

Integration Objects'

Solution for retrieving and archiving OPC alarms and events

OPC Alarms & Events Archiver
Version 1.5 Rev.2

QUICK USER GUIDE

Integration Objects' OPC Alarms & Events Archiver Quick User Guide Version 1.5 Rev.2
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ABOUT THIS USER GUIDE

This guide is a quick step by step guide on how to install and use the OPC AE Archiver.

INSTALLATION PRE-REQUISITES

In order to properly run the OPC AE Archiver, install the OPC Core Components, which consist of all shared OPC modules including the DCOM proxy/stub libraries, the OPC Server Enumerator, .NET wrappers, etc.

INSTALLING OPC AE ARCHIVER

Execute the « IntegrationObjects'OPCAEArchiver_1.5.2» program on your machine using an administrator account. The installation wizard will take you through the different steps.

1. Go to **Start => Programs => Integration Objects => OPC Archiver => OPC Alarms & Events Archiver => OPC AE Archiver.**
2. Start the OPC AE Archiver

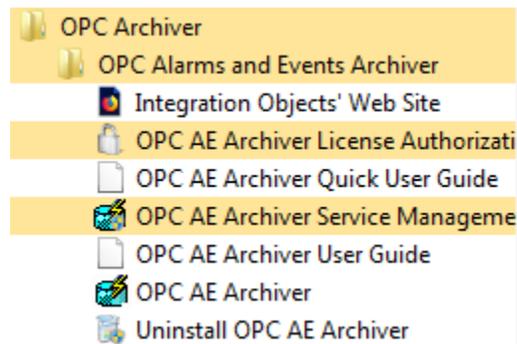


Figure 1: OPC AE Archiver Start Menu

CONNECTING TO AN OPC SERVER

To connect to an OPC AE server, select:

- **OPC Server**, then **Connect to server** in the Menu Bar
- Or use the **Connect to server** button in the Toolbar.

A dialog screen will appear:

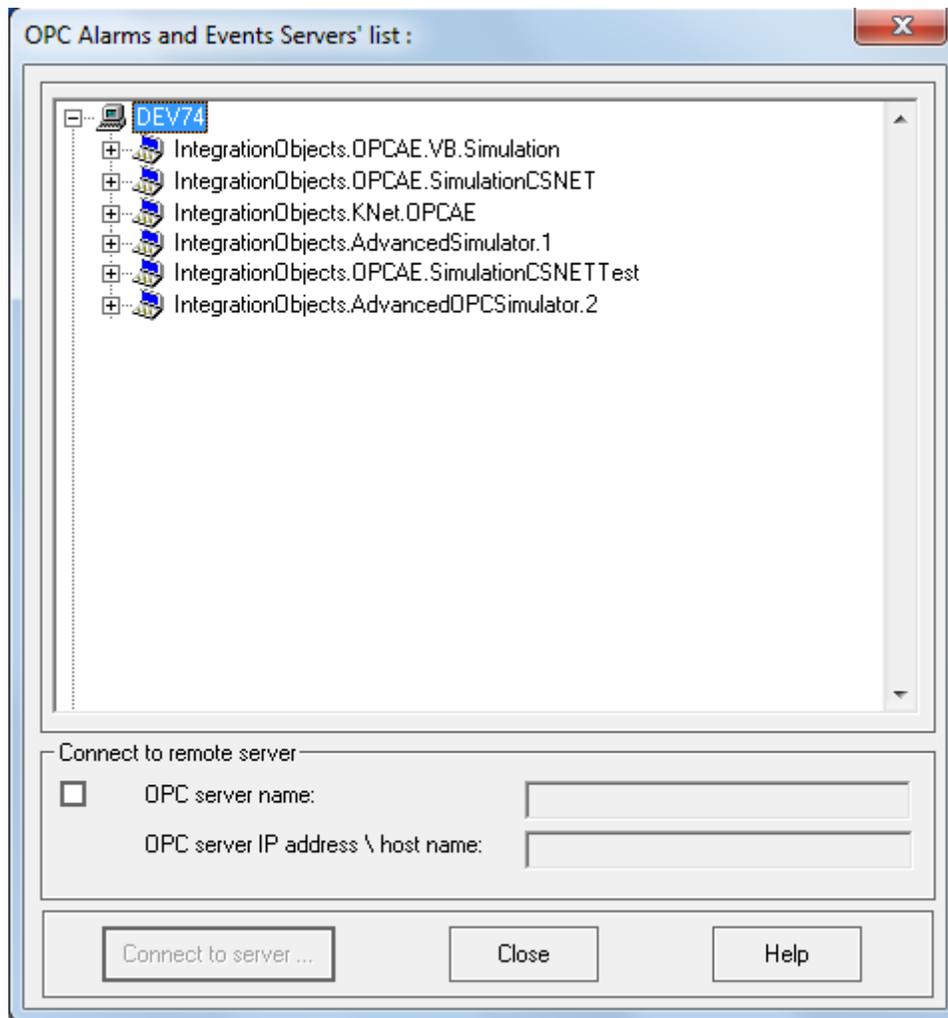


Figure 2: Connect to OPC AE Server

There are two options for adding a new OPC AE server connection.

The first option:

1. Double-click the OPC server you wish to connect to.

Second Option:

1. Type the server ProgID in the **OPC Server Name** Text Box.
2. Type the IP Address or the name of the host that contains the server in the **Host Name** Text Box.
3. Click **Connect To Server**.

The new connection will be added and the target server will be added to the connected servers list.

ADDING AN EVENT SUBSCRIPTION

To add a new event subscription to a connected OPC server, click on the server and select the **Create Event Subscription** menu item.

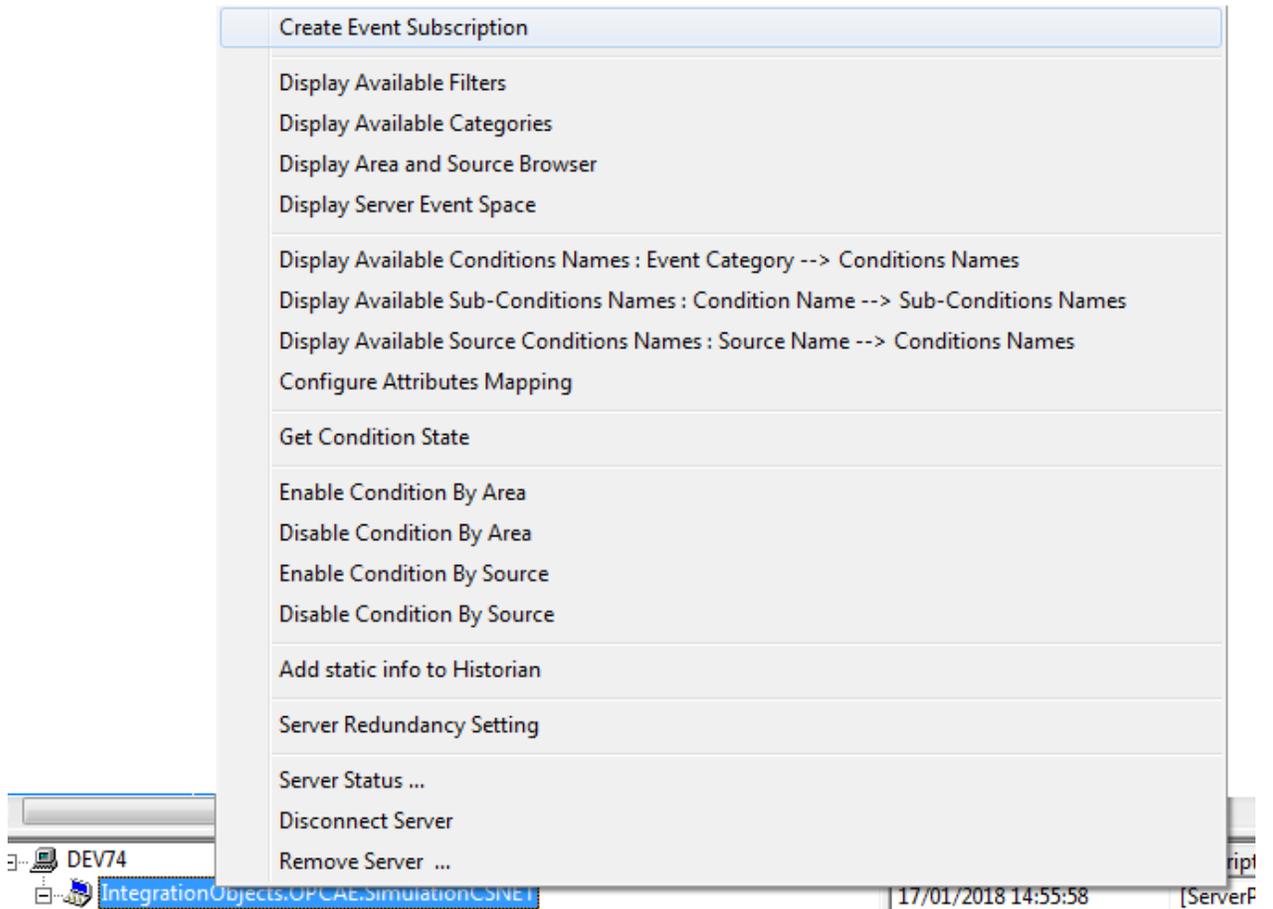


Figure 3: Create Event Subscription Menu Item

The dialog screen below will then appear:

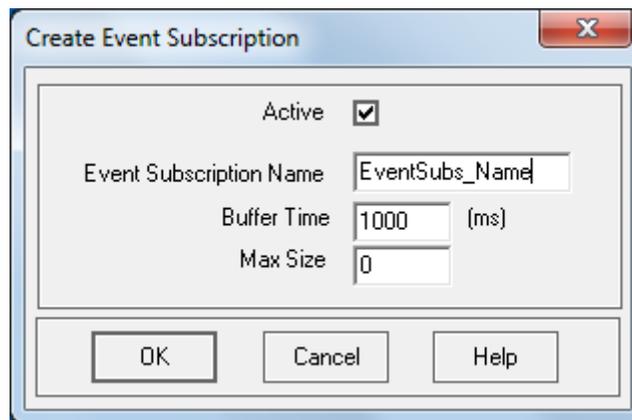


Figure 4: Create New Event Subscription

This allows the user to create a new event subscription to the OPC AE server. The user has to fill out the different properties of the subscription:

- **Active:**
 - Checked if the event subscription is to be created active.
 - Unchecked if the event subscription is to be created as inactive. If the subscription is inactive, then the server will not send event notifications to the client based on the subscription, and has no responsibility to buffer or maintain the event notifications. Thus, event notifications may be lost.
- **EventSubscription Name:** The name to be associated with the event subscription.
- **Buffer Time:** The requested buffer time. The buffer time is in milliseconds and tells the server how often to send event notifications.
- **Max Size:** The requested maximum number of events that will be sent in a single callback. A value of 0 means that there is no limit to the number of events that will be sent in a single callback.

CREATING AN ADO ARCHIVER

To add a new ADO Historian, select:

- **Transfer, Config New Historian**, and then **ADO** in Menu bar.
- **Create ADO Historian** button in Toolbar.

A dialog screen appears: **(OLE DB Data Link)**

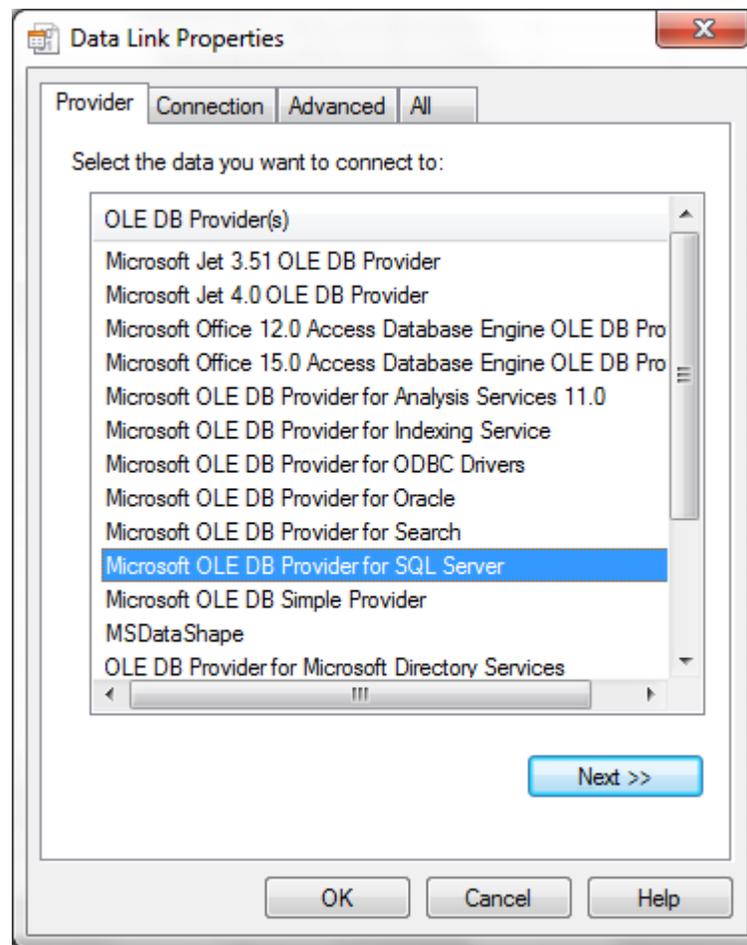


Figure 5: Add New Historian

To add a new ADO Historian, choose the provider to be used, and then press the **Next** button. A dialog screen appears:

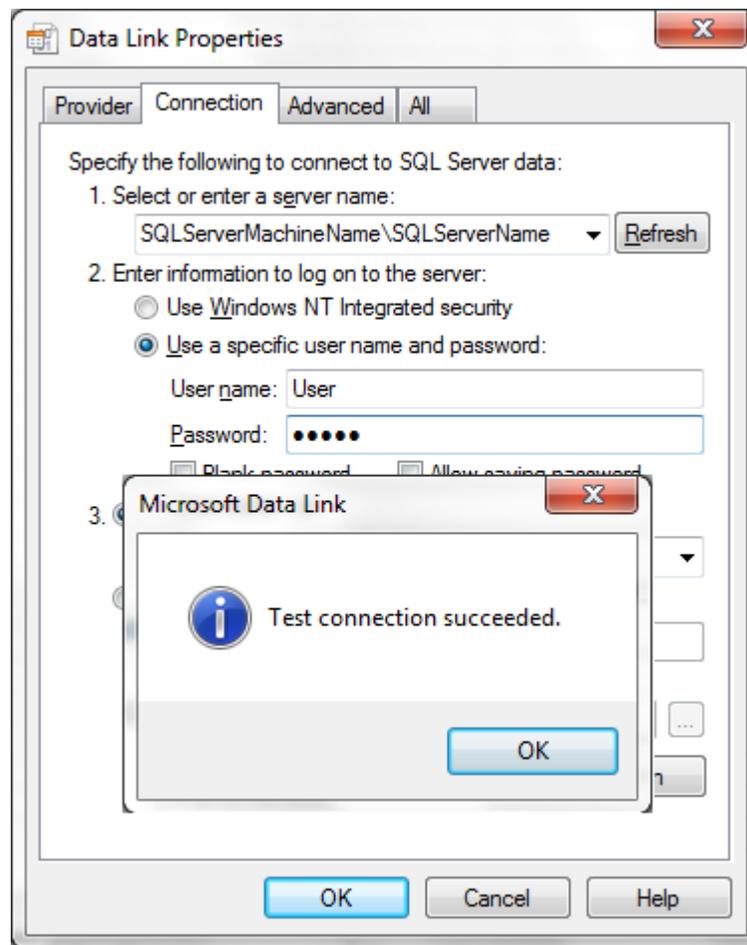


Figure 6: Testing New Historian

After selecting the type of provider to use, configure the connection parameters to be used by entering the necessary information. You can use the **Test Connection** button to test the specified connection parameters. After this, press the **OK** button and a dialog screen will appear:



Figure 7: New Historian

At this stage, this dialog screen allows users to:

1. View the connection string previously configured.
2. Type the login name and password to be used with this ADO Historian.
3. A name to identify this new ADO Historian. This name must be unique.

When the user presses the **Apply** Button, a dialog screen will appear:

AE Historian Building : Step 1

Use separate table for each Event Subscription.

Use Primary Key

Use default table and fields names.

Setting table and fields names: New table. Existing table.

Table name	<input type="text" value="IOOPCEventSubs_1Table"/>	
Machine field name	<input type="text" value="MachineName"/>	<input type="checkbox"/>
Server progID field name	<input type="text" value="ServerProgID"/>	<input type="checkbox"/>
Server Address field name	<input type="text" value="ServerNodeName"/>	<input type="checkbox"/>
Subscription field name	<input type="text" value="SubscriptionName"/>	<input type="checkbox"/>
Source field name	<input type="text" value="SourceName"/>	<input checked="" type="checkbox"/>
Event Time field name	(d/h) <input type="text" value="EventTime"/>	<input checked="" type="checkbox"/>
	(ms) <input type="text" value="EventTime_MS"/>	
Severity field name	<input type="text" value="Severity"/>	<input type="checkbox"/>
Message field name	<input type="text" value="Message"/>	<input type="checkbox"/>
Quality field name	<input type="text" value="Quality"/>	<input type="checkbox"/>
Condition field name	<input type="text" value="Conditions"/>	<input type="checkbox"/>
Sub-Condition field name	<input type="text" value="SubCondition"/>	<input type="checkbox"/>
Event Mask field name	<input type="text" value="Mask"/>	<input type="checkbox"/>
New State field name	<input type="text" value="NewState"/>	<input type="checkbox"/>
Event Type field name	<input type="text" value="EventType"/>	<input type="checkbox"/>
Event Category field name	<input type="text" value="EventCategory"/>	<input type="checkbox"/>
ACK required field name	<input type="text" value="AckReq"/>	<input type="checkbox"/>
Active Time field name	(d/h) <input type="text" value="ActiveTime"/>	<input type="checkbox"/>
	(ms) <input type="text" value="ActiveTime_MS"/>	
Cookie field name	<input type="text" value="Cookie"/>	<input type="checkbox"/>
ActorID field name	<input type="text" value="ActorID"/>	<input type="checkbox"/>
Attributes field name	<input type="text" value="Attributes"/>	<input type="checkbox"/>

Use separate attributes columns

Figure 8: Configuring New Historian

This dialog screen provides the user with the ability to manage the table and field names for the newly created historian.

At this step, choose the storage mode to be used by the Archiver:

- Use one historian table for each event subscription: To use this option, the user has to select the **“Use separate table for each Event Subscription”** option. Then, click the **Apply** button.
- Store all alarms in the same historian table. In this case, you can choose one of the following methods:
 - Configure a new table: To configure the new table to be created, you can:
 - Use the default table and field names. **“Use default table and field names”** option should be checked.
 - Set its own table and field names. **“Setting table and fields names”** and **“New table”** options should be checked.
 - Use an existing table. **“Setting table and fields names”** and **“Existing table”** options should be checked.



When mapping your fields, if you check “Use separate attributes columns” check button, the AE Archiver will create separate columns in the designated historian table to store the vendor specific attributes.



When mapping the AE Archiver fields with the existing table fields, you should respect the following table:

Field Name	Required SQL Type
Machine name	Varchar
Server name	Varchar
Server address	Varchar
Event Subscription name	Varchar
Source name	Varchar
EventTime	Date/ time
EventTime millisecond	Integer
Severity	Integer
Message	Varchar
Quality	Varchar

Condition	Varchar
SubCondition	Varchar
Mask	Varchar
New state	Varchar
EventType	Varchar
Event Category	Varchar
Ack required	Varchar
ActiveTime	Date/ time
ActiveTime_MS	Integer
Cookie	Varchar
ActorID	Varchar
Attributes	Varchar

Table 1: Table Fields And Types

AE Historian Building : Step 1

Use separate table for each Event Subscription.

Use Primary Key

Use default table and fields names.

Setting table and fields names : New table. Existing table.

Table name: IOOPCEventSubs_1Table

Machine field name: MachineName

Server progID field name: [Empty]

Server Address field name: [Empty]

Subscription field name: [List: MachineName, ServerProgID, ServerNodeName, SubscriptionName, SourceName, EventTime, EventTime_MS, Severity, Message, Quality, Conditions, SubCondition, Mask, NewState]

Source field name: [Empty]

Event Time field name (d/h): [Empty] (ms): [Empty]

Severity field name: [Empty]

Message field name: [Empty]

Quality field name: [Empty]

Condition field name: [Empty]

Sub-Condition field name: [Empty]

Event Mask field name: [Empty]

New State field name: [Empty]

Event Type field name: [Empty]

Event Category field name: [Empty]

ACK required field name: [Empty]

Active Time field name (d/h): [Empty] (ms): [Empty]

Cookie field name: [Empty]

ActorID field name: [Empty]

Attributes field name: [Empty]

Use separate attributes columns

Apply Cancel

Figure 9: Setting Table and Field Names- Step 1

- If you want to use the primary key when the table is created, check the **Use Primary Key** button. Uncheck this button to deactivate this option.
- If you choose to use the “**Use Primary Key**” option, you have to select the list of fields that compose the primary key.



If the user checks the “Use Primary Key” option, the list of fields to be used as the primary key must define a unique row for each alarm.

Example: If the user uses just a SourceName as a Primary Key, he will get a database error for a duplicate value in Primary Key.

- Finally, click the **Apply** button.

Once confirmed, the new ADO Historian is created and the storage table will be created.

The second step consists of the setup of the AE Server static information tables:

Figure 10: Setting Up Tables- Step 2

This table will contain all connected AE Servers.

AE Historian Building : Step 3

Server Table

Server ID	ServerID
Server Address	ServerNodeName
Server ProgID	ServerProgID

Server Structures Tables

Area Table

Table Name	AreaTable
Server ID	ServerID
Area Name	AreaName

Sub-Area Table

Table Name	SubAreaTable
Server ID	ServerID
Area Name	AreaName
SubArea Name	SubAreaName

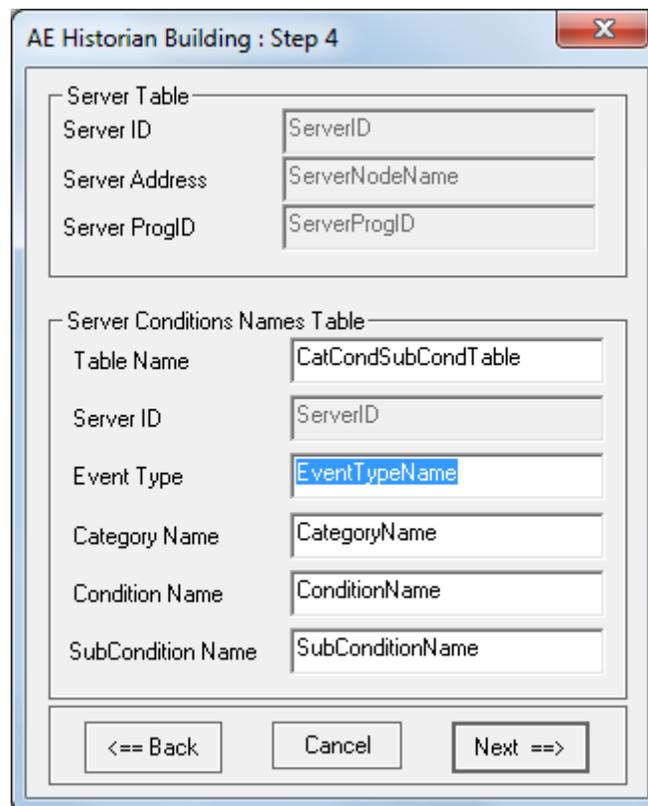
Event Source Table

Table Name	SourceTable
Server ID	ServerID
Area Name	AreaName
Source Name	SourceName

<== Back Cancel Next ==>

Figure 11: Setting Up Tables- Step 3

These tables will contain the server structure (area, sub area and sources) for each connected AE Server.



AE Historian Building : Step 4

Server Table

Server ID: ServerID

Server Address: ServerNodeName

Server ProgID: ServerProgID

Server Conditions Names Table

Table Name: CatCondSubCondTable

Server ID: ServerID

Event Type: EventTypeName

Category Name: CategoryName

Condition Name: ConditionName

SubCondition Name: SubConditionName

<== Back Cancel Next ==>

Figure 12: Setting Up Tables- Step 4

This table will contain the list of available categories, condition names and SubCondition names for each connected AE Server.



AE Historian Building : Step 5

Server Table

Server ID: ServerID

Server Address: ServerNodeName

Server ProgID: ServerProgID

Server Conditions Names Table

Table Name: EventAttributeTable

Server ID: ServerID

Event Type: EventTypeName

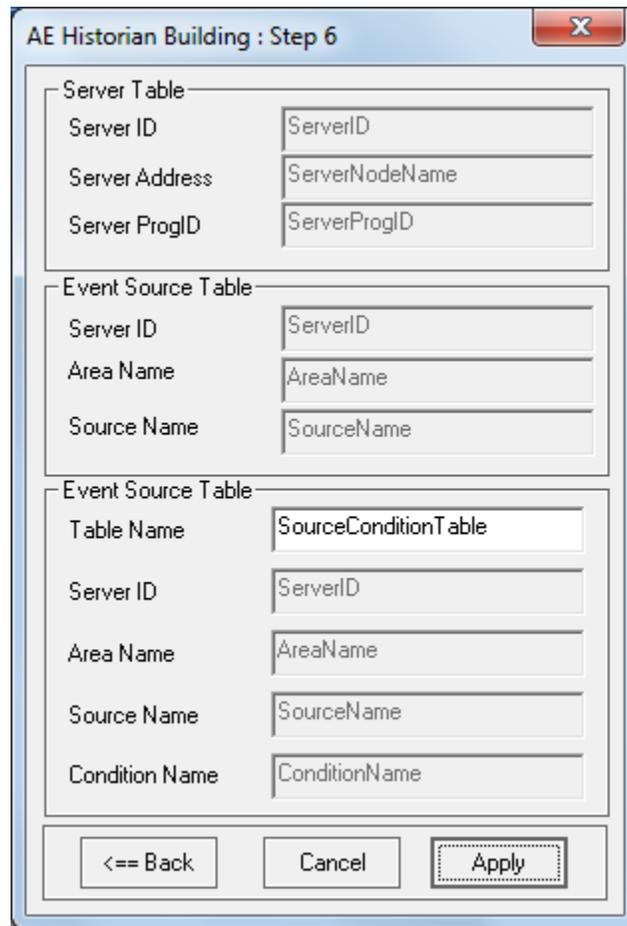
Category Name: CategoryName

Event Attribute Name: EventAttribute

<== Back Cancel Next ==>

Figure 13: Setting Up Tables- Step 5

This table will contain the list of available event attributes.



AE Historian Building : Step 6

Server Table

Server ID: ServerID

Server Address: ServerNodeName

Server ProgID: ServerProgID

Event Source Table

Server ID: ServerID

Area Name: AreaName

Source Name: SourceName

Event Source Table

Table Name: SourceConditionTable

Server ID: ServerID

Area Name: AreaName

Source Name: SourceName

Condition Name: ConditionName

<== Back Cancel Apply

Figure 14: Setting Up Tables- Step 6

This table will contain the list of available Source condition names for each connected AE Server.

CREATING AN ODBC ARCHIVER

To add a new ODBC Historian, select:

- **Transfer, Config New Historian**, and then **ODBC** in the Menu bar.
- **Create ODBC Historian** button in the Toolbar.

A dialog screen will appear:

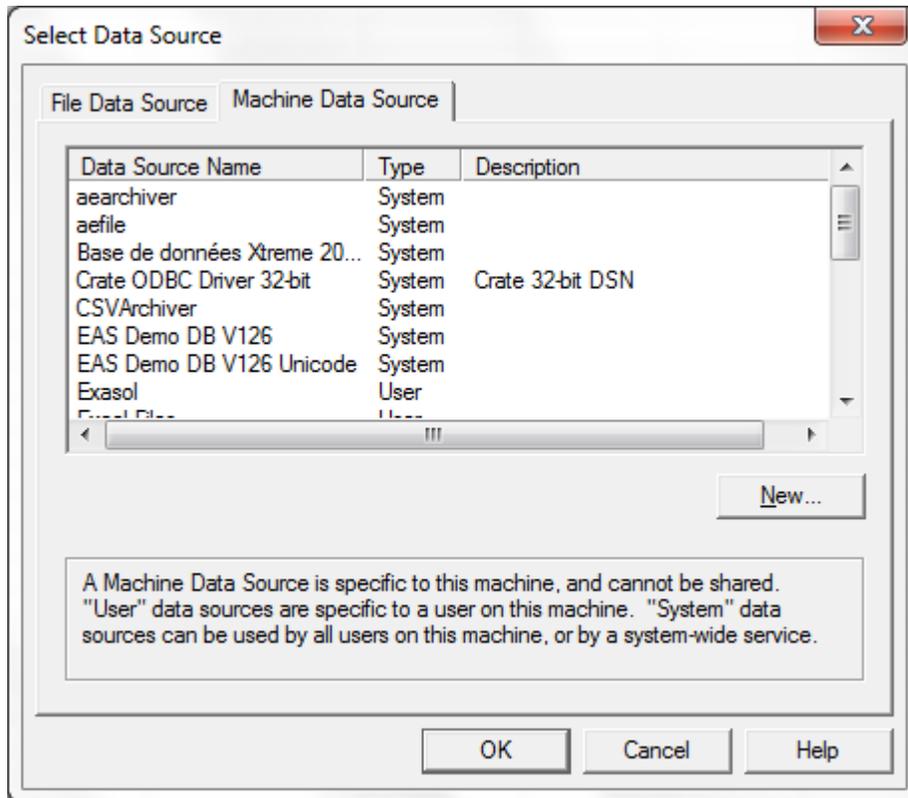


Figure 15: Select Data Source

To add a new ODBC Archiver, choose the Data Source Name to use with this new database, and then press the **Next** button. A dialog screen appears:



Figure 16: Logging into New ODBC Historian

This dialog screen allows the user to:

4. View the connection string
5. Type the login name and password to be used with this ODBC Database.
6. Create a name to identify this new ODBC Database. The name must be unique.



The connection to Cassandra DB can be successfully established via ODBC using the “ODBC;DSN=Cassandra;” connection string.



Figure 17: Logging into Cassandra Historian

Click the **Apply** button and the following dialog screen will appear:

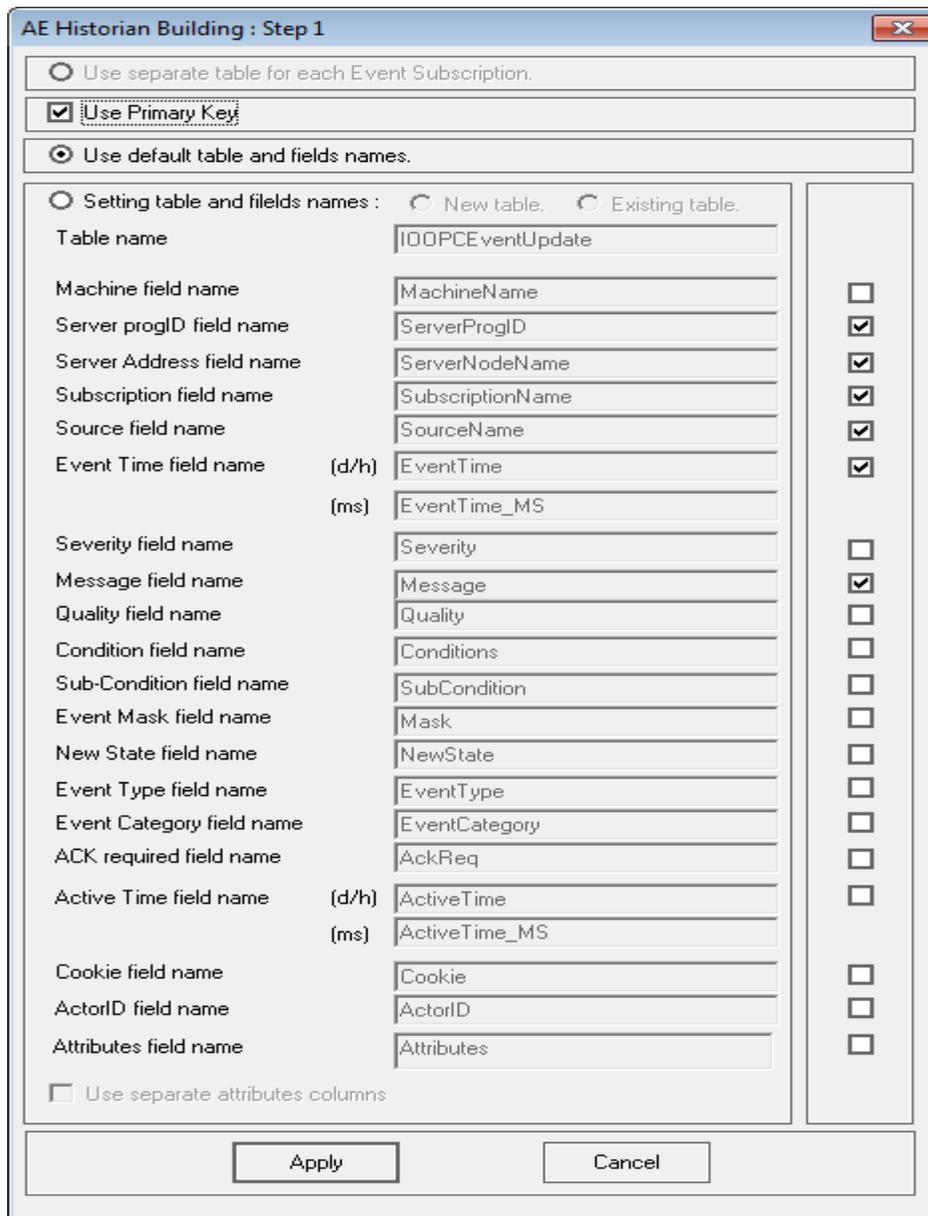


Figure 18: Manage Table and Field Names

This dialog screen provides the user with the ability to manage the table and field names for the newly created ODBC Connection.

In this step, the user has to choose the storage mode to be used by the Archiver:

- Use one historian table for each event subscription: To use this option, the user has to select the **“Use separate table for each Event Subscription”** option. Then, click the **Apply** button.
- Store all alarms in the same historian table: To use this option, the user can choose one of the following methods-
 - Configure a new table: the user can-

- Use the default table and field names. **“Use default table and fields names”** option should be checked.
- Or set its own table and field names. **“Setting table and fields names”** and **“New table”** options should be checked.
- Use an existing table. **“Setting table and fields names”** and **“Existing table”** options should be checked.



When mapping your fields, if you check **“Use separate attributes columns”** check button, the AE Archiver will create separate columns in the designated historian table to store the vendor specific attributes.



When mapping the AE Archiver fields with the existing table fields, respect the following table:

Field Name	Required SQL Type
Machine name	Varchar
Server name	Varchar
Server address	Varchar
Event Subscription name	Varchar
Source name	Varchar
EventTime	Date/ time
EventTime millisecond	Integer
Severity	Integer
Message	Varchar
Quality	Varchar
Condition	Varchar
SubCondition	Varchar
Mask	Varchar
New state	Varchar
EventType	Varchar
Event Category	Varchar

Ack required	Varchar
ActiveTime	Date/ time
ActiveTime_MS	Integer
Cookie	Varchar
ActorID	Varchar
Attributes	Varchar

Table 2: Fields Names and Required Types

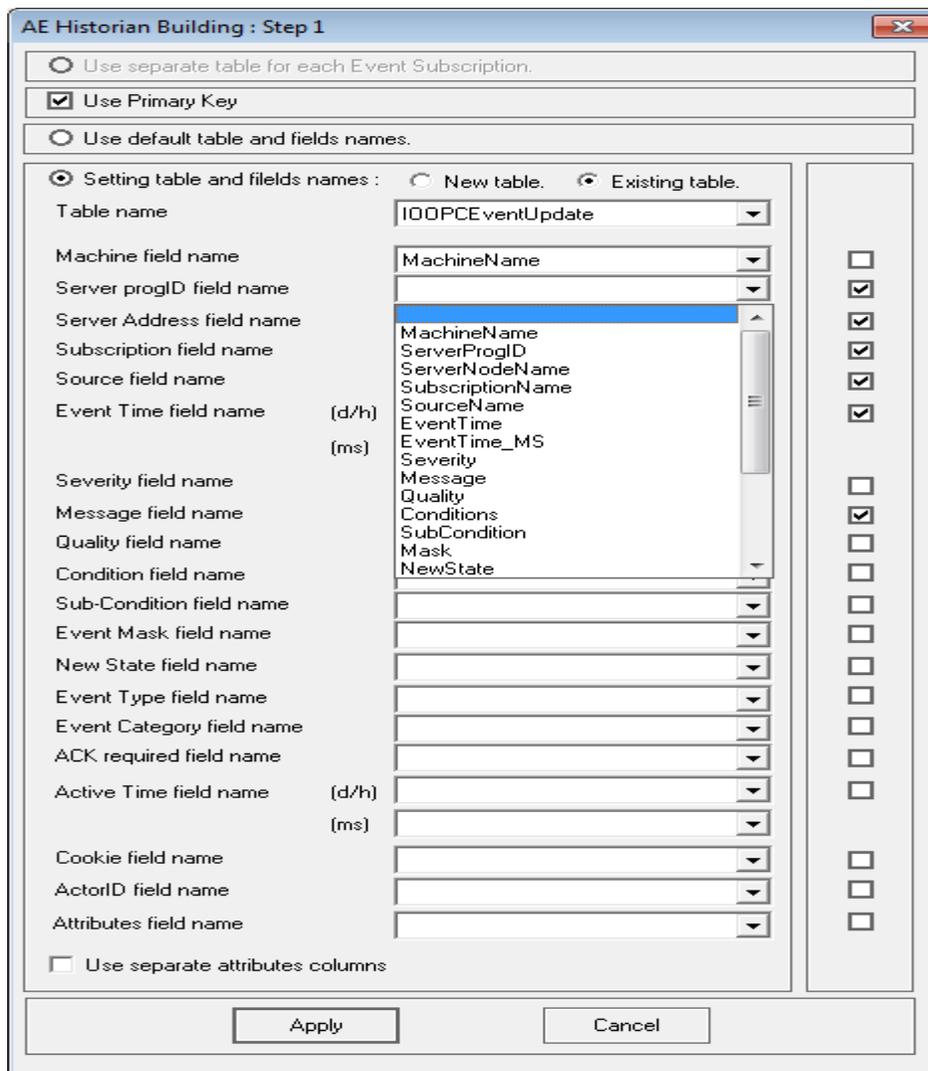


Figure 19: Setting Table Fields

- If you want to use the primary key when the table is created, check the **Use Primary Key** button. Uncheck this button to deactivate this option.
- If you choose to use the “**Use Primary Key**” option, select the list of fields that compose the primary key.



If the user chooses to use the Primary Key option, the list of fields to be used as the primary key must define a unique row for each alarm.

Example: If the user uses just a SourceName as the Primary Key, he will get a database error for duplicate value in the Primary Key.

- Finally, click the **Apply** button.

At this stage, the new ODBC Archiver is created and the Storage table will be installed. The second step, like with the Ado Archiver, consists of setting the server static information's tables.

CREATING A CSV ARCHIVER

To add a new CSV Historian, follow the steps below:

- Select **CSV** from **Transfer-> Config New Historian** Menu.

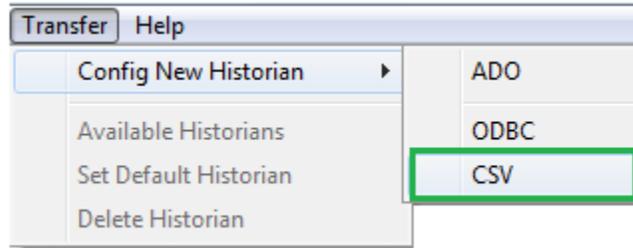


Figure 20: Select CSV Archiver

- Select Machine Data Source from **Select Data Source** window and then click the **New** button.

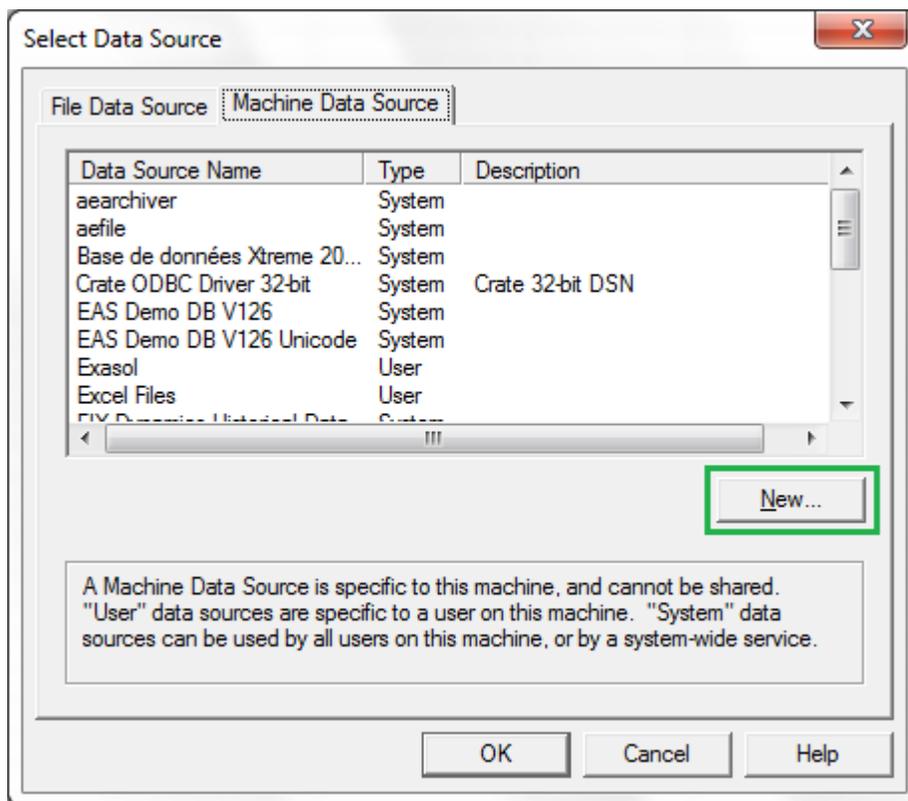


Figure 21: Create New Data Source

- Create a new **System Data Source** using **Microsoft Access Text Driver (*.txt, *.csv)**.

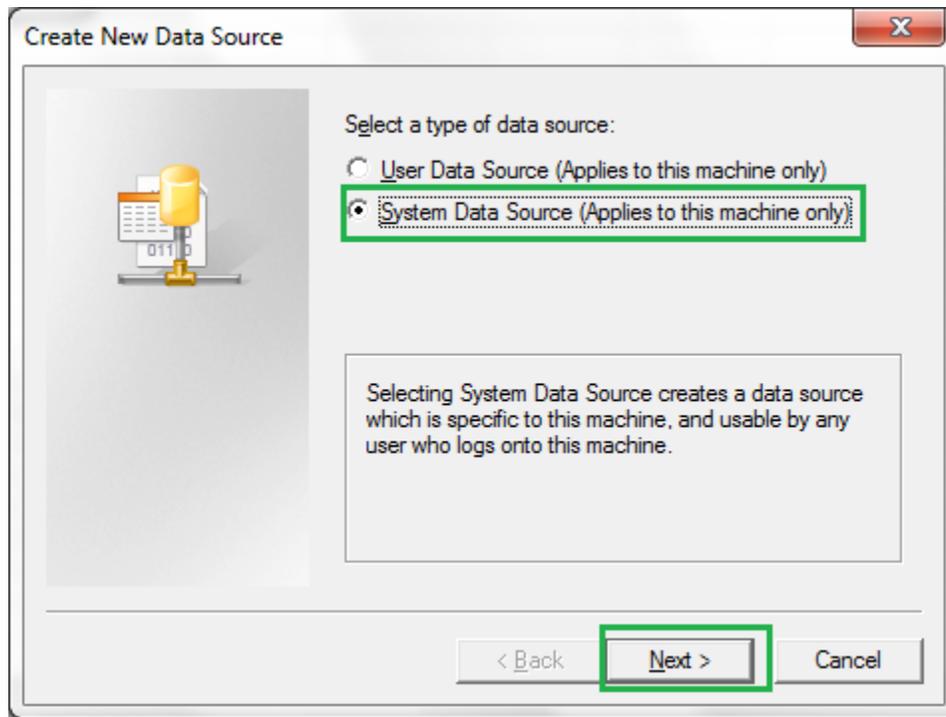


Figure 22: Select System Data Source

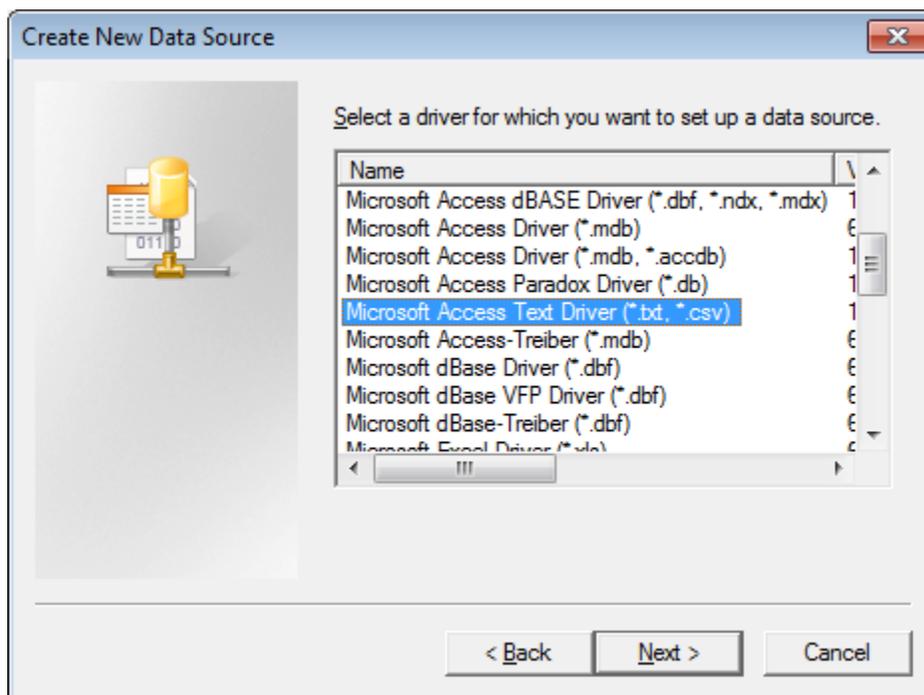


Figure 23: Select the CSV Data Source

- Click **Next** and then the **Finish** button.
- Enter the Data Source name and uncheck the “User Current Directory” checkbox to specify the CSV file directory in **ODBC Text Setup** window and click **OK** to save the changes.

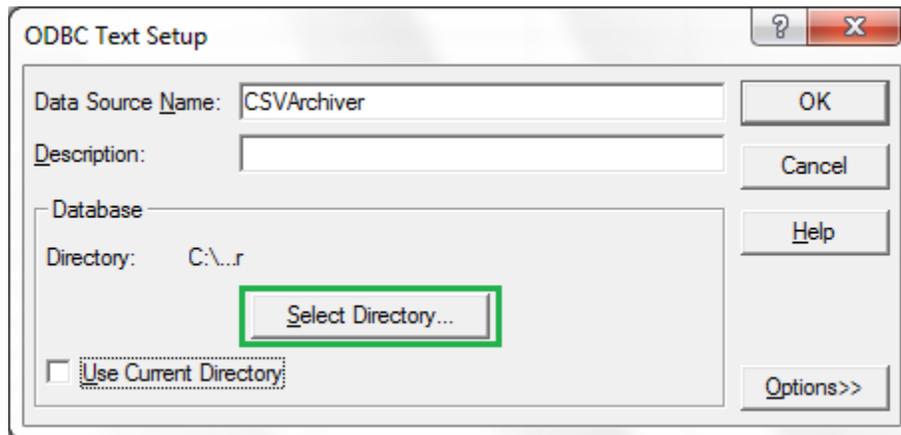


Figure 24: Data Source Parameters

- Select the CSV file directory

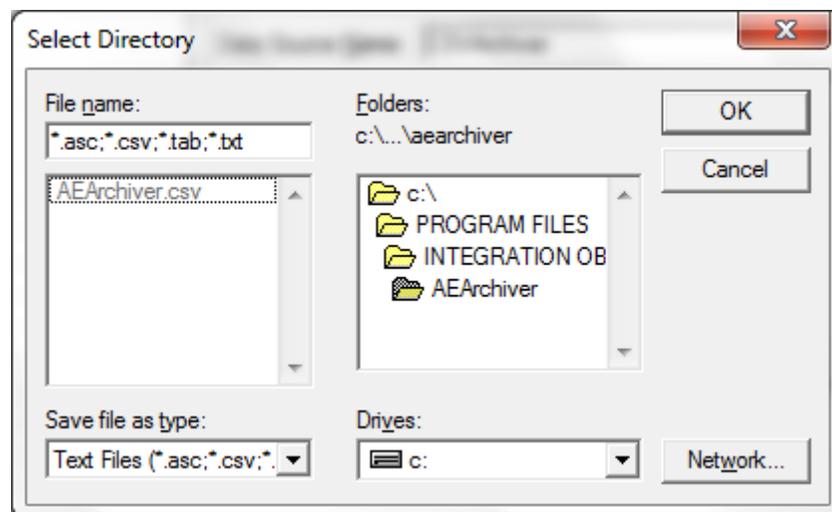


Figure 25: Select the CSV File Directory

- Once the Data Source is configured, select it and click the **OK** button.

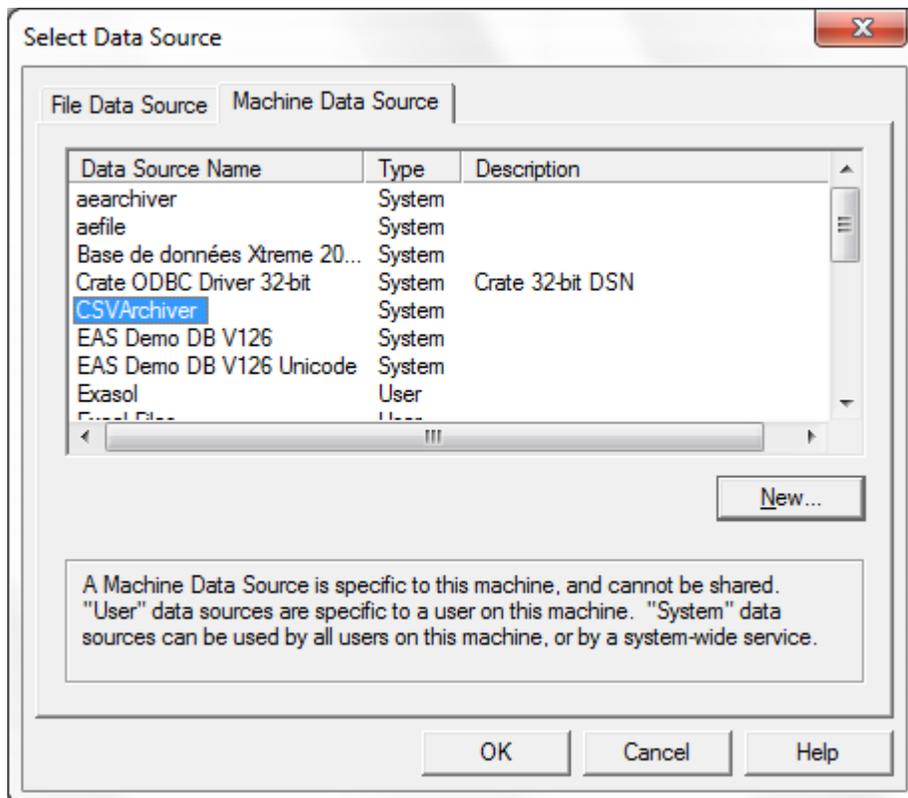


Figure 26: Select the Data Source

- Select the CSV file from the displayed window

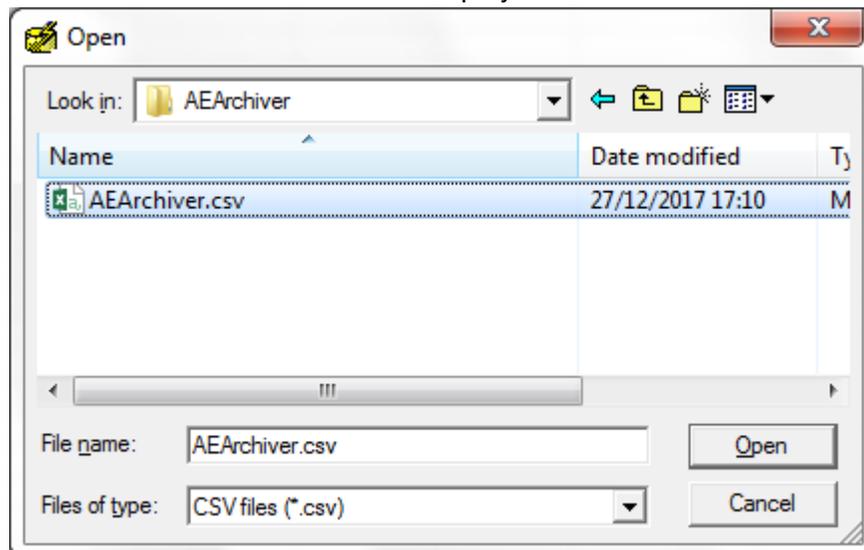


Figure 27: Select the CSV File

After specifying the CSV file, configure the archive process from the displayed **CSV Archiver Configuration** window:

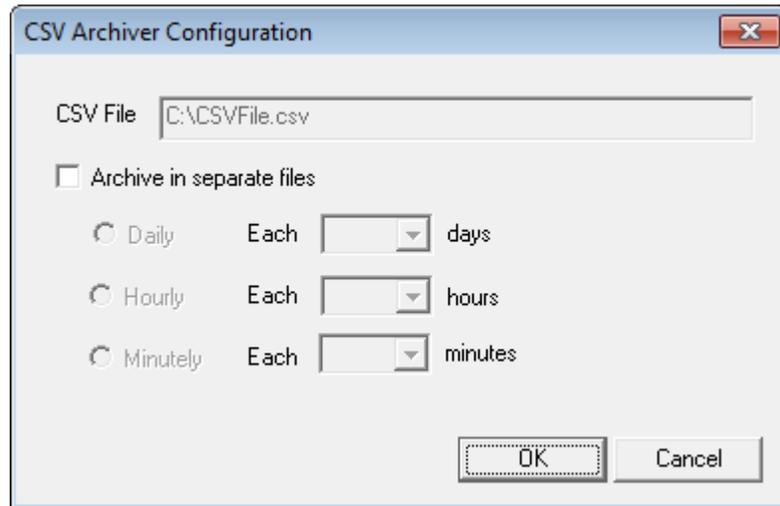


Figure 28: CSV Archiver Configuration

Parameter	Description	Default Value
CSV File	The CSV file full path	-
Archive in separate files	<p>Checked: Archive OPC alarms in separate CSV files according to the defined periodicity(Daily or Hourly or Minutely)</p> <p>Unchecked: the OPC alarms are stored in the specified CSV file.</p> <p>Once the size limit is reached the old CSV file is copied to an intermediate CSV file with incremental extension, before being overwritten.</p>	Unchecked
Daily	A new CSV file is created for each defined day period.	0 (day)
Hourly	A new CSV file is created for each defined hour period.	0 (Hour)
Minutely	A new CSV file is created for each defined minute period.	0 (Minute)

Table 3: CSV Archiver Configuration Parameters

- Once the CSV Configuration is done, click **OK** to proceed.
- Uncheck **Use Primary Key** from AE Historian Building: Step 1 window and then click the **Apply** button and proceed with the configuration steps.

AE Historian Building : Step 1

Use separate table for each Event Subscription.

Use Primary Key

Use default table and fields names.

Setting table and fields names : New table. Existing table.

Table name	IOOPCEventUpdate	
Machine field name	MachineName	<input type="checkbox"/>
Server progID field name	ServerProgID	<input checked="" type="checkbox"/>
Server Address field name	ServerNodeName	<input checked="" type="checkbox"/>
Subscription field name	SubscriptionName	<input checked="" type="checkbox"/>
Source field name	SourceName	<input checked="" type="checkbox"/>
Event Time field name	(d/h) EventTime	<input checked="" type="checkbox"/>
	(ms) EventTime_MS	
Severity field name	Severity	<input type="checkbox"/>
Message field name	Message	<input checked="" type="checkbox"/>
Quality field name	Quality	<input type="checkbox"/>
Condition field name	Conditions	<input type="checkbox"/>
Sub-Condition field name	SubCondition	<input type="checkbox"/>
Event Mask field name	Mask	<input type="checkbox"/>
New State field name	NewState	<input type="checkbox"/>
Event Type field name	EventType	<input type="checkbox"/>
Event Category field name	EventCategory	<input type="checkbox"/>
ACK required field name	AckReq	<input type="checkbox"/>
Active Time field name	(d/h) ActiveTime	<input type="checkbox"/>
	(ms) ActiveTime_MS	
Cookie field name	Cookie	<input type="checkbox"/>
ActorID field name	ActorID	<input type="checkbox"/>
Attributes field name	Attributes	<input type="checkbox"/>

Use separate attributes columns

Apply Cancel

Figure 29: Uncheck the User Primary Key Check Box

The OPC AE Archiver incorporates a configuration file “ConfigCSVFile.ini” which includes several parameters. These parameters have default settings and can be changed by editing the configuration file. To do so:

1. Open ConfigCSVFile.ini in a text editor.
2. Edit any of the parameters listed in the following tables:

File Setting	Description	Default Value
CSVFileMaxSize	The maximum CSV file size, in bytes. Once this size is reached during run-time, the CSV file is overwritten.	1048576*2 ~ 2 Mb (MegaByte)
ArchiveLast	TRUE: Old file is copied to an intermediate file with incremental extension, before being overwritten. FALSE: Any pre-existing CSV file is erased and overwritten at start-up.	FALSE
CSVListMaxSize	The maximum number of alarms to be collected before archiving them in the csv file	10

Table 4: INI CSV Configuration File Parameters



The user needs to set the newly created archiver as the default one in order to be able to start it.

RUNNING OPC AE ARCHIVER AS A SERVICE

If you did not already install the OPC AE Archiver service, you can install it by running the OPC AE Archiver Service Management using an administrator account:



Figure 30: Run the OPC AE Archiver Service Management

An icon appears in the tool tray at the right-hand side of the Task Bar.

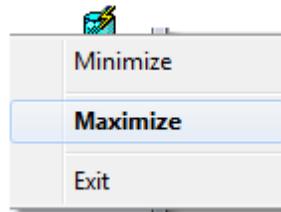


Figure 31: the OPC AE Archiver Service Management Tray Icon

To install the “OPC Alarms and Events Archiver service”, click on the “Install Integration Objects’ OPC Alarms and Events Archiver service” button.

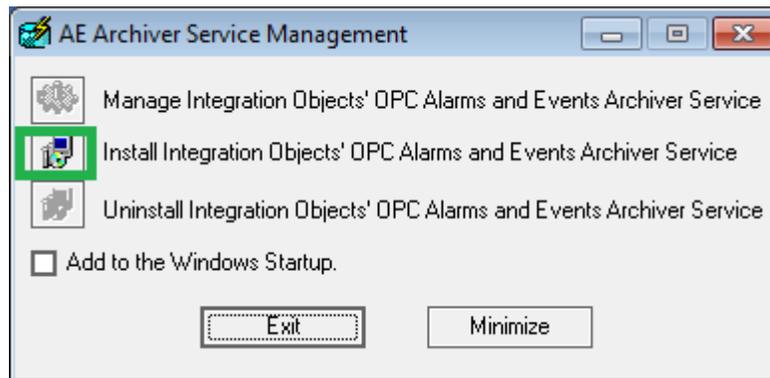


Figure 32: Install the OPC AE Archiver Service

In case the archiver is configured, run the OPC AE Archiver from the OPC AE Archiver start menu, make sure that the **Start Historian** button is started and then close the application.



Figure 33: Start the Archiver

Once the application is closed, the user can start the OPC AE Archiver Service from the Windows Services Manager.

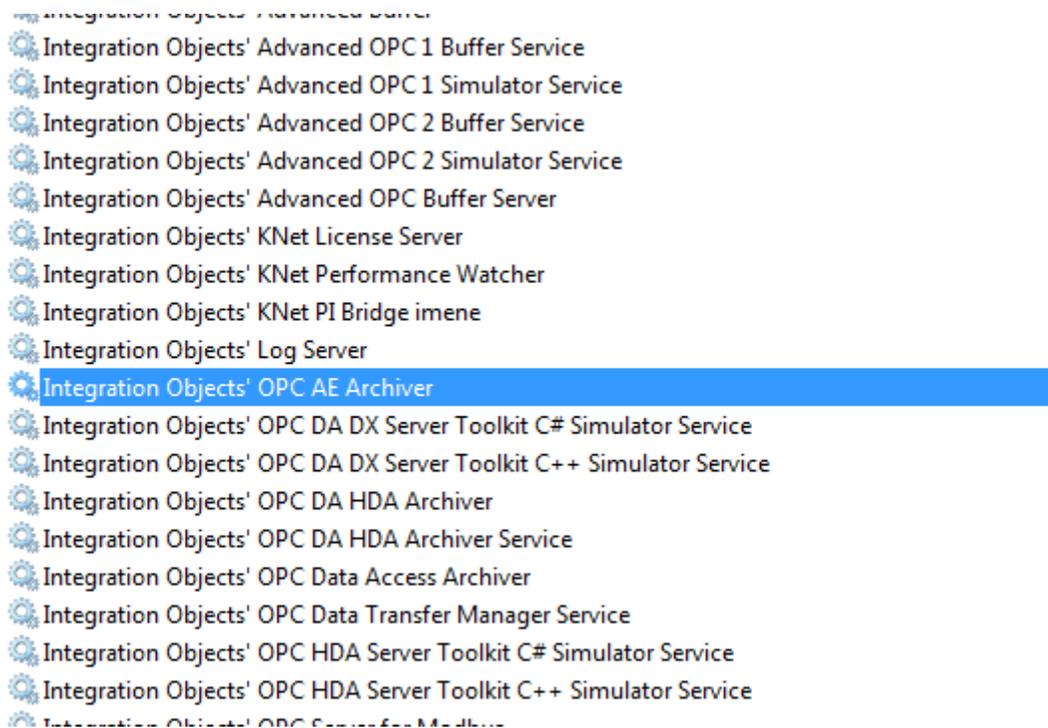
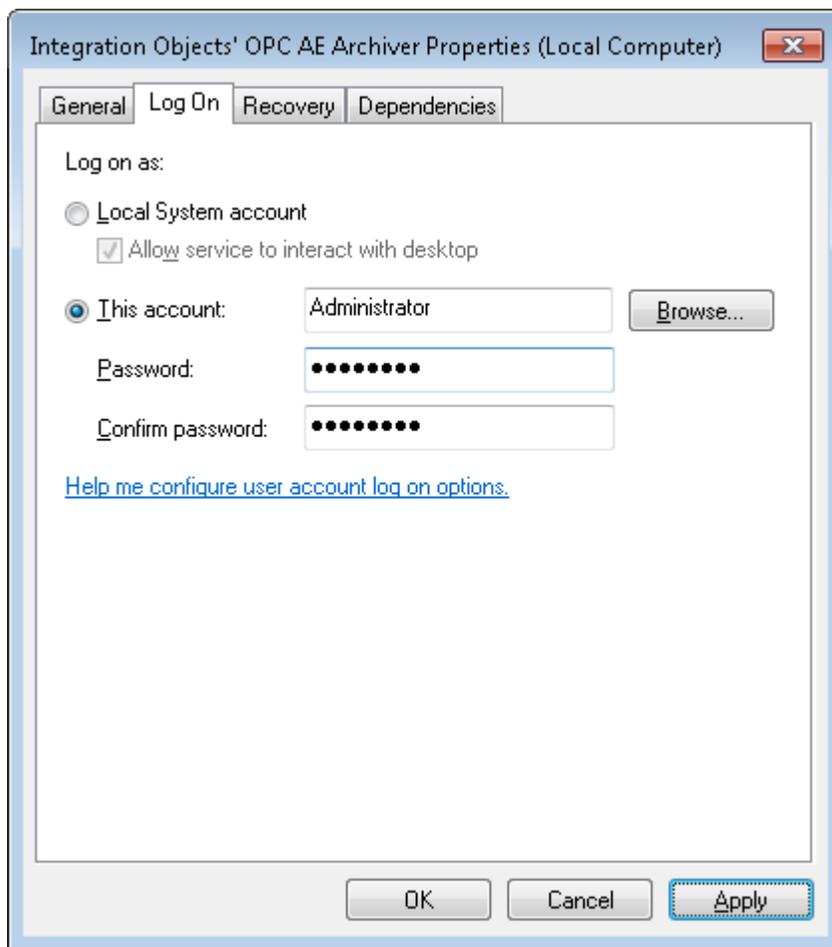


Figure 34: Start the OPC AE Archiver Service from Windows Services Manager

In case the OPC AE Archiver did not succeed to archive the OPC alarms & events when running as a service, follow the procedure below to change the service log on:

1. Open Windows Services panel
2. Go to Integration Objects' OPC AE Archiver service and stop it if it is running.
3. Right click on the Integration Objects' OPC AE Archiver service and select **Properties** from the displayed menu
4. Go to the Log On tab and configure it to use your user account. Make sure that the account that you are using is the same one used to log on to your computer.



5. Click **OK** to save your changes
6. Restart the OPC AE Archiver service and check if the data are successfully logged in the alarms table

For additional information on this guide, questions or problems to report, please contact:

Offices

- Americas: +1 713 609 9208
- Europe-Africa-Middle East: +216 71 195 360

Email

- Support Services: customerservice@integrationobjects.com
- Sales: sales@integrationobjects.com

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