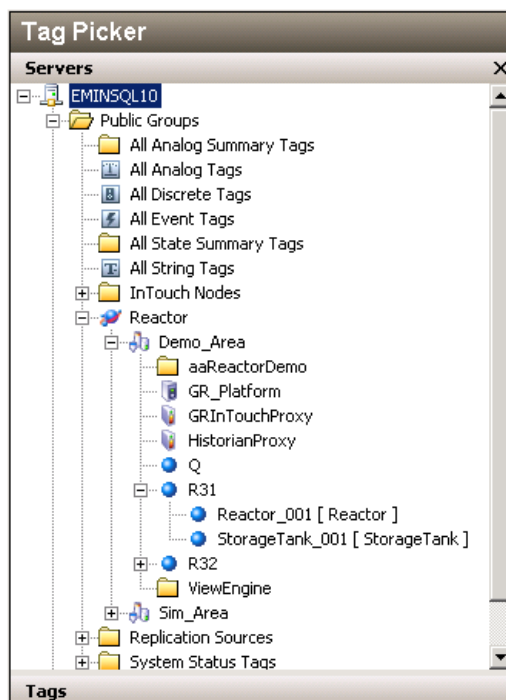
Browsing the Model Hierarchy in a Historian Client

You can browse the ArcestrA model view hierarchy in any Wonderware Historian client that incorporates the **Public Groups** folder in the navigation tree, such as the Historian Trend client.

It is recommended that you not modify the model view hierarchy replication either directly from the database or by using an application such as the Historian Trend client.

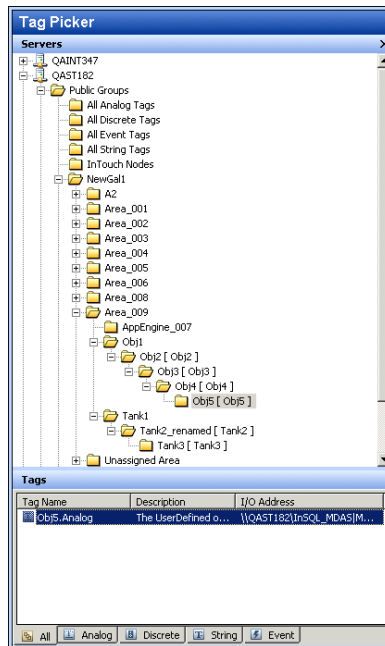
To browse the model hierarchy

- 1 Start a client, such as the Historian Trend client.
- 2 Connect to the historian.
- 3 In the navigation tree, expand **Public Groups**.
- 4 Expand the group that reflects the name of the Galaxy you want to browse.



- 5 Navigate through the ArcestrA model view hierarchy and select a group representing an object with historized attributes.
- 6 Select attributes for which you want to view history data in the client.

For example, when you select a group in the Trend Tag Picker, the Tags pane shows a list of all the historian tagnames representing the historized attributes of the selected group (object).



If only the objects at the bottom of the model view hierarchy are deployed, the names for the objects higher in the hierarchy are not available to clients. To enable replication of the hierarchy in other applications, Archedra generates generic names for the undeployed objects. Client applications display these generic names instead of the actual names that appear in the IDE.

Index

A

- acquisition 52, 120
 - configuring 119
 - configuring for analog tags 51
 - configuring for discrete tags 51
 - configuring for string tags 51
 - monitoring 34, 265, 266
- action priority 280
- active image 54, 55, 68, 69, 75, 76, 141
- ActiveEvent 284
 - methods 308
 - security 304
 - using 303
- ActiveX control 303
- AddEventTag() method 309
- address string 52
- administrative tools 15
 - Historian Database Export/Import Utility 15
 - InTouch History Importer 15
 - Microsoft SQL Server 44
 - System Management Console 15
 - Windows operating system 46
- alerts 272
- analog tags
 - adding 62
 - configuring 48
 - configuring acquisition 51

- configuring general properties 48
- configuring limits 56
- configuring storage 53
- configuring summaries 60
- deleting 79
- AppEngine
 - configuring replication 320
- application name
 - I/O Server 52, 127, 128
- ArchestrA
 - user account 246
- archive 155
- ASCII 104
- attributes 317
 - viewing 321
- authentication mode 227, 229
- autonomous startup 123
- autostart 32

B

- backups
 - history blocks 155
 - Runtime database 145
- browsing
 - model view 322
- buffers
 - IDAS 124

C

- calculation 294
- characters
 - limit for string tags 73
- client connections
 - monitoring 34, 268
- ComputerName parameter 310
- configuration
 - editing file 115
 - exporting 103, 105
 - importing 112
- Configuration Editor 17
 - about 36
 - connecting to SQL Server 37
 - toolbar buttons 38
 - version 41
- console file 20
- console tree 17, 18
- contexts 56, 58
 - configuring 59
- counter 51
- CSV data
 - example files 170, 173
 - fast load imports 167
 - file format 168, 171
 - import folder 175
 - importing 164, 166
 - normal imports 167
 - NULL values 174

D

- data
 - inserting 176
- data dictionary
 - importing from InTouch 85
- data quality 302
- data rate
 - viewing status 263
- data type
 - managing 149
- database
 - backing up 146
 - restoring 148
- database files
 - viewing details 143
- database modifications 254

- database object
 - managing 149
- database user 257
- DCOM 304
- DDE 90, 129
- deadband 55, 69, 76, 96, 97, 131, 136, 286
 - swinging door 55, 97, 131, 136
 - time 55, 69, 76, 96, 131, 136, 286
 - value 55, 97, 131, 136, 286
- deadband actions
 - configuring 285
- details pane 17
- discrete tags
 - adding 69
 - configuring 66
 - configuring acquisition 51
 - configuring general properties 66
 - configuring storage 67
 - deleting 79
- disk space
 - event history 150
 - status 264
 - summary history 150
- documentation conventions 12
- domain 22
- double-byte 76
- dynamic configuration
 - committing changes 252
 - status 262

E

- edge detection 281
- e-mail actions 289
 - configuring 290
- e-mail profile 290
- encoding format 104
- engineering units 49, 225
 - adding 65
 - configuring 63
 - editing 63
 - viewing defined 63
- error count
 - resetting 264
- error messages
 - monitoring 269
 - viewing 34
 - viewing in Event Viewer 270

- errors
 - Historian Database Export/Import Utility 104
 - viewing status 263
- event actions
 - configuring 278, 285
 - deadband actions
 - configuring 285
 - e-mail actions
 - configuring 290
 - generic SQL actions
 - configuring 288
 - snapshot actions
 - configuring 287
 - summary actions
 - configuring 293
- event detectors
 - configuring 277, 280
 - external detectors
 - configuring 284
 - generic SQL detectors
 - configuring 284
 - schedule detectors
 - configuring 283
 - specific value detectors
 - configuring 281
- event history
 - disk space 150
 - retrieving 299
- event subsystem
 - monitoring status 265
 - starting and stopping 27
- event tags
 - adding 276
 - configuring general properties 279
- Event Viewer 270
- EventDateTime parameter 311
- EventHistory table 150, 299
- events
 - accessing information about 276
 - configuring 275
 - Runtime database 142
 - triggering in InTouch 313
 - triggering in Visual Basic 313
- EventTag parameter 309, 311, 312
- exporting
 - configuration information 103
- external detectors
 - configuring 284
- F**
- FALSE 71, 72
- fast load imports 167
- filter
 - applying 40
 - removing or disabling 41
- filtering
 - tags in details pane 40
- frequency 61
- G**
- Galaxy 315
- general properties
 - configuring for analog tags 48
 - configuring for discrete tags 66
 - configuring for event tags 279
 - configuring for I/O Servers 128
 - configuring for IDASs 120
 - configuring for string tags 73
 - configuring for topics 133
- generic SQL actions
 - configuring 288
- generic SQL detectors
 - configuring 284
- H**
- headroom tags 83
- Historian Database Export/Import Utility
 - about 103
- Historian I/O Server
 - starting and stopping 27, 28
- history blocks
 - adding from prior versions 156
 - backing up 155
 - creating 152
 - editing storage locations 153
 - importing data into 158, 164
 - managing 150
 - monitoring 34
 - refreshing list 152
 - rescanning 152
 - viewing details 151
 - viewing list 151
- Holding database 141
- imports 90

I

- I/O conversations 139
- I/O Server types
 - adding 126
 - configuring 125
 - deleting 127
 - editing properties for 125
- I/O Servers
 - adding 132
 - configuring 127
 - configuring general properties 128
 - configuring storage rules 129
 - data processing 137
 - data processing interval 137
 - deleting 132
 - failover 129
 - importing definitions 86, 90
 - inserting versioned data 180
 - redirecting to InTouch 130
- IDASs
 - adding 124
 - autonomous startup timeout 123
 - buffers 124
 - configuring 120
 - configuring general properties 120
 - connection timeout 124
 - deleting 125
 - failover 121
 - primary 121
 - tagname database imports 98
- import folders 166
- importing
 - configuration information 103
 - CSV data 164, 166
 - data dictionary 85
 - guidelines 183
- InitializeEx() method 310
- INSERT statements 157, 175
 - syntax 176
- inserting data
 - guidelines 183
- integral divisor 64
- interpolation
 - analog tags 50
- InTouch
 - ActiveEvent 303
 - importing history data 158

- importing tagname database 85
 - redirecting I/O Server data 130
 - triggering events 313
- InTouch History Importer 158
- InTouch nodes
 - importing 87
 - viewing associated tags 101
 - viewing properties 99
- InvokeEventAtTimeEx() method 311
- InvokeEventEx() method 311
- IPX/SPX 259
- IsConnected method 312

L

- late data 137
- license information
 - refreshing 250
 - viewing 247
- licensing
 - viewing status 263
- limit
 - for summaries 296, 301
- limit names 56, 58
 - configuring 60
- limit type 57, 58
- limits 57, 58
 - adding 58
 - configuring for analog tags 56
 - editing 58
 - for a storage location 154
 - for summaries 296, 301
 - priority 57, 58
- linear scaling 53
- local replication server 188
- logins
 - adding 230
 - managing 229
 - viewing properties 230
 - Wonderware Historian 246
 - Wonderware Historian registration 21

M

- Management Console 17
 - about 24
 - viewing status information 34
- memory
 - future tags 82
 - management 152

- menu commands
 - System Management Console 42
 - message logs
 - administering 269
 - monitoring 269
 - message pairs 66
 - adding 72
 - configuring 70
 - editing 71
 - viewing 70
 - messages
 - status 265
 - Microsoft Management Console (MMC) 16
 - Microsoft SQL Server
 - administrative tools 44
 - authentication mode 227
 - Configuration Editor 37
 - e-mail actions 290
 - mixed mode 227
 - model view 315
 - browsing 322
 - replication 317
 - representation 315
 - modification tracking
 - Runtime database 142
 - turning on or off 254
 - viewing changes 254
 - monitoring
 - client connections 268
 - data acquisition 266
 - message logs 269
 - status information 34
 - system 261
 - system tags 271
 - .MSC file 20
- N**
- named pipes 259
 - namespace 315
 - naming scheme 193
 - network protocol
 - changing 259
- O**
- object permissions
 - setting 239
 - objects 317
 - OLE DB provider
 - monitoring status 265
 - original data
 - inserting 179
- P**
- passwords
 - managing 242
 - Performance Logs and Alerts 272
 - permissions
 - managing 238
 - setting for object 239
 - setting for statements 241
 - private groups 79
 - processing interval 137
 - properties
 - viewing in the console 39
 - protocols 128, 266
 - changing 259
 - public groups 79
- Q**
- quality 302
- R**
- raw value 53, 225
 - real-time data
 - inserting 178
 - registration
 - deleting 23
 - editing 23
 - Wonderware Historians 20
 - reinitialization
 - topics 139
 - RemoveEventTag() method 312
 - replication
 - configuring 319, 320
 - enabling at runtime 321
 - naming scheme 193
 - security 190
 - simple 199, 200, 202, 203
 - store-and-forward 192
 - replication group
 - adding 208
 - creating for multiple servers 212
 - deleting 211
 - editing 210

- replication schedules
 - adding 204
 - deleting 208
 - editing 206
 - replication server
 - about 188
 - deleting 199
 - editing 197
 - report
 - Runtime database 258
 - resolution 282, 294
 - restoring databases 148
 - retrieval
 - monitoring status 265
 - roles
 - adding users 237
 - managing 235
 - viewing for a database 235
 - rollover value 51
 - rule
 - managing 149
 - Runtime database 141
 - backing up 145
 - changing properties 143
 - managing 142, 144
 - viewing report 258
- S**
- scaling 53
 - scan rate
 - for event tags 281, 284
 - schedule detectors
 - configuring 283
 - search 297
 - security
 - ActiveEvent 304
 - authentication mode 227
 - managing 227
 - managing logins 229
 - managing passwords 242
 - replication 190
 - roles
 - adding users 237
 - managing 235
 - viewing 235
 - setting permissions 239, 241
 - users
 - adding 236
 - adding to roles 237
 - managing 235
 - viewing 235
 - Windows groups 244
 - Wonderware Historian registration 21
 - server groups 19
 - adding 19
 - creating in console 19
 - deleting 19
 - registered servers 24
 - renaming 19
 - simple replication 200, 201
 - deleting 203
 - editing 202
 - snap-in 16
 - snapshot actions
 - configuring 287
 - snapshot files 179
 - specific value detectors
 - configuring 281
 - SQL Server Enterprise Manager 44
 - SQL Server Service Manager 46
 - statement permissions
 - setting 241
 - status
 - subsystems 264
 - viewing in Management Console 34
 - status bar 35
 - storage
 - configuring for analog tags 53
 - configuring for discrete tags 67
 - configuring for string tags 74
 - managing 141
 - tagname database imports 96, 97
 - storage locations
 - history blocks 153
 - path 151, 154
 - storage rate 54
 - storage rules
 - configuring for I/O Servers 129
 - configuring for topics 134
 - storage subsystem
 - monitoring status 265
 - store-and-forward 121
 - data chunk size 123
 - duration 123
 - interval 123
 - replication 189, 192

- stored procedures
 - managing 149
 - string tags
 - adding 76
 - configuring 73
 - configuring acquisition 51
 - configuring general properties 73
 - configuring storage 74
 - deleting 79
 - summaries
 - configuring for analog tags 60
 - viewing tag properties 301
 - summary actions
 - configuring 293
 - summary data
 - viewing 300, 301
 - summary date 302, 303
 - summary history
 - disk space 150
 - viewing 302
 - summary operations
 - adding for event 294
 - adding tags 295
 - summary tags
 - adding 213, 220
 - deleting 223
 - editing 221
 - source tags 215, 218, 226
 - viewing details 224
 - SummaryHistory table 150
 - swinging door deadband 55, 97, 131, 136
 - system
 - monitoring 261
 - system driver
 - monitoring status 265
 - system tags 271
 - System Management Console
 - about 16
 - areas of 17
 - closing 44
 - creating items 39
 - creating server groups 19
 - deleting items 39
 - filtering tags 40
 - menu commands 42
 - starting 17
 - using 18
 - viewing historized attributes 321
 - viewing properties 39
 - system parameters
 - adding 251
 - editing 251
 - system status
 - monitoring 34, 262
 - system tags
 - monitoring 271
 - system-wide properties
 - managing 247
- ## T
- tables
 - managing 149
 - tag
 - replication 199
 - tag count 248, 249, 263
 - tag definitions
 - copying 78
 - Tag Finder 297
 - tag groups
 - about 79
 - adding 80
 - adding tags 81
 - deleting 82
 - renaming 81
 - tag importer
 - about 85
 - before importing 86
 - DDE I/O Servers 90
 - duplicate addresses 88
 - duplicate tagnames 88
 - Holding database 90
 - import order 87
 - machine names 89
 - node tags 101
 - performing a re-import 91
 - performing an import 91
 - re-importing 89
 - topic names 88
 - viewing node properties 99
 - tag references
 - deleting 82
 - TagName parameter 311
 - Tagname.X file 100
 - importing 91

tags

- adding to a group 81
- adding to summary operation 295
- allocating memory 82
- configuring 47
- deleting 79
- filtering in details pane 40
- imported node 101
- importing definitions from InTouch 85
- information about 48
- organizing into groups 79
- searching for 297
- viewing summary properties 301

TCP port 191

TCP/IP 259

technical support 13

threshold

- for storage 154
- IDAS 122

tier-2 historian

- about 188

time deadband 55, 69, 76, 96, 131, 136, 286

time interval

- for event tags 281, 284

timeout 133

- IDAS autonomous startup 123
- IDAS connection 124

toolbar buttons

- Configuration Editor 38

topic names

- importing 88

topics 52, 133, 266

- adding 137
- configuring 133
- configuring general properties 133
- configuring storage rules 134
- deleting 138
- reinitializing 139

transaction log

- viewing details 144

Transact-SQL 157, 175

TRUE 71, 72

U

Unicode 104

uniqueness string 93

unit of measure 49, 63, 64, 225

UPDATE statements 157, 175

- syntax 181

users 257

- adding 236
- adding to a role 237
- adding to Windows groups 244
- managing 235
- viewing for a database 235

V

value deadband 55, 97, 131, 136, 286

version

- Configuration Editor 41
- viewing for system 264

versioned data

- inserting 180

Visual Basic

- triggering events 313

W

Windows authentication 227

Windows operating system

- administrative tools 46

Windows security groups

- adding users 244

Windows Server 2003 90, 129

Windows Server 2008 129

Windows Vista 129

WinPlatform

- configuring replication 319

Wonderware Historian

- administering 15
- configuring startup options 29
- creating groups 19
- logins 246
- registration 20, 21, 23
- shutting down 30
- starting 25
- stopping 25
- system health 271

wwVersion parameter

- INSERTs 178