KPIworks Gateway for OPC V1.00
Installation and User Guide

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Terms of Use

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Chapter One

About KPIworks Gateway for OPC

This chapter introduces KPIworks Gateway for OPC and describes how it is integrated into the KPIworks network.

It is included as an introduction to not only the product itself, but the documentation package as well. This manual contains an overview of the product, detailed installation instructions, and Gateway for OPC user instructions.

Getting Started

This manual contains procedural and conceptual information about KPIworks Gateway for OPC. It is written for System Administrators to install and maintain and also to provide them with a general knowledge of how the product works.

While it is not required that the user have any prior programming or marquee display experience, the user should understand basic Windows concepts.

While this guide exists primarily as a user guide, it also contains detailed information regarding the installation. The installation section takes you through installation procedures, setup instructions and general requirements.

Documentation Conventions

This document contains the following documentation conventions to help you navigate through the manual, obtaining a better understanding of the material.

Notes contain tips or reminders about procedural and conceptual information within the manual.

Cross-references provide you with a link to further information about the section of the document that you are currently reading.

Items noted pertain only to VisualPlant users.

Using the Toolbar

The Gateway for OPC toolbar allows you to quickly access menu items at the click of a button. The toolbar is located below the menu at the top of the screen.

 - Allows you to move up one folder level

 - Saves changes

- Allows for the addition of a new Device, Item, Event, Timed Item or Virtual Item.

 - Allows you to edit Devices, Items, Events, Timed Items, or Virtual Items by selecting the folder, selecting what you wish to edit from the right pane then clicking this icon.

 - Deletes the current device, item, event, timed item or virtual item.

 - Allows you to enter in text to search for an item by Device, Item, Event, Timed Item or Virtual Item.

 - Changes how you would like to display items in the right pane – Large icons, Small icons, List or Details

 - Launches online help file

KPIworks Gateway for OPC Features

KPIworks Gateway for OPC allows users to easily retrieve OPC hosted data items, perform basic calculations on numeric items, and monitor the information for conditions. Once a data item is found to match the event's test condition, marquees or Andon board messages may be displayed. Sound devices may also be triggered.

Main features of Gateway for OPC include:

- Hot reload for any configuration changes/additions.
- The gateway can connect to multiple OPC servers
- Offers Data Access and Historical Data Access support
- Supports 10 types of items:
  BIT
  FLOAT
  SIGNED BYTE
  SIGNED LONG
  SIGNED WORD
  STRING
  TIMESTAMP
  UNSIGNED BYTE
  UNSIGNED LONG
  UNSIGNED WORD

Chapter Two

Conceptual Overview

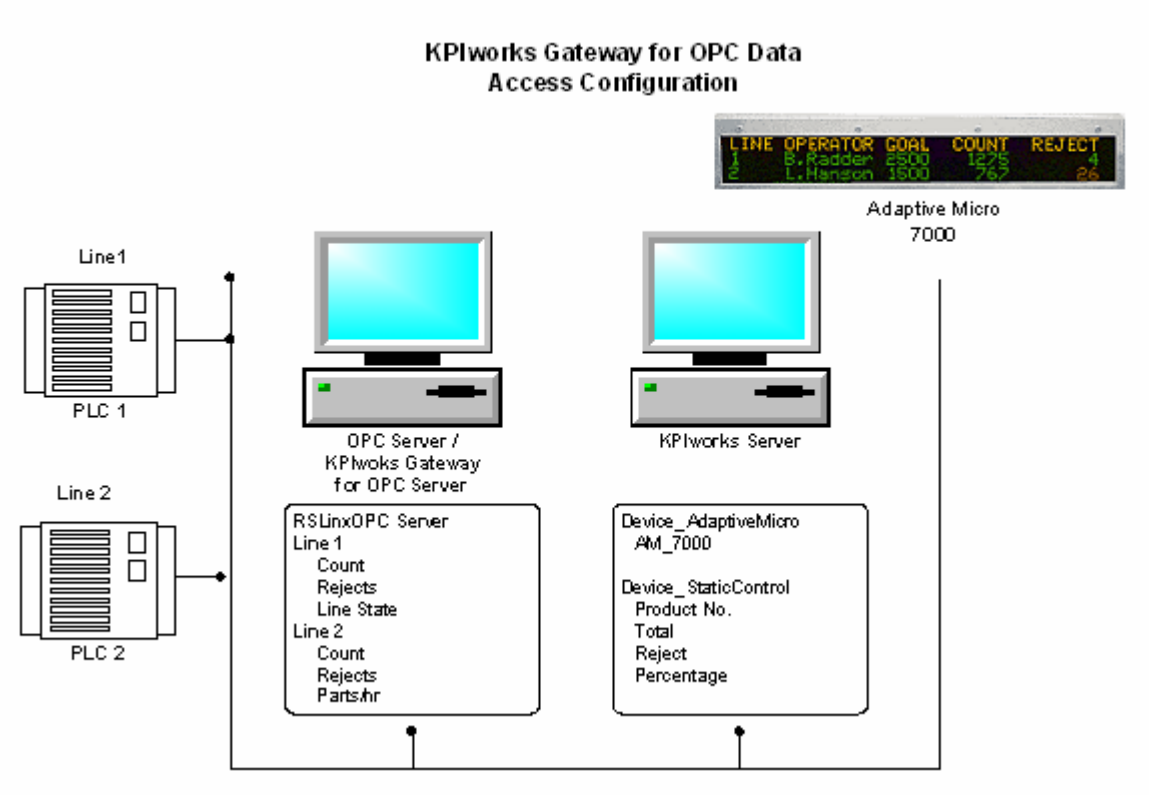
This chapter describes KPIworks Gateway for OPC in detail. It begins with a brief overview of the product and finishes with a general description of the main components of the product.

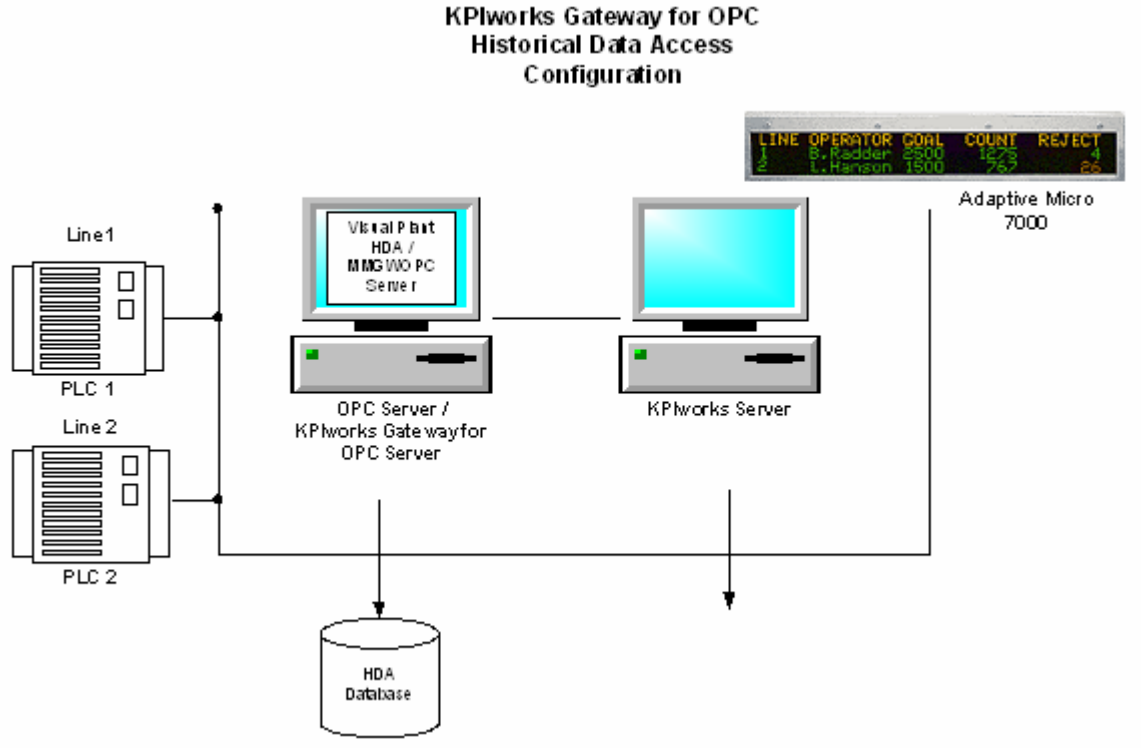
This chapter is included to provide background information about the product itself and some of the concepts involved in marquee displays and OPC Servers. Users who are familiar with these components do not need to read this chapter.

System Overview

KPIworks Gateway for OPC is another product in the KPIworks Suite of products and may reside on your KPIworks Server or access a KPIworks Server over a LAN or WAN connection.

The KPIworks Gateway for OPC provides a bridge between OPC supported PLC processors and your KPIworks Server. Various event rules can be defined based on OPC Data Items or conditions. Once one of these trigger conditions is met, message text can be dispatched to your KPIworks Server, including providing values from OPC Data Items embedded within the message text.




KPIworks Gateway for OPC
Historical Data Access
Configuration
LINE OPERATOR GOAL COUNT REJECT
1 B.Radder 2500 1275 4
2 L.Hanson 1500 767 26
Adaptive Micro
7000
Line1
PLC 1
Line 2
PLC 2
Visual Plant
HDA /
MMGWO PC
Server
OPC Server /
KPIworks Gateway for
OPC Server
KPIworks Server
HDA
Database

Chapter Three

Installing KPIworks Gateway for OPC

This chapter describes the KPIworks Gateway for OPC installation and setup process. It begins with general installation requirements and concludes with procedural information about installing the software.

System Checks and Requirements

Before beginning the installation, it is important to determine the hardware and software requirements necessary for KPIworks Gateway for OPC.

The following list contains important decisions that must be considered before the software is installed:

Installation Considerations:

System Requirements

One of:

- Microsoft Win2K (SP4+)
- Microsoft Win2K (SP3)
- Microsoft XP (SP1a+)

Applications

- KPIworks Server v8.x
- OPC DA Server(s)
- OPC HDA Server(s)

Disk Space

- 120

Display

- 800x600

Drivers

- TCP/IP
- MDAC v2.7 + sp1

RAM

- 128 MB

Additional Requirements

- Determine which disk drive/directory your KPIworks Gateway for OPC software will reside on.
- Determine the Host name of the KPIworks Server you will be connecting to.

Installing KPIworks Gateway for OPC

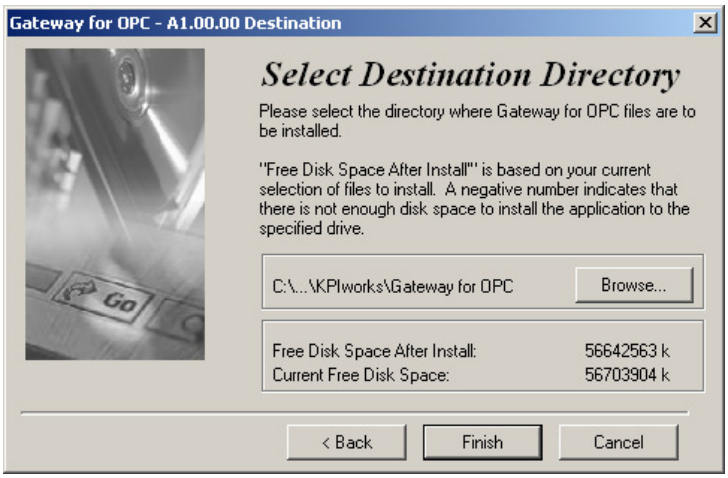
This section of the manual contains procedural information about installing KPIworks Gateway for OPC on your system. It assumes that you have no prior knowledge of the software, but does require a basic knowledge of the Microsoft Windows environments.

KPIworks Gateway for OPC Installation

To Install KPIworks Gateway for OPC:

1. Run SETUP.EXE from the KPIworks Gateway for OPC
2. Select “Continue”

3. You will be prompted for the installation install directory:



4. Click OK to complete the installation. The computer must be restarted before the KPIworks Gateway for OPC can be operated.

   KPIworks Gateway for OPC allows users to connect to remote OPC Servers; servers that are not located on the same machine that is running the Gateway for OPC. Prior to launching the Gateway for OPC application, you must first set logon information to enable MM Gateway for OPC to use DCOM to connect to remote OPC Servers. You must also install the OPC Core Components files required to facilitate browsing of OPC Servers and Items within them.

Setting Logon Information

To set logon information for the OPC Service:

1. On Windows2000 from Control Panel, Administrative Tools, Services, double click the MM Gateway for OPC service.
2. Change the logon for the service to a valid user account, trusted between both the MM GWOPC server machine and all remote OPC Servers. (If running Windows 2000, see the Log On tab) The remote OPC Server and the machine trying to access it must be on the same domain.

Installing OPC Core Components Files

1. To install the OPC Core Components files:
2. In the Gateway for OPC install directory, an OPCREDIST folder was created containing two files: OPC Core Components 2.00 Redistributable.MSI and OPC Core Components 2.00 Redistributable.MSM.
3. For Windows 2000 users, simply double click the OPC Core Components 2.00 Redistributable.MSI file. NT4 users must first run the service pack (instMSIw.exe) installed in the OPCREDIST folder then launch the MSI file.
4. The setup will run with no prompts.

Starting KPIworks Gateway for OPC

1. To start KPIworks Gateway for OPC:
2. From the Start menu, select Programs - KPIworks – Gateway for OPC – Administrator. The first time you start the Administrator you will be prompted to specify the details of the gateway server.

Chapter Four

Configuring KPIworks Gateway for OPC

Before you can begin using KPIworks Gateway for OPC, you must configure the various settings that control the interface to the gateway. The steps required include selecting the correct KPIworks Server and adding an OPC Server.

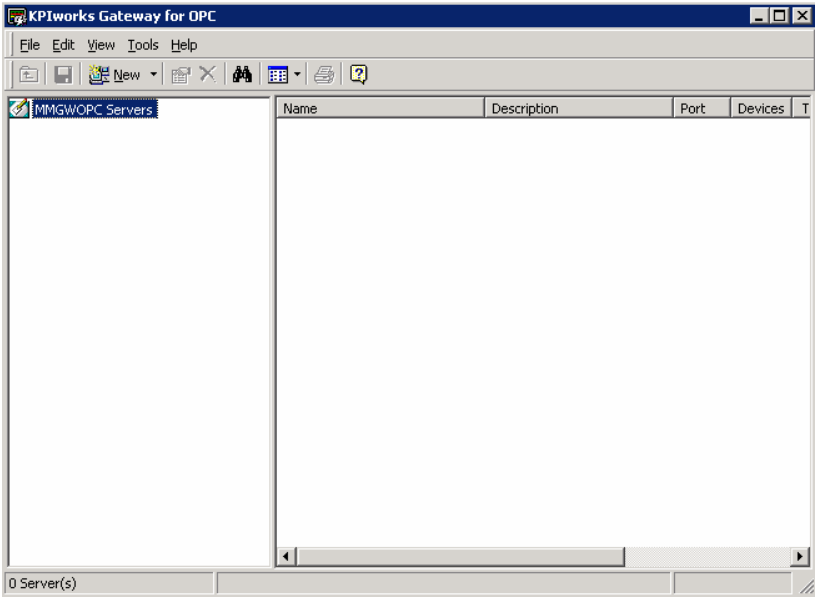
This chapter contains information regarding the setup, configuration and maintenance of KPIworks Gateway for OPC.

Configuring KPIworks Gateway for OPC Options

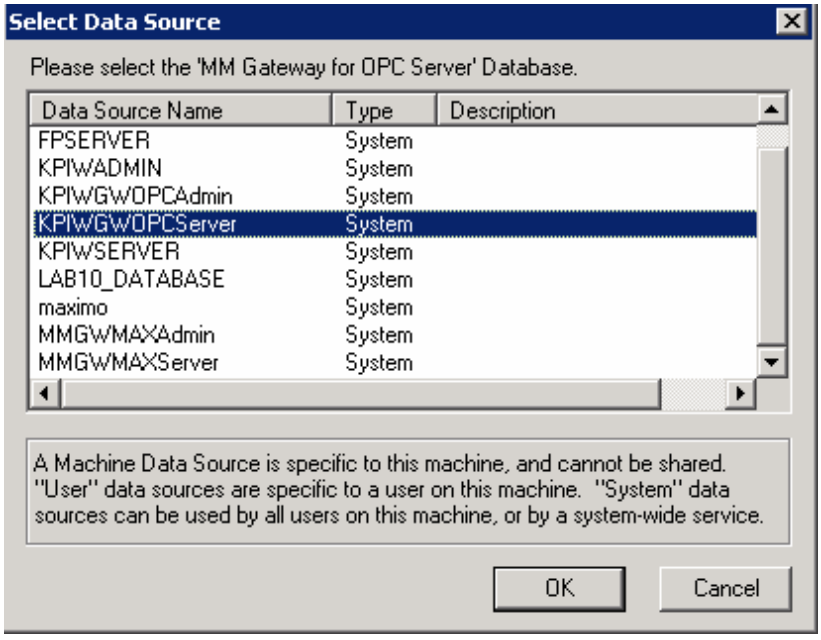
The Gateway Server details and settings must be configured before adding any OPC devices and events.

To configure the Gateway for OPC server:

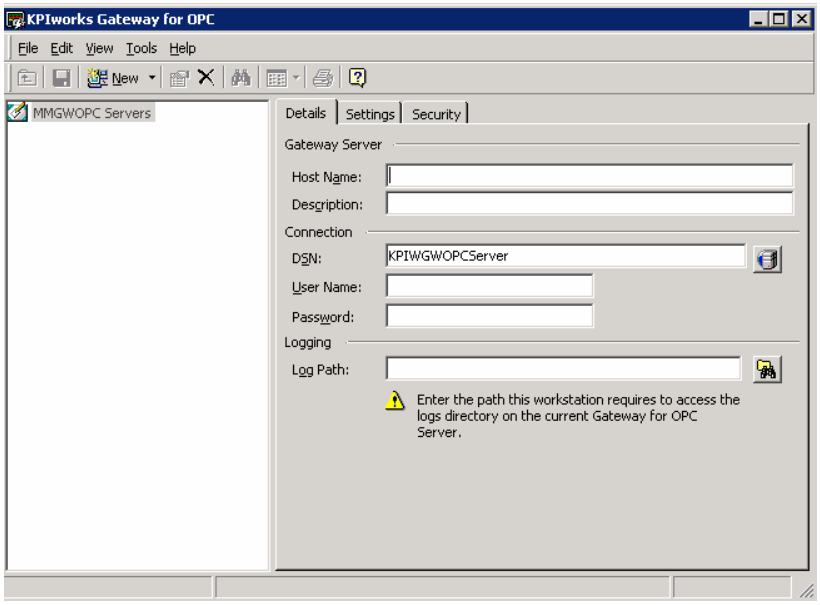
1. When the Gateway for OPC is launched, the following screen is displayed:



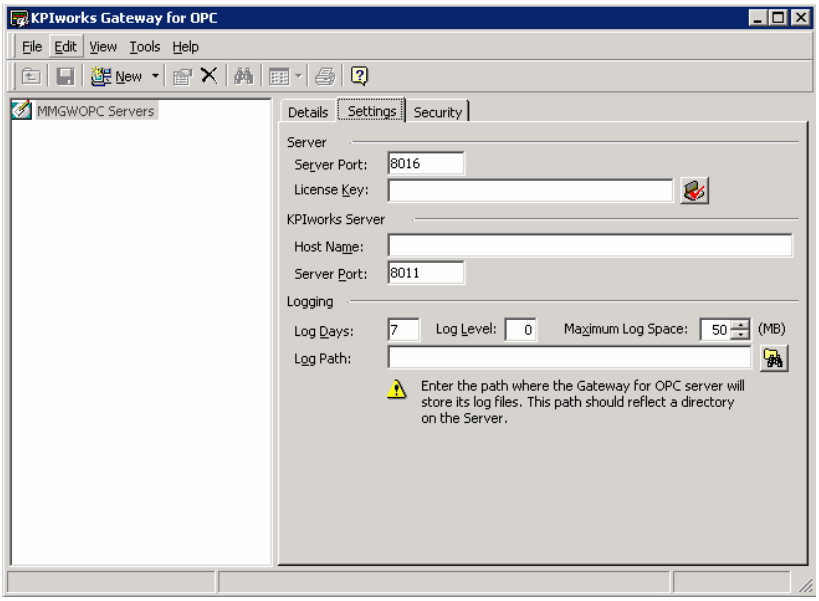
2. Click on New in the task bar to get the following screen:



3. Chose the KPIGWOPCServer database you will be using and then click OK. The following screen will appear:

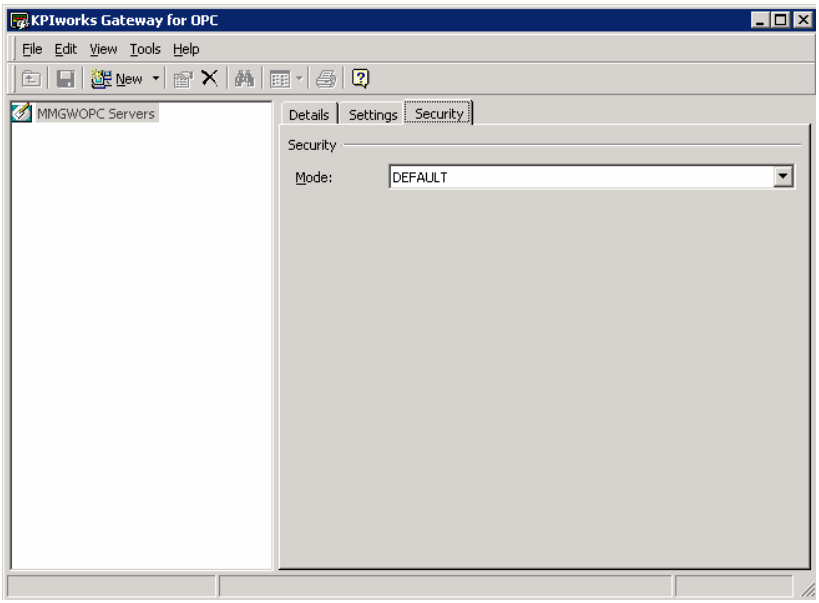


4. On the Details tab, enter a Host Name for the Gateway Server. This can be the host name or IP address of the machine where the gateway server has been installed.
5. Enter a description for the Gateway Server. The DSN field is already populated from step 3.
6. Select the Settings tab. The following screen is displayed:



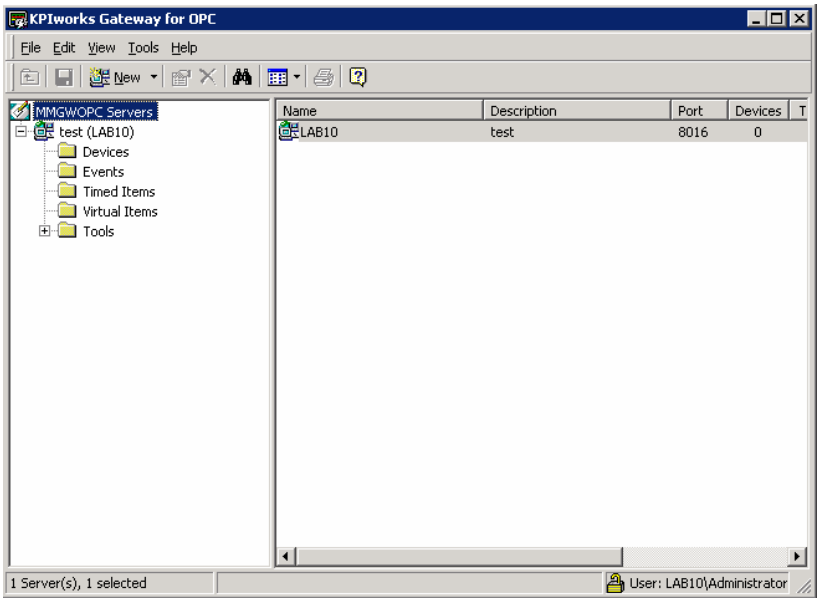
7. The Server Port defaults to 8016.
8. Enter in the required 27-digit license key for the Gateway.
9. Enter in the Host Name of your KPIworks Server. This can be the host name or IP address of the machine where the KPIworks Server has been installed.

10. Enter in the Server Port that will be utilized by the KPIworks Server. The Server Port defaults to 8011.Enter the number of days in the Log Days field that the log file will be kept before being purged. Default is 7 days.
11. The Log Level field is for use at the request of ADAPTIVE. In the event of any problems with the Gateway, ADAPTIVE may request additional levels of logging to assist in problem solving.
12. To avoid the log files from consuming too much drive space, you can specify how much space to allot to the log file in the Maximum Log Space field. Default is 50 MB.
13. Select the Log Path that Gateway for OPC will log to.
14. Click on the Security tab to configure the desired level of security on the KPIworks Gateway for OPC. (The same path from the Details screen)



15. Mode of Default leaves security disabled. Basic mode enables ADAPTIVE security and Ford Mode enables Ford specific security.
16. Click the Save icon in the toolbar to save your Server options.

17. Selecting KPIWGWOPC Servers displays a summary view in the right pane.



18. This summary includes such details as the Port, and the number of Devices, Tags, Events, Virtual Items and Functions created under this server.

Chapter Five

Using the KPIworks Gateway for OPC

The KPIworks Gateway for OPC user interface is conveniently displayed in a tree view that shows a Devices folder that enables the user to add information about the devices that the OPC server will use to communicate with, such as PLC units or other OPC servers. This manual will refer to values being pulled from PLCs in all examples.

It includes an Events folder, Timed Items folder and a Virtual Items folder that enable you to add various events that once triggered, will display information to a marquee that has been configured in KPIworks Administrator.

This chapter contains procedural information about using KPIworks Gateway for OPC. It begins with an overview of the functionality of KPIworks Gateway for OPC and concludes with procedural information about performing everyday Administrator tasks.

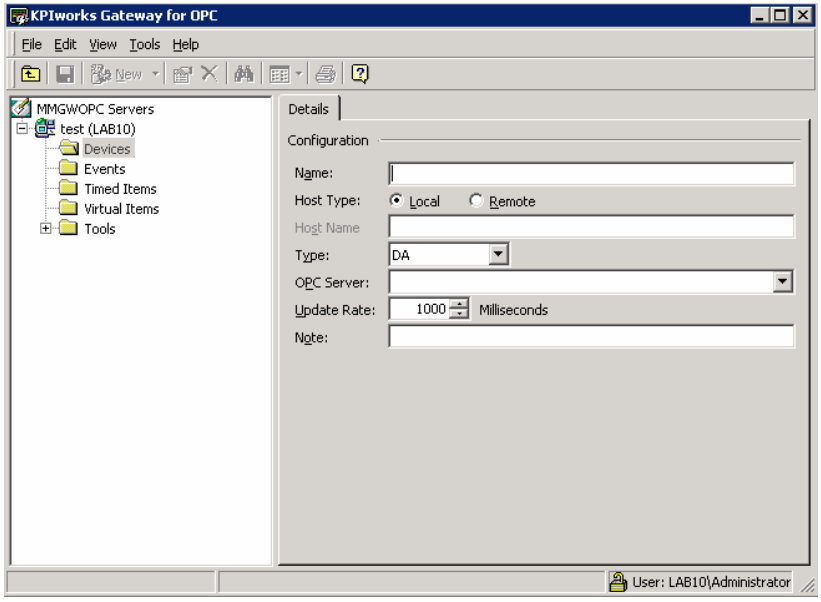
Creating and Modifying OPC Devices

The Devices folder allows you to add and maintain devices and device related information such as the OPC Server name. Devices are the OPC servers to which the server will connect to retrieve tag values. There are two types of Devices that may be configured: DA – Data Access or HDA – Historical Data Access. They may be configured using a local or a remote OPC server.

Adding a Device

To add a device to the database:

1. Select the Devices folder and click the New icon in the toolbar. The following screen is displayed:

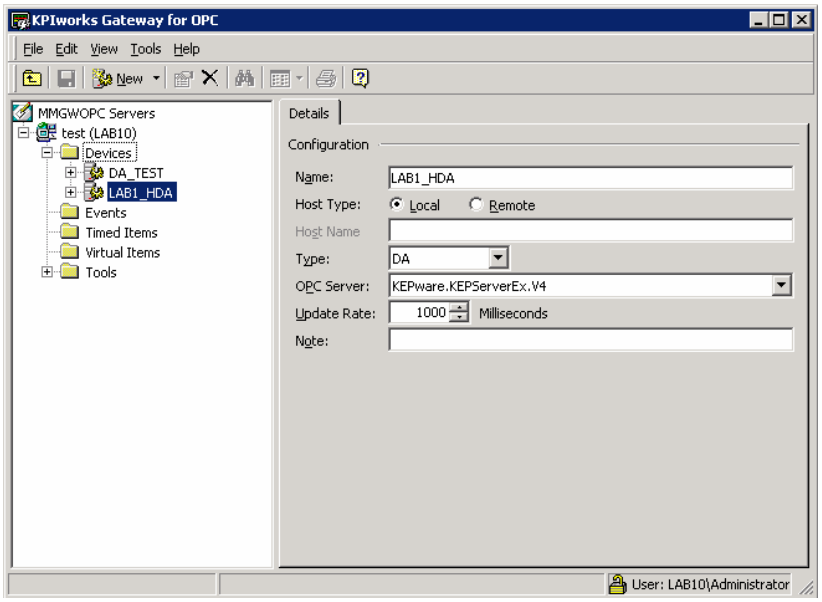


2. Select whether the OPC Server is running locally on the same machine as the Gateway for OPC, or remotely.
3. If the OPC Server is running locally, a host name is not required.
4. If the OPC Server is running remotely, a host name is required. This will be the machine name where the OPC Server is running. Security must be configured appropriately in order for Remote OPC to work.
5. Select the Type of data that will be accessed. DA refers to current data available in the PLC. HDA refers to the historical data that may be retrieved for a certain period of time.
6. The OPC Server name drop down menu will contain all valid OPC Servers that are currently available, depending on the Type of OPC Server selected. (DA or HDA).
7. The Update Rate defaults to 1000 Milliseconds. This value reflects the fastest rate at which data can be sent.
8. Enter in a Note to describe this server. This field is optional.
9. Click the Save icon in the toolbar to save changes.

Viewing and Modifying Devices

To view or modify OPC Devices:

1. From the Devices folder, select the OPC Device that you wish to modify.



2. The configuration settings and information for the selected Device are displayed.
3. Click on a field to edit the Device information. Once a Device has Items configured to it, only the OPC Server: field may be modified.
4. Click the Save icon in the toolbar to save any changes. Once the information has been saved, you cannot revert to the old information. The only way to get it back is by changing it again.

Deleting a Device

Devices can be deleted through the Devices folder in the tree view

To delete a Device:

1. Select the Device you want to delete. The Device information will then appear on the right-hand side of the screen.
2. Click the Delete icon to remove the Device from the database. Once a Device has been deleted, it cannot be retrieved. The only way to retrieve it is by adding it back into the database. A Device cannot be deleted if it has any Items associated with it. The Items should be deleted first prior to removing the Device.

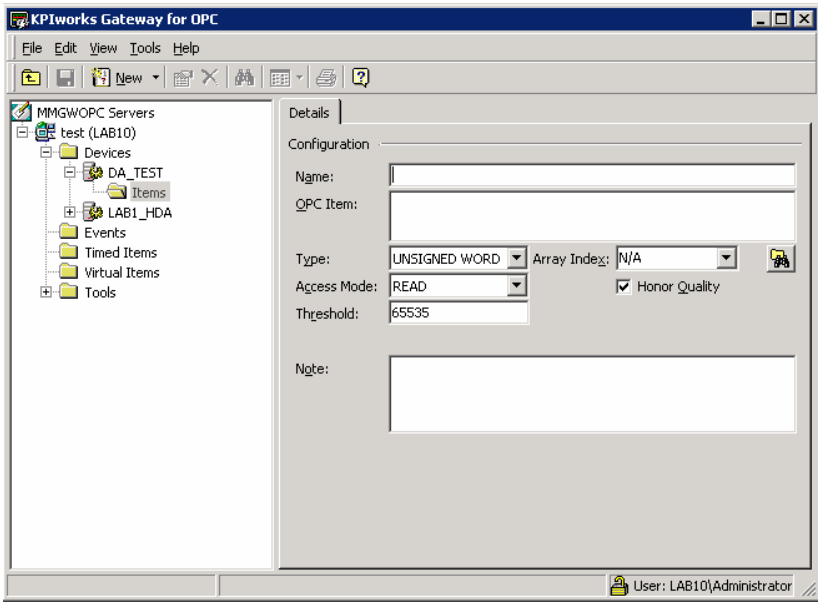
Creating and Modifying Items

Tag information, also referred to as Items, can now be added to the configured Device(s).

Adding a Data Access Type Item

To add a DA Type Item to the gateway:

1. Expand the Devices folder and select the DA type device that was created. Select the Items folder, and then click the New button on the toolbar. The following screen is displayed:



2. Enter in the DA Item name in the Name: field. This should be a logical name to describe the data the item is polling.
3. Enter in the OPC Item. This is the OPC Item name that was configured in the OPC Server. If the OPC Item name is unknown, you can use the browse icon to search for a valid Item for the DA type device selected.
4. The Type defaults to UNSIGNED WORD. The following tables lists currently supported Item types:

Item Type	Description
BIT	Individual binary value 0 or 1
FLOAT	Utilizes decimals
SIGNED BYTE	Integer value between –127 and 127
SIGNED LONG	Integer value between –2,147,483,647 to 2,147,483,647
SIGNED WORD	Integer value between –32,767 to 32,767
STRING	Utilizes characters
TIMESTAMP	Used to retrieve the last time a certain value has changed.
UNSIGNED BYTE	Integer value between 0 and 255
UNSIGNED LONG	Integer value between 0 to 4,294,967,295
UNSIGNED WORD	Integer value between 0 to 65,535

5. Access Mode defaults to READ. This indicates how OPC accesses the variable from the PLC. It currently only reads values from the PLC.

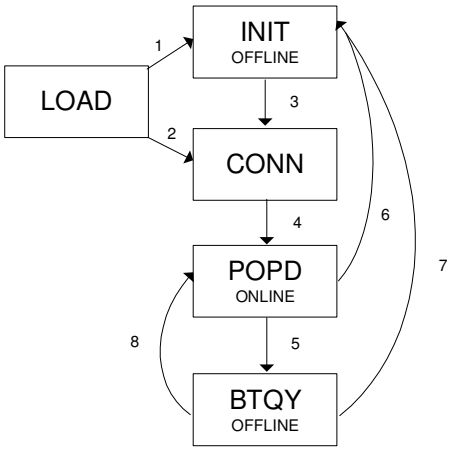
6. Threshold is the point at which the collected values roll over. i.e. when DoorPress values reach 100, they will rollover to 0 and begin again. By entering a correct rollover value for the threshold Gateway for OPC will be able to determine the number of times this counter has rolled over and provide you with correct values regardless of the number of rollovers.
7. Select the element of an array you wish to retrieve data for from the Array Index drop down menu. An Array Index is a quick way to define a number of variables of identical types (Unsigned/Signed Word, Float, String or Timestamp) with one operation. N/A designates that the item you are retrieving is not an array. The Array index allows you to specify a specific element.
   i.e. MACHCOUNT or MACHSTATE for a number of different machines
8. Enter in any additional notes in the Note: field. This field is optional.
9. Click the Save icon in the toolbar to save changes.

Tag States on Start-up

The engine has a clearly defined state and output of tags while the engine is starting up and when tags are in an unexpected state. The states are as follows:

Item State	Online/Offline/Unknown Status	Substituted Test
LOAD	UNKNOWN	NOT-POPD
INIT	OFF	TAG-INIT
CONN	UNKNOWN /OFF	NOT-POPD
POPD	ON	(Tag Value)
BQTY	OFF	BAD-QUAL

Life Cycle of an Item



Initially, the tags are all in LOAD state and an UNKNOWN status. When the OPC component tries to connect to the item, the tag is set to a CONN state. If successful it remains as UNKNOWN status [2]. Otherwise it is set to INIT and the status is OFFLINE [1].

The status for the INIT state can be either OFFLINE or no state. If tag goes from LOAD (which has no status, the tag isn't ON or OFFLINE) then the state remains UNKNOWN. If the tag goes from INIT as offline to CONN, it will remain OFFLINE [3].

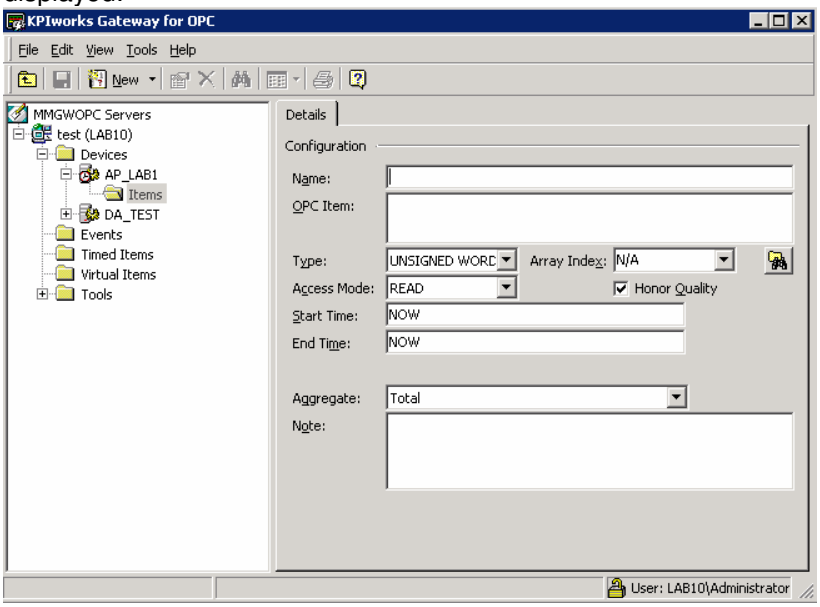
Once the first valid value is received for the tag, it is set to POPD state and an online status [4]. If a bad quality value is received, and honour quality is true for the tag, then the state is changed to BQTY, and goes OFFLINE [5] If, while in POPD or BQTY state, something happens with the connection to the OPC server, then the state is changed to INIT and goes OFFLINE. While in BQTY, a good value will return it to POPD and ONLINE status [8].

If the switch to INIT happened from POPD, then the tag will go OFFLINE [6]. If the switch to INIT happened from BQTY state, then the tag remains OFFLINE [7].

Adding a Historical Data Access Type Item

To add an HDA Type Item to the gateway:

1. Expand the Devices folder and select the HDA type device that was created. Select the Items folder, and then click the New button on the toolbar. The following screen is displayed:



2. Enter in an HDA Item name in the Name: field. This should be a logical name to describe the data the item is polling.

3. Enter in the OPC Item. This is the OPC Item name that was configured in the OPC Server. If the OPC Item name is unknown, you can use the browse icon to search for a valid Item for the HDA type device selected.

4. The Type defaults to UNSIGNED WORD. The following table lists currently supported Item types:

Item Type	Description
BIT	Individual binary value 0 or 1
FLOAT	Utilizes decimals
SIGNED BYTE	Integer value between –127 and 127
SIGNED LONG	Integer value between –2,147,483,647 to 2,147,483,647
STRING	Utilizes characters
SIGNED WORD	Integer value between –32,767 to 32,767
TIMESTAMP	Used to retrieve the last time a certain value has changed.
UNSIGNED BYTE	Integer value between –0 and 255
UNSIGNED LONG	Integer value between – 0 to 4,294,967,295
UNSIGNED WORD	Integer value between – 0 to 65,535

Access Mode defaults to READ. This indicates how OPC accesses the variable from the PLC. It currently only reads values from the PLC.

5. Enter in the Start Time and End Time when the data for this HDA item will be retrieved. These fields must be entered with the following format:

keyword+/-offset+/-offset

where keyword and offset are as specified in the table below. Each offset must be preceded by a signed integer that specifies the number and direction of the offset. If the integer preceding the offset is unsigned, the value of the preceding sign is assumed and will begin as positive. The key word refers to the beginning of the specified time period. DAY means the timestamp at the beginning of the current day (00:00 hours, midnight), MONTH means the timestamp at the beginning of the current month, etc.

Keyword	Offset	Description
NOW		The current GMT time as calculated on the server
DAY	D	The start of the current day
HOUR	H	The start of the current hour
MINUTE	M	The start of the current minute
MONTH	MO	The start of the current month
SECOND	S	The start of the current second
WEEK	W	The start of the current week
YEAR	Y	The start of the current year

Example: "DAY-1D+7H30M" → DAY = first timestamp for today, -1D = first timestamp for yesterday, +7H = 7 a.m. yesterday, +30M = 7:30 a.m. yesterday.

Insertion tags may be used in the Start Time and End Time fields to pull the start and end times for configured DA and HDA items. To obtain a list of the configured Items, enter { which opens up a drop down list of available Item Types.

When defining an OPC HDA item to retrieve counts from VisualPlant, Item substitution may be used to compose the Start or End time. You can then create an item within OPC to collect this data for later use in defining the HDA item start times.

i.e. Rather than specifying Start: DAY+7h and End: NOW for the start of a shift, you may create an HDA item with a Type of Timestamp called SHIFTSTART. You would then specify the Start: time for this HDA item as {SHIFTSTART}.

The value of the SHIFTSTART item in this case will be substituted with a date/time retrieved from the VP OPC schedule at runtime, ensuring the data for this HDA item is correct for the current time within the current shift.

If the value being returned is the start time of the current shift, the Start and End times must be as follows:

Start Time: DAY-1D
End Time: NOW

6. Select the element of an array you wish to retrieve data for from the Array Index drop down menu. The Array Index is a quick way to define a number of variables of different types (Unsigned/Signed Word, Float, String or Timestamp) with one operation. N/A designates that no element is used.

   i.e. MACHCOUNT or MACHSTATE for a number of different machines

   For a Shift, you must select a VisualPlant asset's Production Shifts item. For a Shift Period, you must select a VisualPlant asset's Shift Period when defining the HDA item.

7. Enter in the Aggregate to be used when retrieving the historical data. The available options are: Count, End, Maximum, Minimum, Start and Total. Aggregates are methods that summarize data values. These aggregations are performed during the retrieval of the data.

Aggregate Value	Description
Count	The number of values found between the Start and End time.
End	The last value retrieved between the given Start and End time.
Maximum	The largest value retrieved between the given Start and End time.
Minimum	The smallest value retrieved between the given Start and End time.
Start	The first value retrieved between the given Start and End time.
Total	The sum of all values retrieved between the given Start and End time.
visualplant™ Enabling Intelligent Manufacturing VPHDA_ENDACTUALTIME	Start time of the current shift or current shift period on the specified asset.

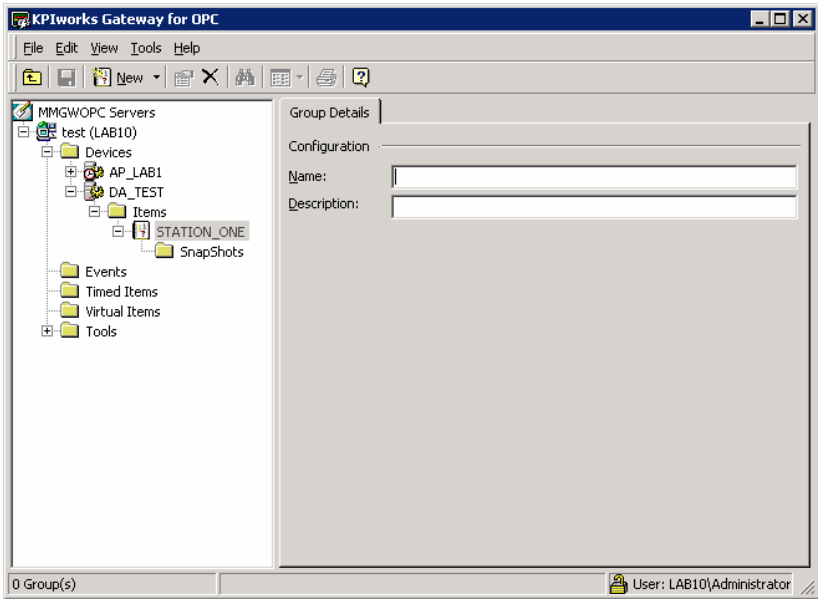
8. Enter in any additional notes in the Note: field. This field is optional.
9. Click the Save icon in the toolbar to save changes.

Adding an OPC Item Group

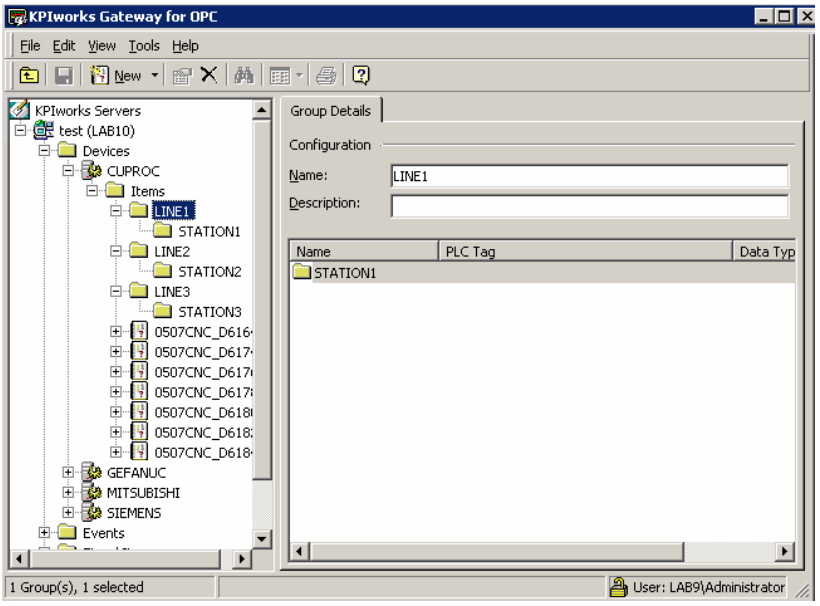
Gateway for OPC allows you to organize your OPC items more efficiently by allowing the creation of Item Groups. This provides a logical way to group machines, stations or other components of the lines.

To add an Item Group to the gateway:

1. Expand the Devices folder and select the OPC Device that you wish to edit. Select the Items folder, then right click and select New Item Group. You can also select the New button drop down on the toolbar and select Item Group. The following screen is displayed:



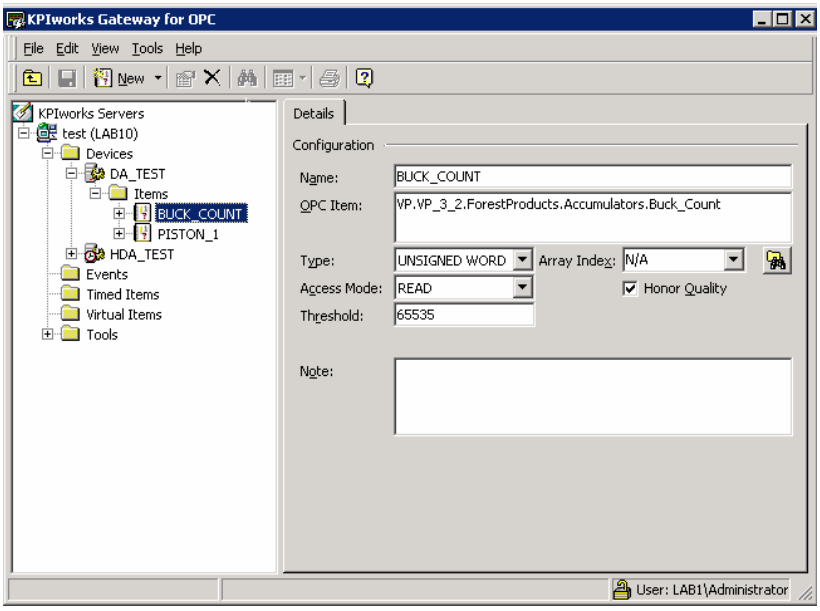
2. Enter the Name and Description of the Group you are creating. Item Groups appear as their own level in the tree view allowing you to easily locate an Item in a certain area of the plant. In this example, an Item Group has been created for the Station in each of three Lines in Body.



Viewing and Modifying Items or Item Groups

To view or modify OPC Items or Item Groups:

1. From the Devices folder, select the OPC Item or Item Group that you wish to modify.



2. The configuration settings and information for the selected Item or Item Group are displayed.
3. Click on a field to edit the Item information.
4. Click the Save icon in the toolbar to save any changes. Once the information has been saved, you cannot revert to the old information. The only way to get it back is by changing it again.

Deleting an Item or Item Group

Items and Item Groups can be deleted through the Devices folder in the tree view

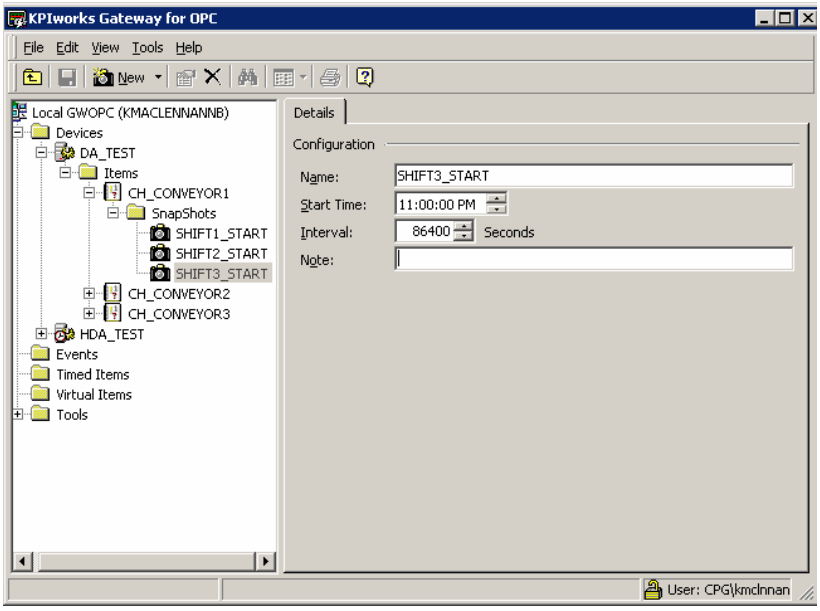
To delete an Item or Item Group:

1. Select the Item or Item Group you want to delete. The Item information will then appear on the right-hand side of the screen.
2. Click the Delete icon to remove the Item from the database. Once an Item or Item Group has been deleted, it cannot be retrieved. The only way to retrieve it is by adding it back into the database. You cannot delete an Item or Item Group if it is being used in an Event, Timed Item or Virtual Item.

Viewing and Modifying Snapshots

To view or modify Snapshots:

1. From the Devices folder, select the OPC Server that you wish to edit. Select the Item that contains the snapshot to be modified, and then select the snapshot you wish to edit.



2. The configuration settings and information for the selected Snapshot are displayed.
3. Click on a field to edit the Snapshot information.
4. Click the Save icon in the toolbar to save any changes. Once the information has been saved, you cannot revert to the old information. The only way to get it back is by changing it again.

Deleting a Snapshot

Snapshots can be deleted through the Devices folder in the tree view.

To delete a Snapshot:

1. Select the Snapshot you want to delete. The Snapshot information should then appear on the right-hand side of the screen.
2. Click the Delete icon to remove the snapshot from the database. Once a Snapshot has been deleted, it cannot be retrieved. The only way to retrieve it is by adding it back into the database. You cannot delete a Snapshot if it is being used in an Event, or Virtual Item.

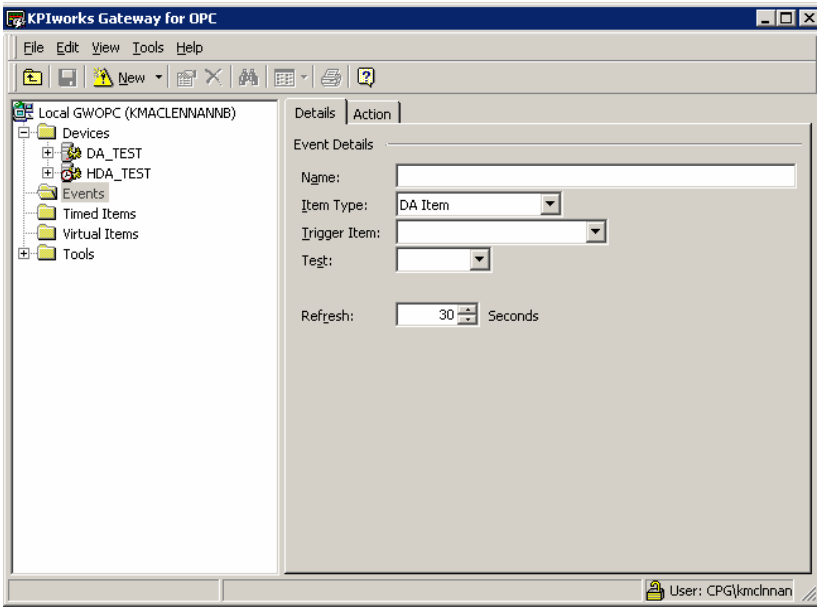
Creating and Modifying Events

Gateway for OPC allows the user to configure events that contain rules that when true, will display items and virtual items to a specified marquee or play a selected speaker tune.

Adding an Event

To add an event:

1. Click the Events folder in the tree view then click the New icon in the toolbar. The following screen is displayed:



2. On the Details tab, enter in the Name of the Event in the Name: field. This name should reflect the rule being implemented by this event. i.e. SHIFT1_PROD to provide production values for shift one to date.
3. Select the Item Type for the item that will be monitored to determine this event's state: DA Item, HDA Item, Virtual Item, or Timed Item.
4. Select the Trigger Item that you wish this Event to monitor. This field will be filtered to display the available items based on the Item Type selected.
5. For an Event utilizing an Item type of UNSIGNED/SIGNED WORD, BIT, BYTE or LONG, an additional field of Bit appears. Select the specific Bit from the UNSIGNED/SIGNED WORD that you wish to evaluate, or ALL to evaluate the data as an integer.
6. Select the Test type you wish to perform on this event. The interface updates the available fields based on Test type. The following is a table of the available bit options and what fields are available to the user when various tests are selected:

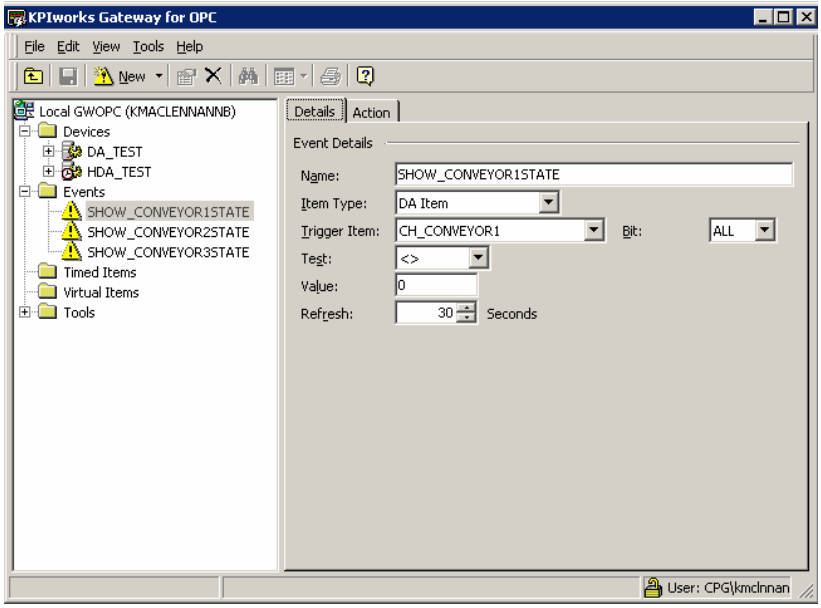
Bit	Test	Fields Enabled
ALL	=	Value
ALL	<	Value
ALL	>	Value
ALL	<>	Value
ALL	change	Precision
ALL	range	Minimum, Maximum
ALL	offline	

0-x	=	Value
0-x	<>	Value
0-x	change	Precision (defaults to 1)

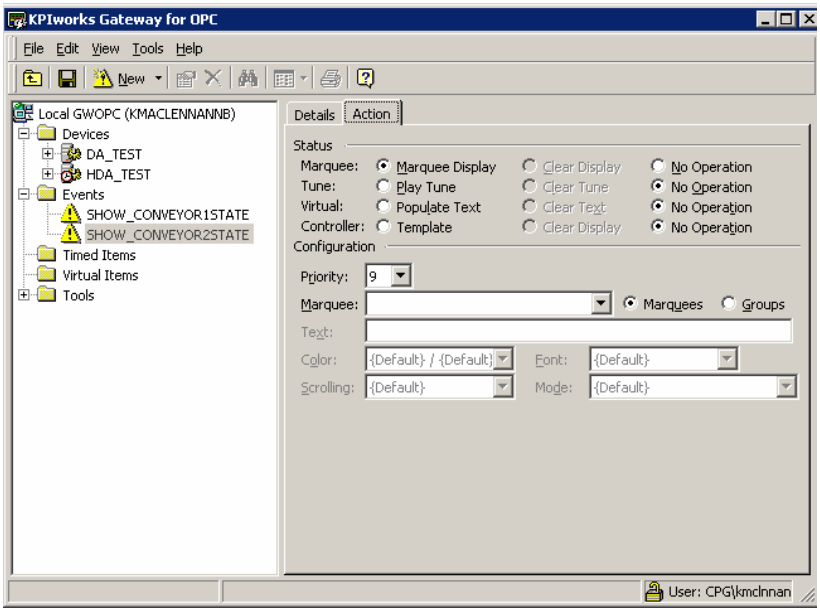
Bit values range from 0-x where x is 0 for an item type of Bit, 7 for an item type of Byte, 15 for an item type of Unsigned/Signed Word and 31 for an item type of Long.

- If an OPC collected item is offline then the event test against that item will be false and an action won't be taken. When a connection is lost between your OPC Server and the PLC:
- If you have selected "Honor Quality" when configuring your Item, the tag is reported as bad quality.
- If you have left "Honor Quality" unselected, the tag is reported as good. The last value collected before the item went offline, will be shown.
- When the item is configured incorrectly i.e. misspelled:
  If "Honor Quality" is selected, the tag is reported as bad quality.
  If "Honor Quality" is unselected, the tag is still reported as bad quality, as it was never able to make the initial connection.

7. Select the Refresh time in seconds. This is the maximum time between display refreshes. If the event is true, this is the maximum time that will expire before the engine sends a fresh update, should the event be active, ensuring the sign does not display old values. Entering in a refresh time of 0 seconds turns refresh off, leaving messages on the display at all times.



8. Click the Action tab to configure where the message will be displayed. The default is Marquee Display to display the message to a marquee that has been configured with KPIworks Administrator. Play Tune and Populate Text are set to No Operation.The following screen is displayed:



9. You may choose to send the message to a marquee display, play a tune, manipulate text in a virtual item that may later be displayed on a marquee, or send the message to a Controller template.

Marquee Display

1. Select the Priority for this sign. The Priority is the KPIworks Server message priority that determines the order that messages sent to the sign will be displayed. High priority messages are a threshold of one and low priority message will be a threshold of nine. Default Priority is set to nine.
2. Select the Marquee where this message will be displayed. The list of available marquees, are those marquees that have been configured in KPIworks Administrator. You may also send the message to a Group that has been configured in KPIworks Administrator by selecting the Groups option to display a list of available groups.
3. The Text: field may contain regular text as well as DA Items, HDA Items, Timed Items and Virtual Items. Various calculations may be performed here as in the example below. To obtain a list of the configured Items, enter { which opens up a drop down list of available Item Types.

   This first pop up menu allows you to select which Item type you wish to retrieve: DA_ITEM, HDA_ITEM, TIMED_ITEM, VIRTUAL_ITEM or a FUNCTION rule. Selecting the Item Type will open another pop up menu to select the trigger item. The final menu allows you to select the cumulative or current values of the selected item.

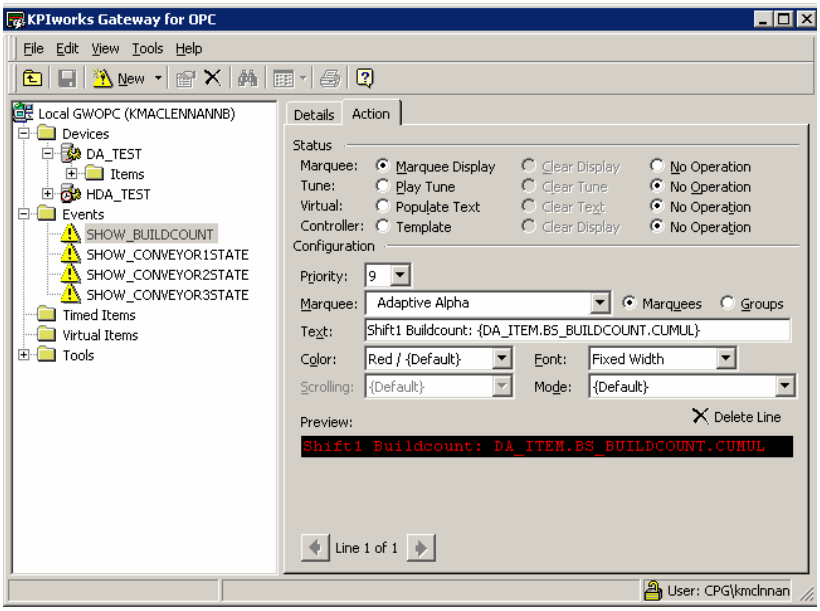
   The following is a list of data elements and options available for each Item Type:

Item Type	Data Elements	Options
DA_ITEM	Configured DA Items	Cumulative, Current, Snapshots
FUNCTION	Configured Function Rules	N/A
HDA_ITEM	Configured HDA Items	Current
TIMED_ITEM	Configured Timed Items	Current
VIRTUAL_ITEM	Configured Virtual Items	Current

   If an Item has been misconfigured or has been disconnected, the message will display *NOT_FOUND* for that item. If the quality of an item is “Not Good”, any item triggered by the event should be turned off and any virtual items should be invalidated if it uses the item.

4. Select the sign attributes that the message will be displayed with including Color, Font, Scroll, and Mode. If only one attribute is available (i.e. only Color Red available on the selected marquee) the field will default to this. All other fields will display {Default}.

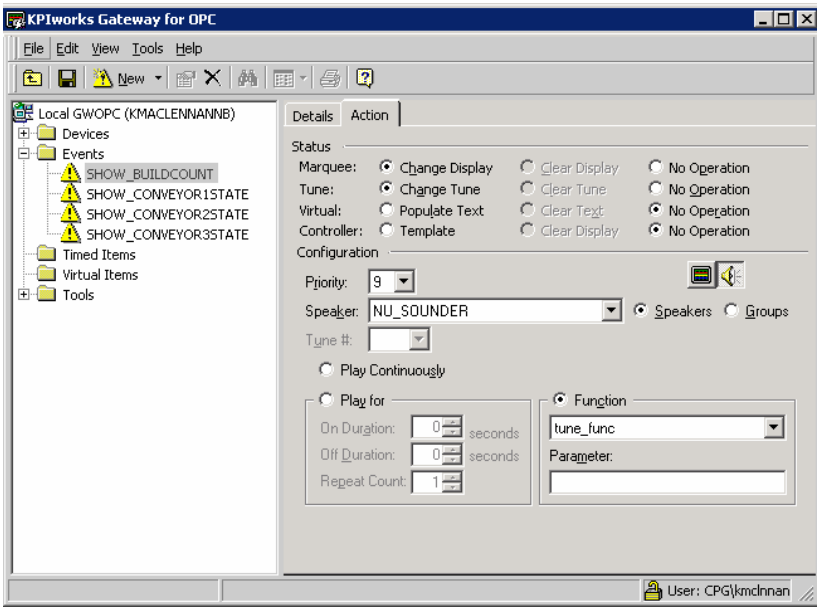
   KPIworks Gateway for OPC allows you to configure additional insertion tags to the default message. The tags available at this time are <TIME> and <DATE>. The insertion tags must be included in brackets and must be all upper case.



5. A maximum length parameter in the format of {CLASS.XXX[:max-length]} allows you to specify the number of characters that will be displayed for that Point value. The valid range for this maximum length parameter is 0 to 1024 and is optional. i.e. {DA_ITEM.BUILDCOUNT_SH2:6} will only show 6 characters of the buildcount point value.
6. Select the Color the message will be displayed with.
7. Select the Mode the message will be displayed with Static, Flashing or Fast Flashing.
8. Click the Save icon in the toolbar to save changes.

Play a Tune

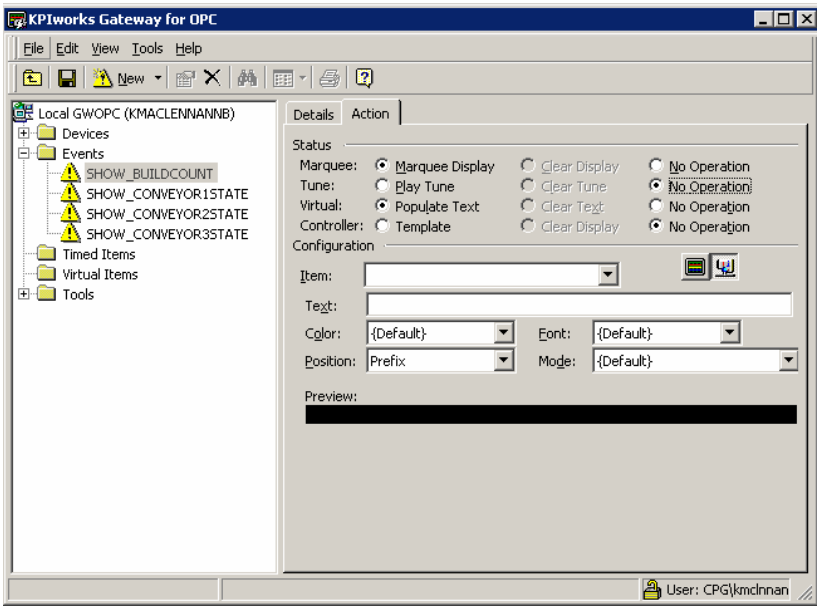
1. If you choose to play a tune, select the Play Tune option then click on the speaker icon  . The following screen is displayed:



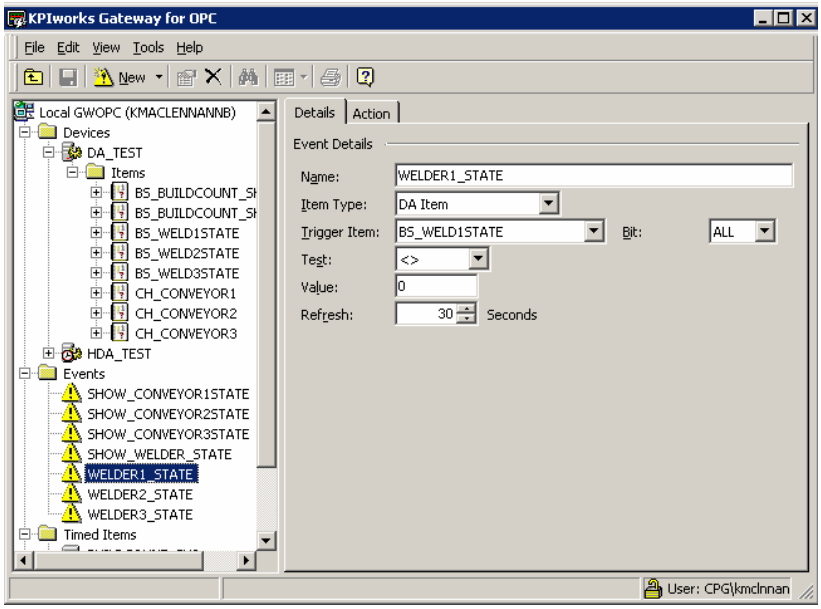
2. Select the Priority that the tune will be played with. The Priority is the KPIworks Server message priority that determines the order that the tune will be played. High priority tunes are a threshold of one and low priority tunes will be a threshold of nine. Default Priority is set to nine.
3. Select the Speaker that the tune will play on. The list contains all speakers that have been configured in KPIworks Administrator. You may also play the tune on a group of speakers that have been configured in KPIworks Administrator by selecting the Groups option to display a list of available groups.
4. Select the tune to be played from the Tune #: field.
5. You may choose to play the tune continuously or to play for a duration of time by selecting the Play for option and entering in the number of seconds that the tune will be played for.

Populate Text

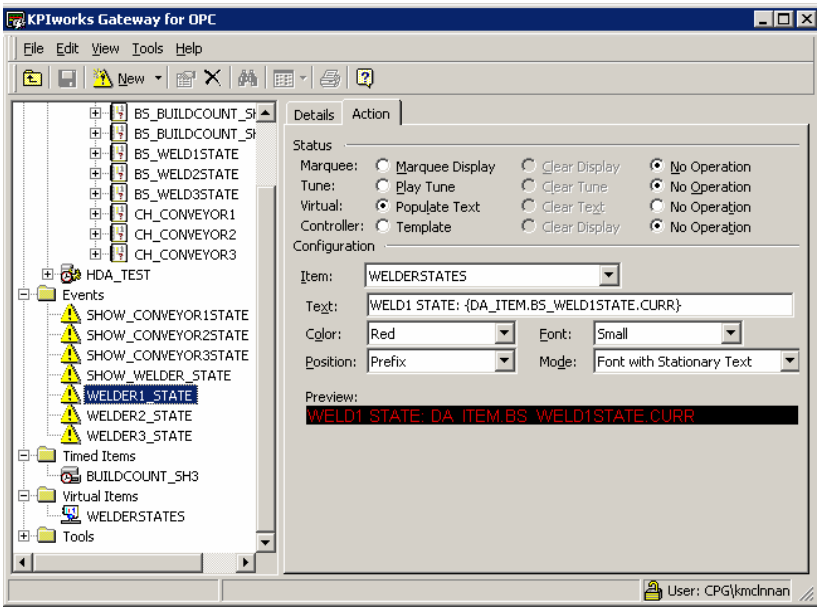
1. If you choose to populate text, select the Populate Text option then click on the text icon  . The following screen is displayed:



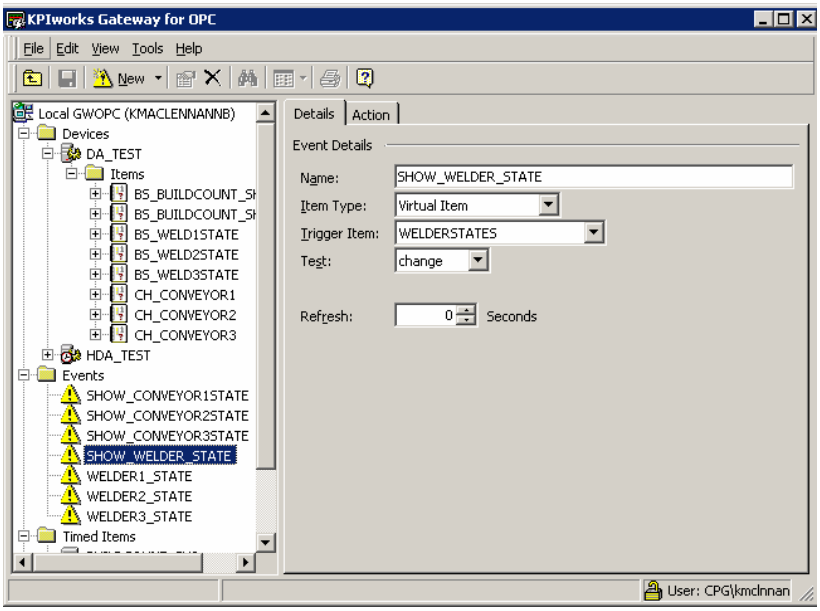
2. Select the Item that you wish to populate text on. This Item is the Virtual Item created with a Type of Event Text. It will string multiple events together for later display on the marquee selected.
3. The Position field specifies if the message text for each Event Text will be added as a Prefix or Suffix to the virtual item.
4. The following is an example of an Event configured to populate text to a virtual item:



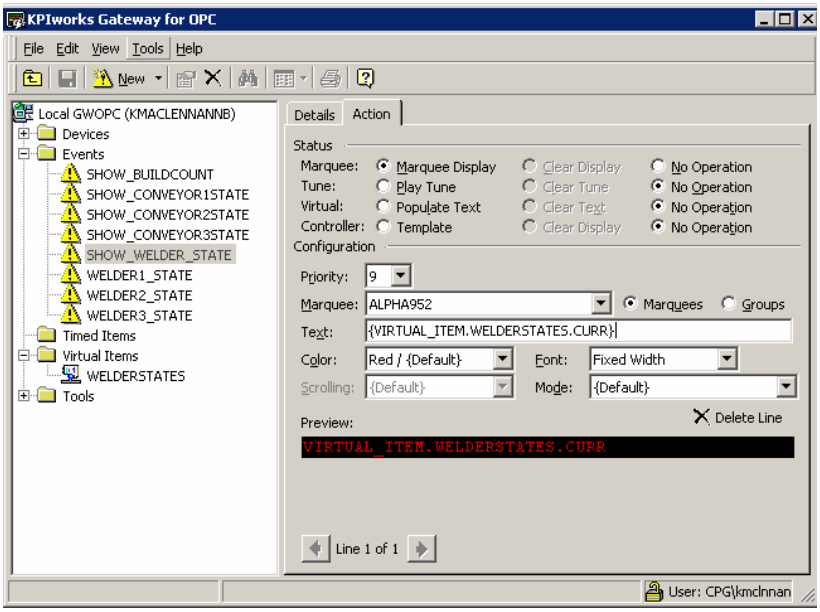
5. The events WELDER1_STATE, WELDER2_STATE and WELDER3_STATE monitor if the welder states are not equal to 0 (not running).



6. In the example above, three events have been created to monitor the state for each of three welders. The Text field includes the current state for each welder.
7. A Virtual Item of WELDERSTATES has been created so each of these text events may be strung together in one message, ultimately to be displayed on the marquee.
8. An Event of SHOW_WELDER_STATE has been created to monitor any changes to the Virtual Item, thus any changes to each of the three Welder States and display the current state on the Alpha952 marquee selected.



9. The Event SHOW_WELDER_STATE monitors the Virtual Item WELDERSTATES for any changes to the states of the three welders.



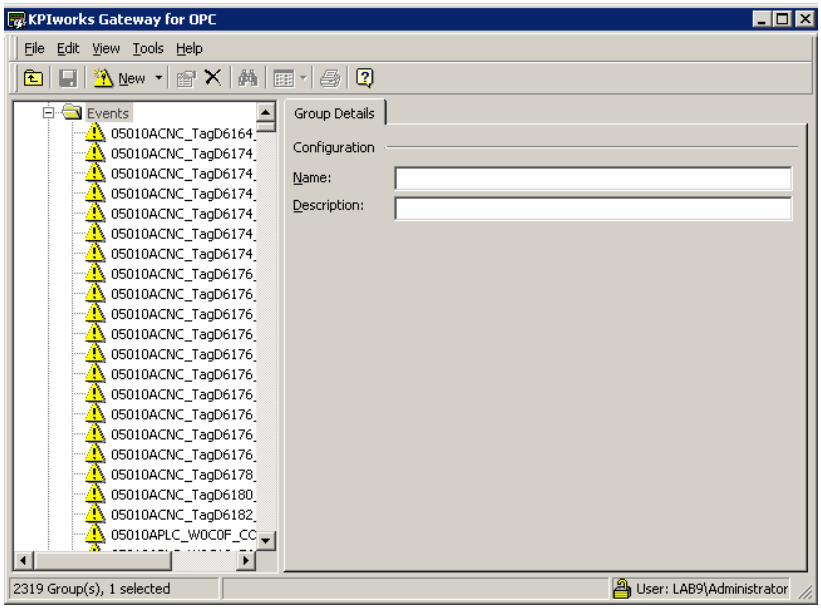
10. In this example each of the three Welder State events have been added with a Position of Prefix so as each event is triggered, the message will be added as a prefix to the existing text. As each of the three welder state events is triggered, the text will appear as a prefix, bumping the previous message to the right. The above example will display the three welder states as follows:

    WS3=6 .WS2=5 .WS1=3

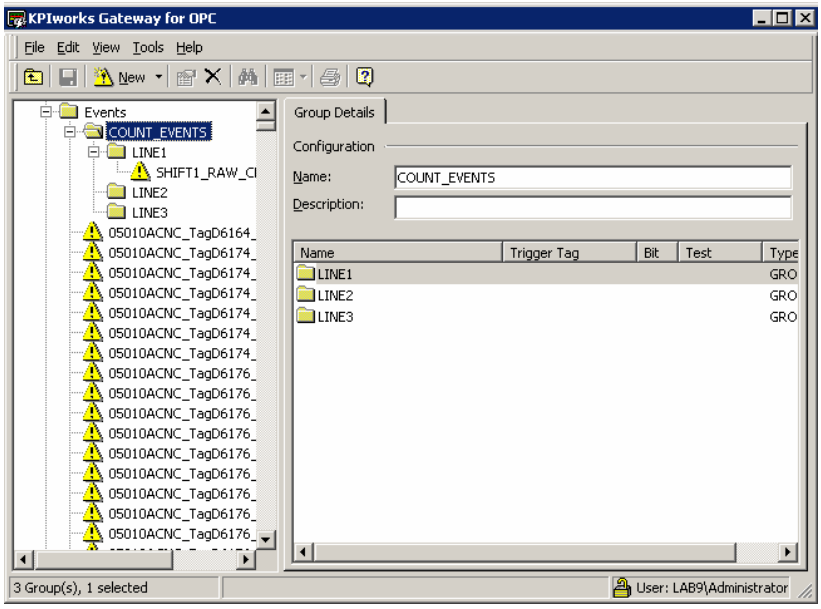
Adding an Event Group

Gateway for OPC allows you to organize your Events more efficiently by allowing the creation of Event Groups. This provides a logical way to group events for various machines, stations or other components of the lines.

1. Expand the Event folder and select an event that you wish to add an Event Group to. Then right click and select New Event Group. You may also select the New button drop down on the toolbar and select Event Group. The following screen is displayed:



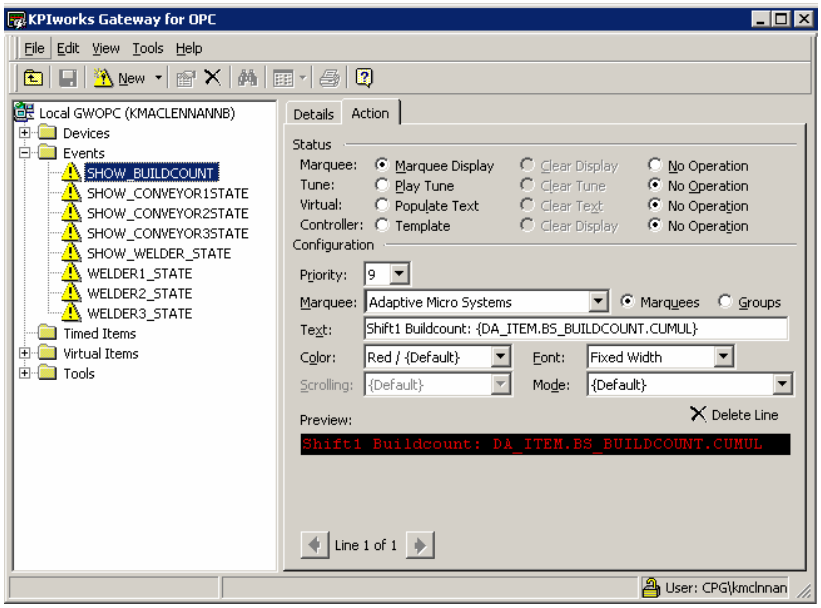
2. Enter a Name and Description of the Group. Event Groups appear as their own level in the tree view allowing you to easily locate an event for a certain area of the plant.



3. In this example, Event Groups called LINE1, LINE2 and LINE3 have been created to easily locate count information for each line in the Event Group called COUNT_EVENTS.

Viewing and Modifying Events and Event Groups

1. From the Events folder, select the Event or Event Group that you wish to edit. The following screen is displayed:



2. The configuration settings and information for the selected Event are displayed.
3. Click on a field to edit the Event information.
4. Click the Save icon in the toolbar to save any changes. Once the information has been saved, you cannot revert to the old information. The only way to get it back is by changing it again.

Deleting an Event or Event Group

Events and Event Groups can be deleted through the Events folder in the tree view.

1. Select the Event or Event Group you want to delete. The Event information should then appear on the right-hand side of the screen.
2. Click the Delete icon to remove the event from the database. Once an Event or Event Group has been deleted, it cannot be retrieved. The only way to retrieve it is by adding it back into the database.

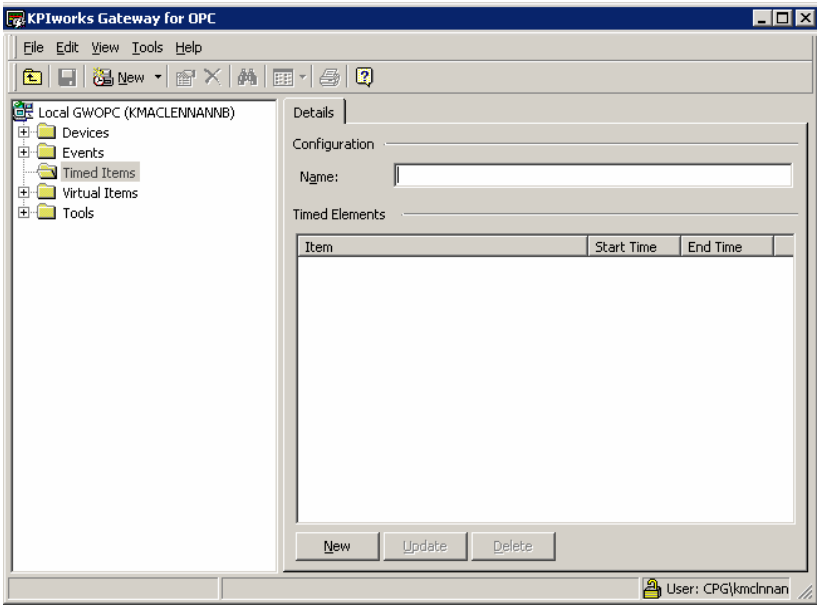
Creating and Modifying Timed Items

Gateway for OPC allows the user to configure Items referred to as Timed Items which allow the user to enter in a schedule of configured items to be utilized based on time of day. This provides similar functionality to that of OPC HDA in that it enables you to perform calculation using historical values such as a constantly incrementing counter value at the beginning of a shift.

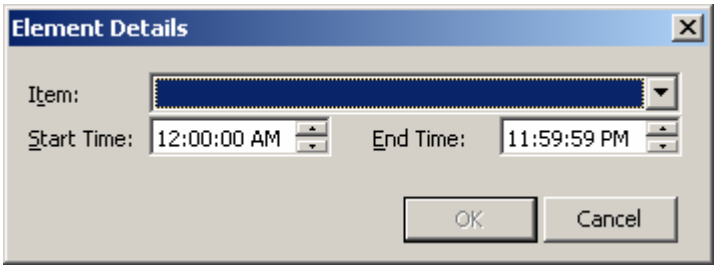
Adding a Timed Item

To add a Timed Item:

1. Click on the Timed Items folder in the tree view and click the New icon in the toolbar. The following screen is displayed:



2. Enter in the Name of the Timed Item. This name should reflect the items being scheduled by this timed item. i.e. BUILDCOUNT_SH3 to provide a build count for shift three.
3. On the Details tab, click on the New button to add timed elements to this item. The following screen is displayed:



4. The Item: drop down includes all configured DA Items, HDA Items and Virtual Items. Only like datatype items may be added.
   i.e. the first item selected is an HDA item with Type of UNSIGNED WORD. The next datatype item added to this Timed Item must also be an item of Type UNSIGNED WORD. The drop down will be filtered to list only the remaining items of Type UNSIGNED WORD.
5. Enter in the Start Time and End Time that this Timed Item member will be returned and click OK to return to the Timed Item Details screen. You may continue to add additional

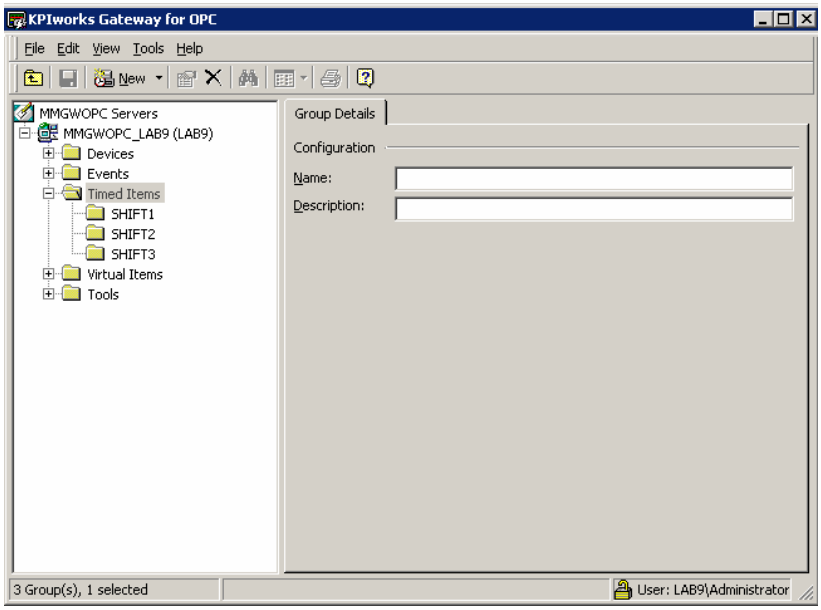
elements to the Timed Item by clicking the New button. Timed Item members Start and End times may not overlap in any way.

Adding a Timed Item Group

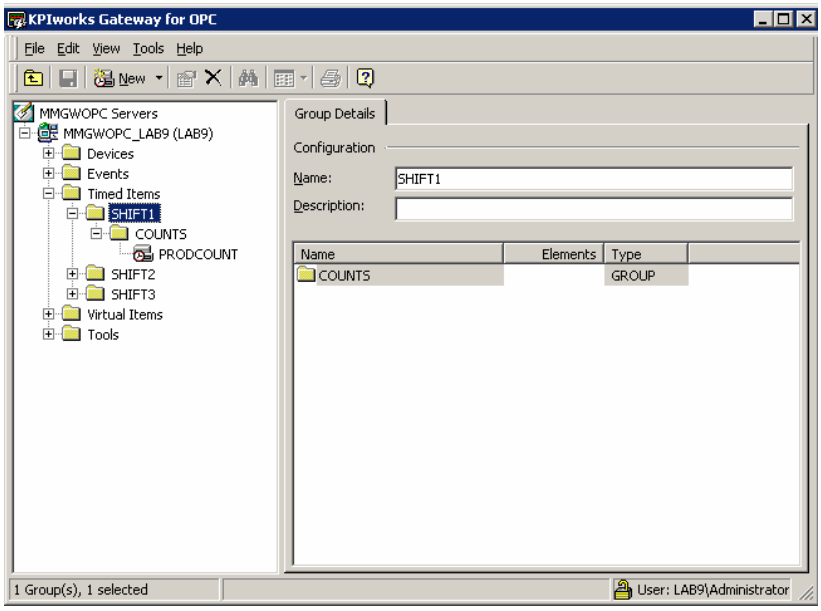
Gateway for OPC allows you to organize your Timed Items more efficiently by allowing the creation of Timed Item Groups. This provides a logical way to group timed items for various machines, stations or other components of the lines.

To add a Timed Item Group to the gateway:

1. Expand the Timed Items folder and select the Timed Item that you wish to add a Timed Item Group to. Then right click and select New Timed Item Group. You may also select the New button drop down on the toolbar and select Timed Item Group. The following screen is displayed:



2. Enter a Name and Description of your Group. Timed Item Groups appear as their own level in the tree view allowing you to easily locate a Timed Item for a certain area of the plant.

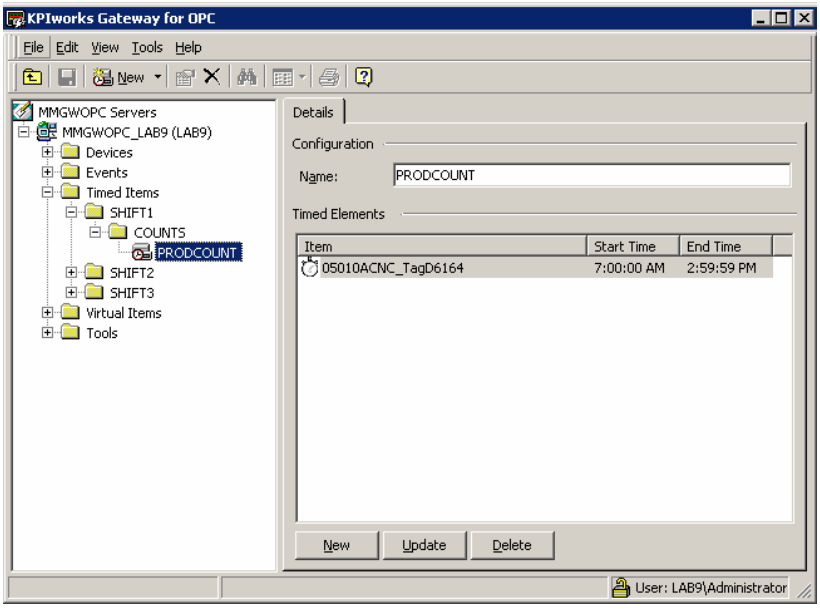


3. In this example, a Timed Item Group called COUNTS has been created to easily locate count information for each Shift.

Viewing and Modifying Timed Items or Timed Item Groups

To view or modify Timed Items or Timed Item Groups:

1. From the Timed Items folder, select the item or Item Group that you wish to modify.



2. The configuration settings and information for the selected Timed Item are displayed.
3. Select the Item to edit and click the Update button.
4. Click the Save icon in the toolbar to save any changes. Once the information has been saved, you cannot revert to the old information. The only way to get it back is by changing it again.

Deleting a Timed Item or Timed Item Group

Timed Items or Timed Item Groups can be deleted through the TimedItems folder in the tree view

To delete a Timed Item or Timed Item Group:

1. Select the Timed Item or Timed Item Group you want to delete. The Timed Item information should then appear on the right-hand side of the screen.
2. Click the Delete icon to remove the Timed Item from the database.
3. You may delete only an Element of the Timed Item. Select the Timed Item from the tree view then select the timed element to delete. Click the Delete button to remove the selected element. Once a Timed Item or Timed Item Group has been deleted, it cannot be retrieved. The only way to retrieve it is by adding it back into the database. You cannot delete a Timed Item or a Timed Item Group if it is being used in an Event, or Virtual Item

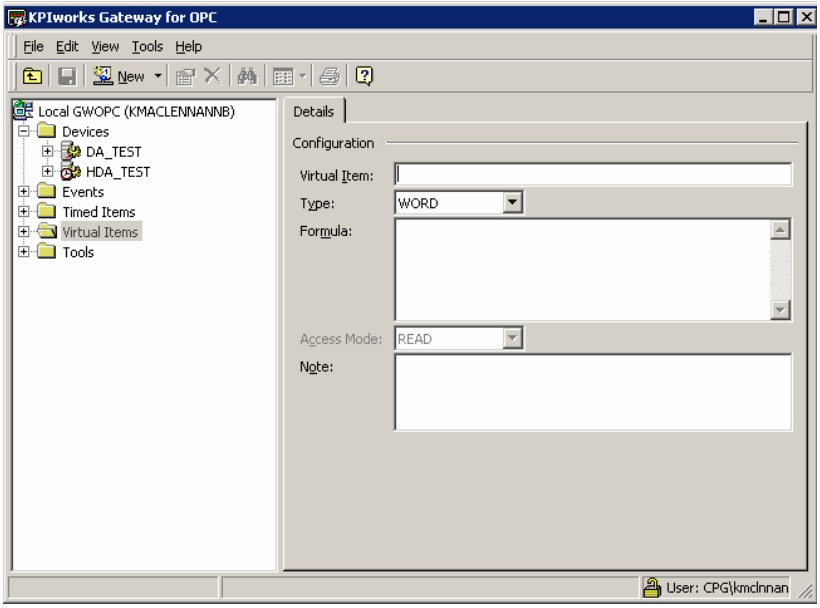
Creating and Modifying Virtual Items

Gateway for OPC allows the user to configure Items referred to as Virtual Items which provide a calculated value of data from the item rather than the current item value.

Adding a Virtual Item

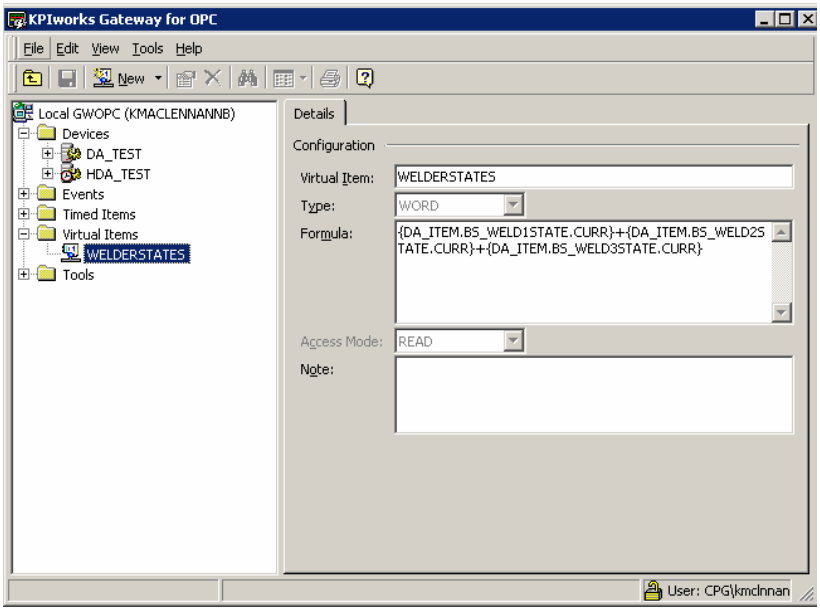
To add a Virtual Item:

1. Select the Virtual Items folder in the tree view and click the New icon in the toolbar. The following screen is displayed:



2. Enter in the name of the Virtual Item. This should be a logical name to describe the value that is being calculated.
3. The Type field will be defaulted to UNSIGNED WORD but may be changed to FLOAT, STRING or EVENT TEXT Type.
4. Enter in the Formula that the virtual item will calculate. This field may include regular text and configured DA Items, HDA Items, Timed Items or Virtual Items.
5. The Formula field label for an Event Text virtual item changes to Default, allowing you to enter in a default message to be used as an optional default value for the item when no event has populated it. Any configured items such as DA, HDA, Timed, or Virtual items may be added to the Formula field.
6. To obtain a list of the configured Items, enter { which opens up a drop down list of available Items. This first pop up menu allows you to select which Item type you wish to retrieve: DA_ITEM, HDA_ITEM, TIMED_ITEM, or VIRTUAL_ITEM. Selecting the Item Type will open another pop up menu to select the trigger item. The final menu allows you to select the cumulative or current values of the selected item.

   Various calculations may be performed here as in the example below.



7. Selecting an Item from the list will provide other values to include in the calculation such as Cumulative value, Current value, as well as current and cumulative values on all snapshots.
8. The calculation operations that can be used here are outlined in the following table:

Function	Operator(s)	Example
Addition	+	1+1
Associativity	()	(6+2)/2
Bitwise AND	&	1&3
Bitwise Exclusive OR	^	4^3
Bitwise Inclusive OR	|	3|1
Division	/	6/2
Modulo	%	7%2
Multiplication	*	6*3
One's Compliment	~	~8
Shift Left	<<	8<<2
Shift Right	>>	4>>5
Subtraction	-	6-1

The above table of operators is in precedence order. All operators associate from left to right If a Virtual Item formula refers to an Item which is in an error state (i.e. misconfigured or offline) then the Virtual
Item will return *NOT_FOUND* if referenced.
If the event in your devisor = 0, it will be forced to create a value of 1 and will be documented in your log file.

The Access Mode: field defaults to READ.

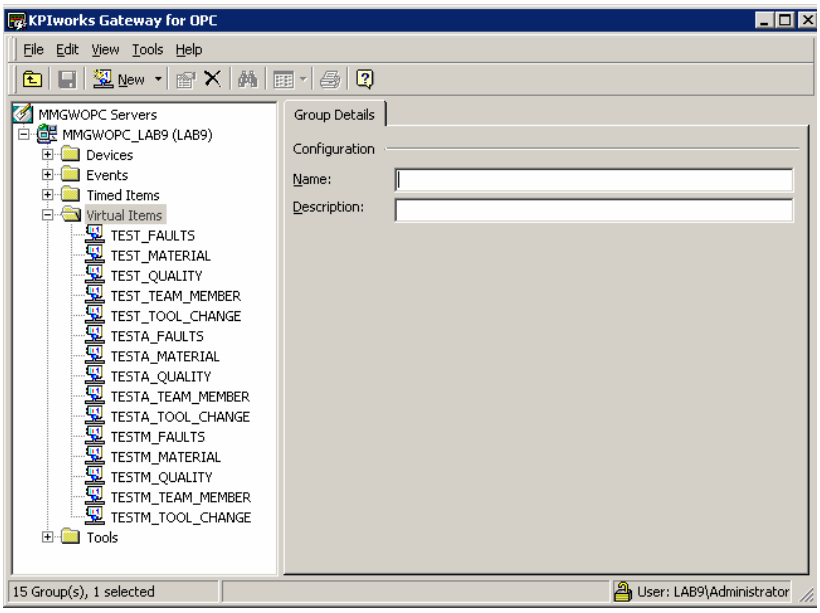
9. Enter in an applicable note in the Note: field. This field is optional.
10. Click the Save icon in the toolbar to save changes.

Adding a Virtual Item Group

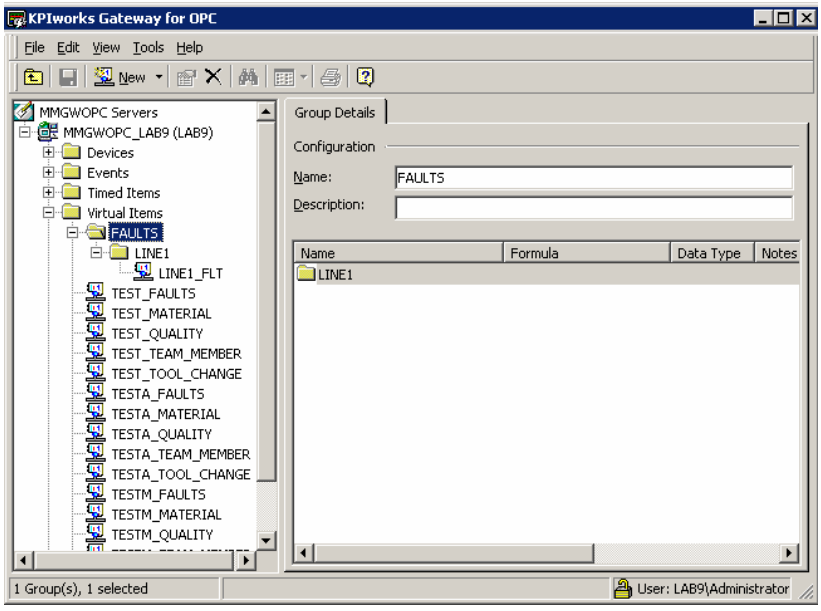
Gateway for OPC allows you to organize your Virtual Items more efficiently by allowing the creation of Virtual Item Groups. This provides a logical way to group virtual items for various machines, stations or other components of the lines.

To add a Virtual Item Group to the gateway:

1. Expand the Virtual Items folder and select the Virtual Item that you wish to add a Virtual Item Group to. Then right click and select New Virtual Item Group. You may also select the New button drop down on the toolbar and select Virtual Item Group. The following screen is displayed:



2. Enter the Name and Description of your group. Virtual Item Groups appear as their own level in the tree view allowing you to easily locate a Virtual Item for a certain area of the plant.

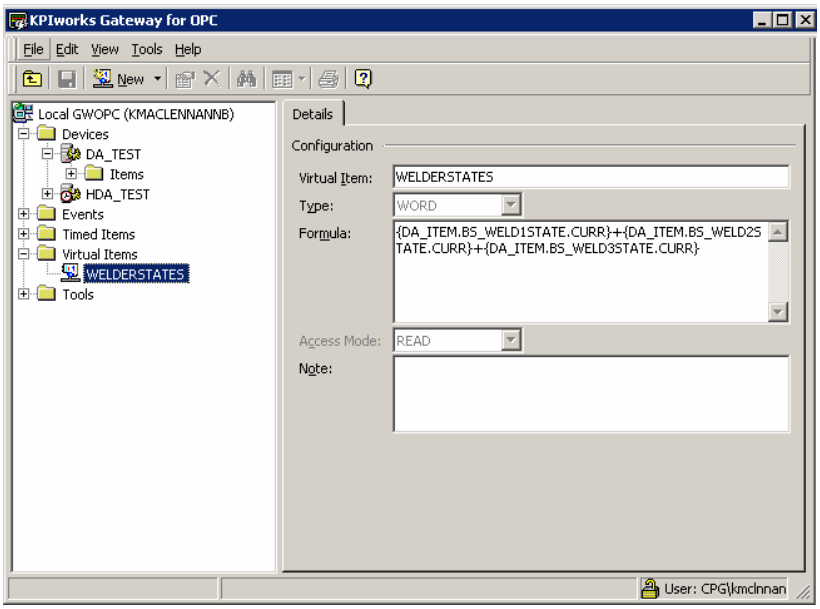


3. In this example, a Virtual Item Group called FAULTS has been created to easily locate fault information for each Line.

Viewing and Modifying Virtual Items or Virtual Item Groups

To view or modify OPC Virtual Items or Virtual Item Groups:

1. From the Virtual Items folder, select the OPC Item that you wish to edit then select the Item to be modified.



2. The configuration settings and information for the selected Virtual Item are displayed.
3. Click on a field to edit the Virtual Item information.
4. Click the Save icon in the toolbar to save any changes. Once the information has been saved, you cannot revert to the old information. The only way to get it back is by changing it again

Deleting a Virtual Item or Virtual Item Group

Virtual Items or Virtual Item Groups can be deleted through the Virtual Items folder in the tree view

To delete a Virtual Item or Virtual Item Group:

1. Select the Virtual Item or Virtual Item Group you want to delete. The Virtual Item information should then appear on the right-hand side of the screen.
2. Click the Delete icon to remove the Virtual Item from the database. Once a Virtual Item or Virtual Item Group has been deleted, it cannot be retrieved. The only way to retrieve it is by adding it back into the database. You cannot delete a Virtual Item or Virtual Item Group if it is being used in an Event, or Timed Item

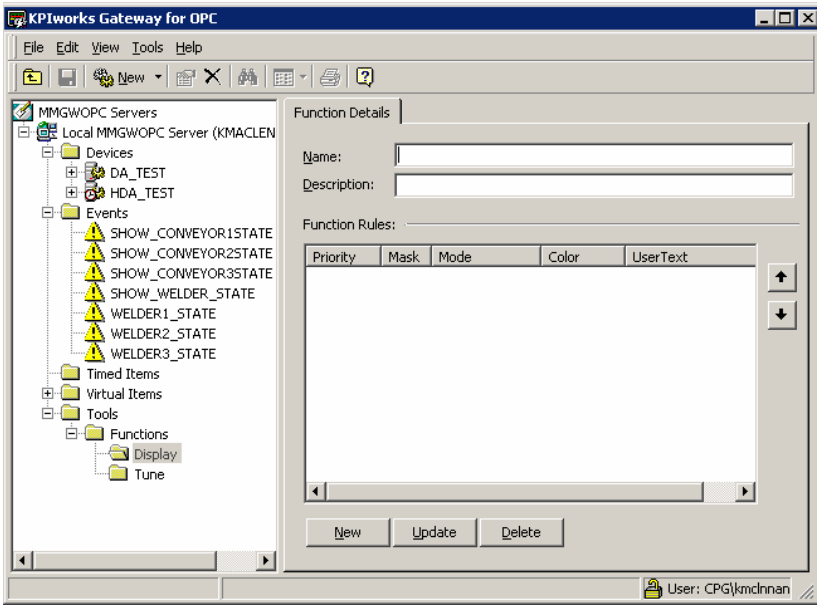
Configuring Function Rules

KPIworks Gateway for OPC allows you to configure various function rules to define user text that will be displayed on your marquees. Any change in the bit values defined in the rule for configured OPC items will be sent to the selected marquee or play the selected tune.

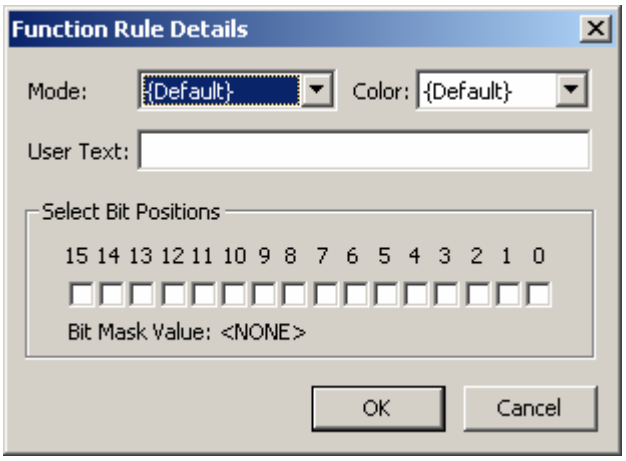
Function is a reserved word similar to DA_ITEM, HDA_ITEM etc.

Adding a Function Rule to a Display

1. To add a function rule to a Display:
2. Select the Tools folder from the tree view then expand the Functions folder. You may set a function to display a value to a marquee or to play a tune on a selected tune device.
3. Select the Display folder then click the New button in the toolbar to display the following screen:

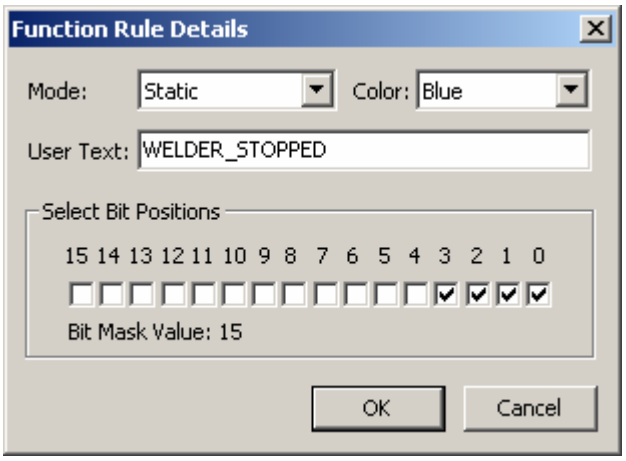


4. Enter in the name of the Function in the Name field.
5. Click the New button to add a new rule. The following screen is displayed:



6. Select the Mode and Color that the message will be displayed with on the marquee.

7. Enter in the User Text that will be displayed on the marquee when this bit value changes.
8. Select the bit positions that must be on/high in order for this rule to be implemented, sending the User Text to the marquee.

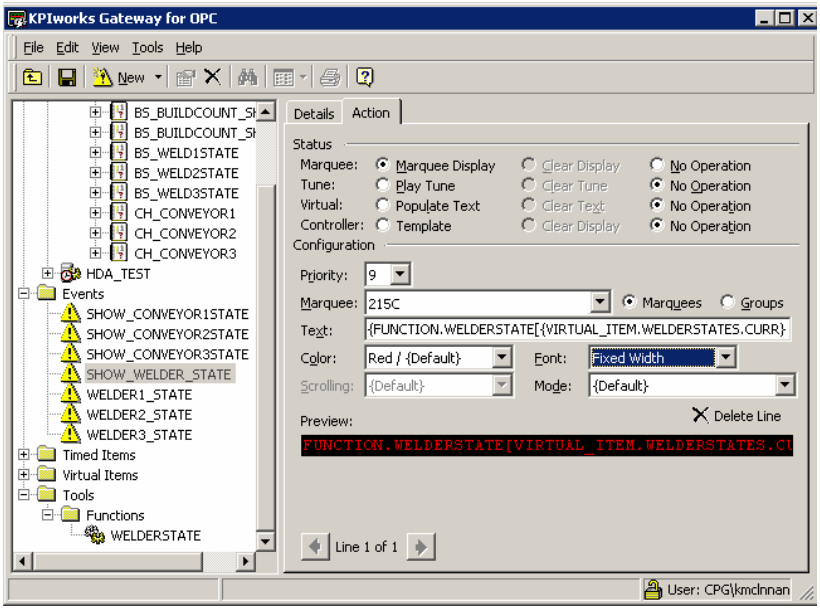


9. In this example, if bit 0, 1, 2 or 3 changes, the User Text of WELDER_STOPPED will be displayed on the selected marquee.

   Be sure to place multi-bit rules at the top of the Function Details screen by using the order buttons to the left of the rule details. This is necessary as rules are processed from top to bottom.

   The Bit Mask Value may be set to 0 so that if none of the bits change (i.e. the value of the bit is 0), a message may be displayed that everything is running correctly.

10. You may utilize this function rule in an event by including the function rule with the event details. The following format must be used in the Text field: {FUNCTION.functionname[{xx_ITEM.itemname.CURR}]}

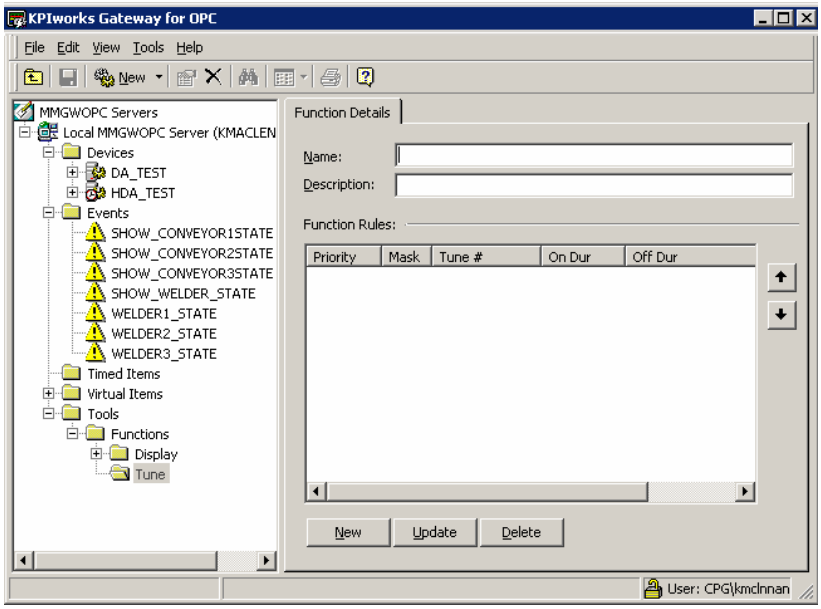


11. In the example above, the Function called WELDERSTATE will be used with the Virtual Item called WELDERSTATES. Remember this Virtual Item was created so that a change to any of the three welder states will be sent to the marquee via the SHOW_WELDER_STATE Event.

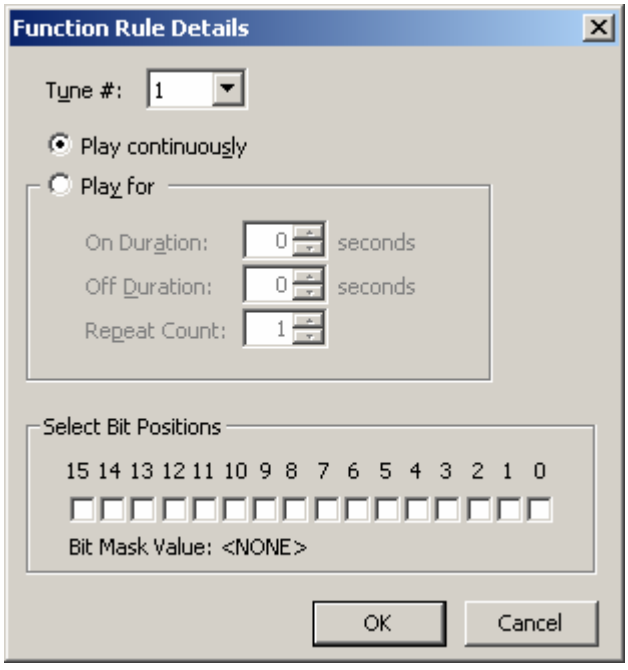
Adding a Function Rule to Play a Tune

To add a function rule to play a Tune:

1. To play a tune when a bit value changes, select the Tune folder then click the New button in the toolbar to display the following screen:

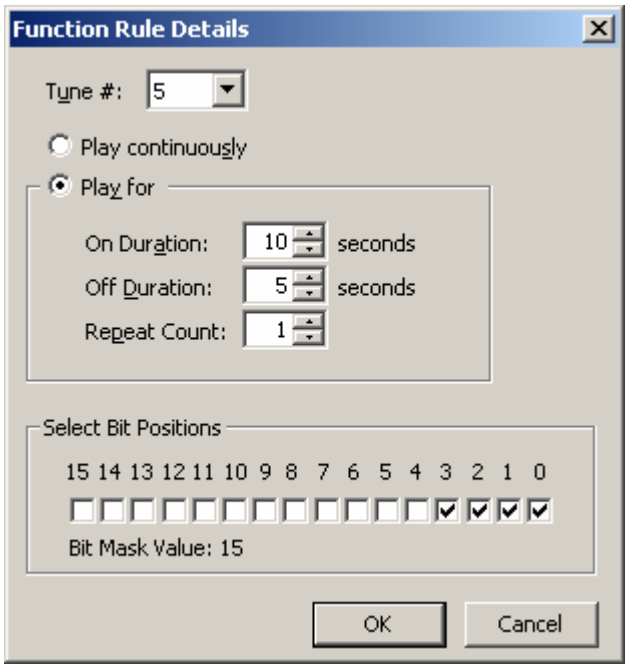


2. Enter in the name of the Function in the Name field.
3. Click the New button to add a new rule. The following screen is displayed:



4. Select the Tune # that will be played when the bit value changes.
5. You may elect to play the tune continuously or for a set duration of time.

6. Select the bit positions that must be on/high in order for this rule to be implemented, causing the selected tune # to play.

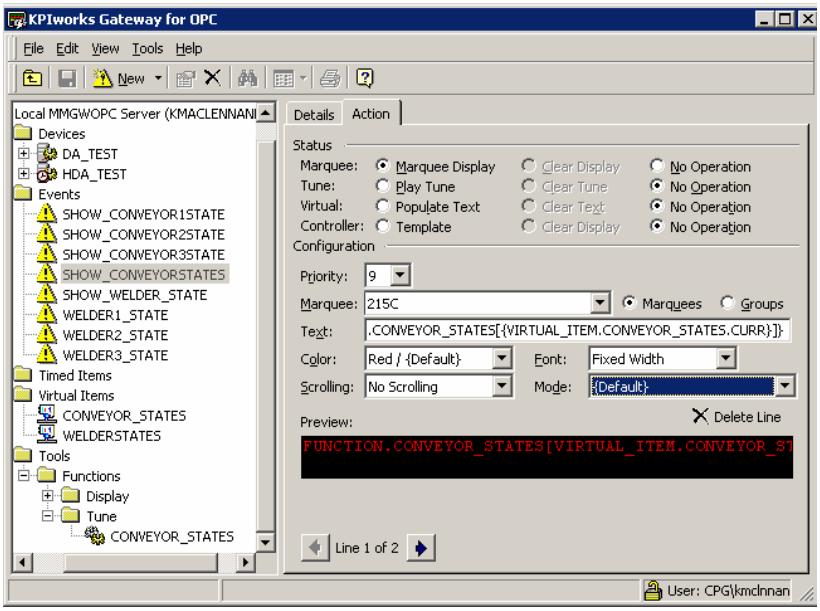


7. In this example, if bit 0, 1, 2 or 3 changes, Tune #5 will be played on the selected tune device for that Event.

   Be sure to place multi-bit rules at the top of the Function Details screen by using the order buttons to the left of the rule details. This is necessary as rules are processed from top to bottom.

   The Bit Mask Value may be set to 0 so that if none of the bits change (i.e. the value of the bit is 0), a tune may be played to notify that everything is running correctly.

8. You may utilize this function rule in an event by including the function rule with the event details. The following format must be used in the Text field: {FUNCTION.functionname[{xx_ITEM.itemname.CURR}]}



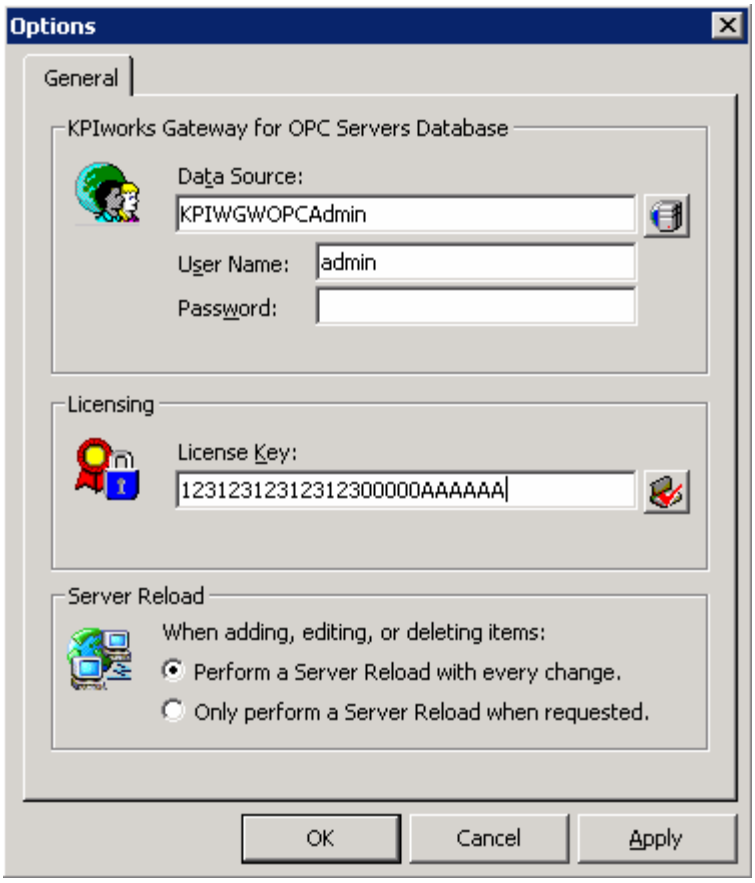
9. In the example above, the Function called CONVEYOR_STATES will be used with the Virtual Item called CONVEYOR_STATES. Remember this Virtual Item was created so that a change to any of the three conveyor states will play the selected tune via the SHOW_CONVEYORSTATES Event.

Reloading the Gateway Server

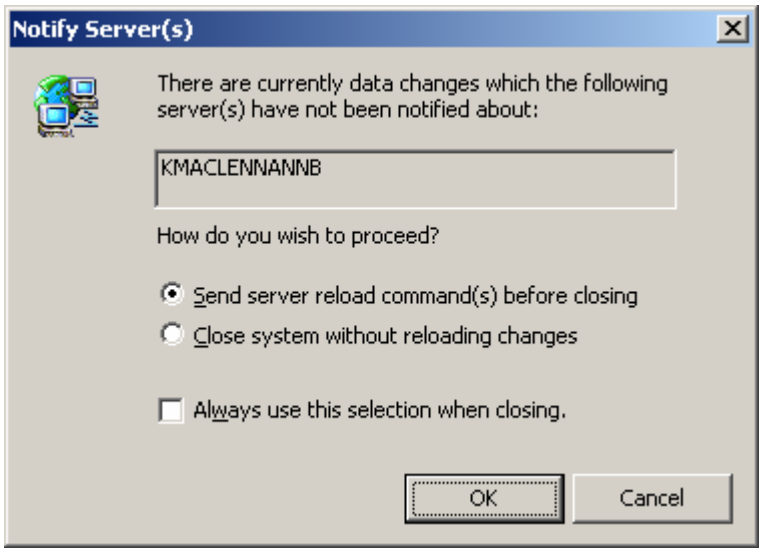
KPIworks Gateway for OPC gives you the option to reload the server with any additions, edits or deletions automatically or when requested by the user.

Reloading the Server

1. To reload the Gateway for OPC server:
2. From the Tools menus, select Options. The following screen is displayed:



3. Select if you would like the server to automatically reload after every change or to perform the reload only when requested.
4. If you choose to reload after every change, the reload will take place when the Save button is clicked.
5. If you choose to reload only when requested, you will be prompted that there are data changes that the server needs to notified about and have the option to either send the reload before closing or close the system without reloading the changes:

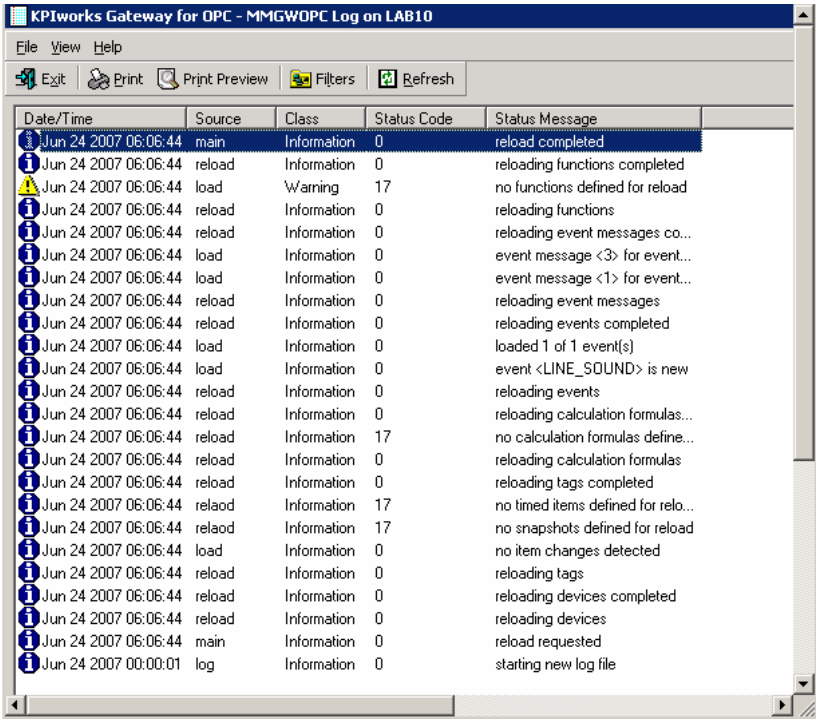

Notify Server(s)
There are currently data changes which the following server(s) have not been notified about:
KMACLENNANNB
How do you wish to proceed?
Send server reload command(s) before closing
Close system without reloading changes
Always use this selection when closing.
OK
Cancel

Viewing the Log File

KPIworks Gateway for OPC allows you to view the log files associated with the various components of the software. The log files contain an accurate history of every transaction and modification made to the database.

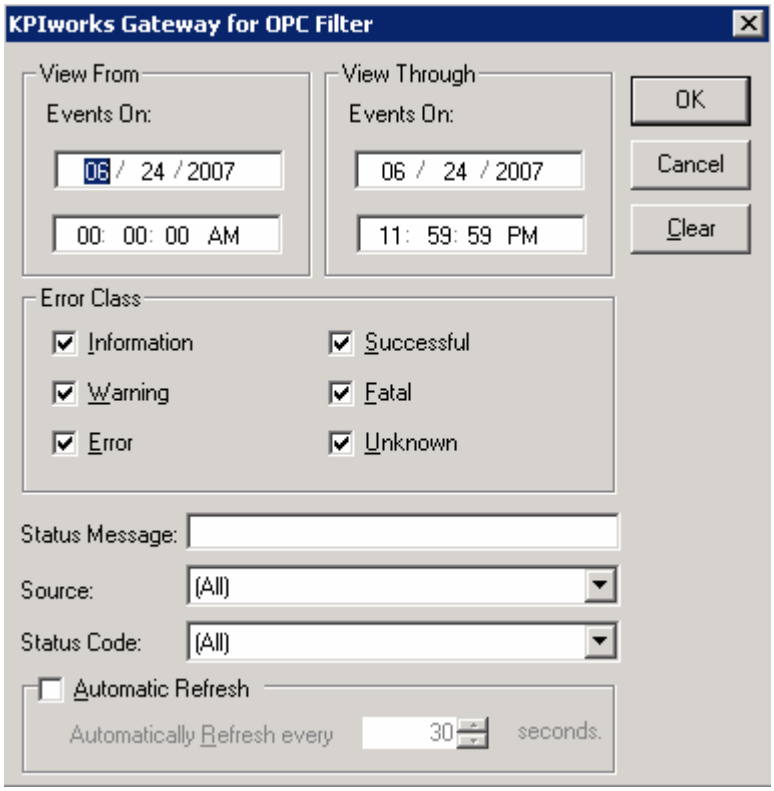
To View the Log File:

1. Select View Log option from the View menu to display the following screen:



2. Double-click the log entry for further information.

3. Click the Filters button and choose viewing options to display only the desired information.



4. The Events On: field defaults to the current day.
5. The Status Message field can be used to search for a portion of the message in the log.

Only certain characters may be used in this field. The common search characters are as follows:

Character	Match made	Example
?	Any single character	Text in the log is ABC, DBC and XYZ. If ?BC is used in the Status Message field, only ABC and DBC will be returned.
*	Zero or more characters	*Initiated* in the Status Message field would return all log items with the word 'Initiated'
#	Any single digit (0-9)	Text in the log is Device1, Device5, Device8, Device10. Keying in Device# in the Status Message field, will return Device1, Device5, and Device8.

When matching the special characters left bracket ([), question mark (?), number sign (#), and asterisk (*), enclose them in brackets. Ex. to find all log items that start with [you need to enter in [[]* in the Status Message field.

6. Select the Automatic Refresh option to automatically refresh the log file based on the seconds specified.

Chapter Six

Configuring and Using Security

The KPIworks Gateway for OPC comes equipped with security options that allow the administrator to configure users with limited security access. It is conveniently displayed in the tree view under the Tools folder when enabled.

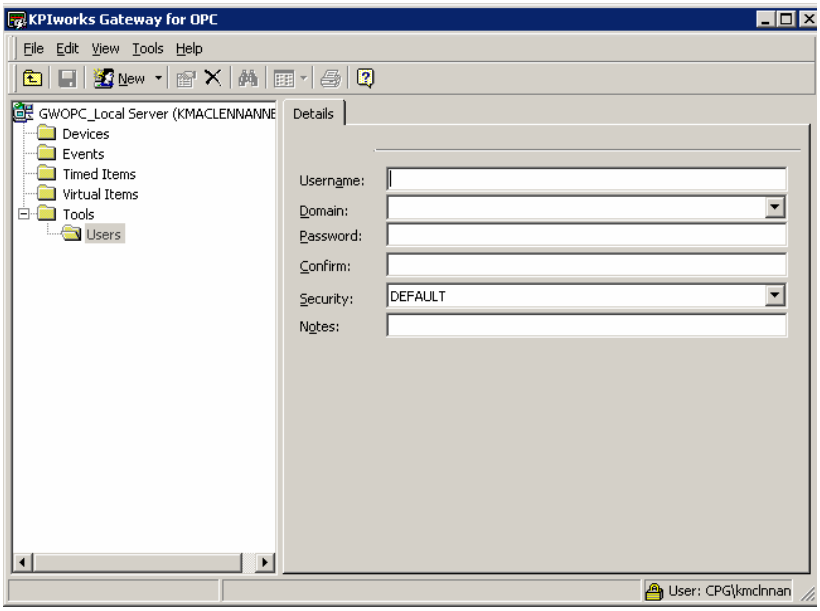
Enabling and Configuring Security

If security is enabled when the Gateway for OPC server is configured, either by selecting Basic or Ford mode security (specific only to Ford users), a Users folder appears under the Tools section of the tree view.

The Users folder allows the administrator to add destinations with limited access to various user applications.

Adding a User to Security

1. Click on the Tools folder then select the Users folder. Right click and select New User or click the New icon in the toolbar. The following screen is displayed:



2. Enter the Username for this account. This must be the Windows login username. The first user entered must be an administrator with Admin security. The last user removed must also be an Admin.
3. Select the Domain from the drop down list of available domains.
4. Enter a Password for this username then confirm password.
5. Select the level of security this user will have. Currently only Admin access is available for all Gateway for OPC users.
6. Enter any additional notes on the user in the Notes field.
7. You will now be prompted for a User ID/password and a valid Domain name before you can access KPIworks Gateway for OPC.


Login to server: Testing (LAB12)
ADAPTIVE
Adaptive Micro Systems LLC
User ID:
Password:
Domain:
LAB12
Login
Cancel

Chapter Seven

Running the Database Converter

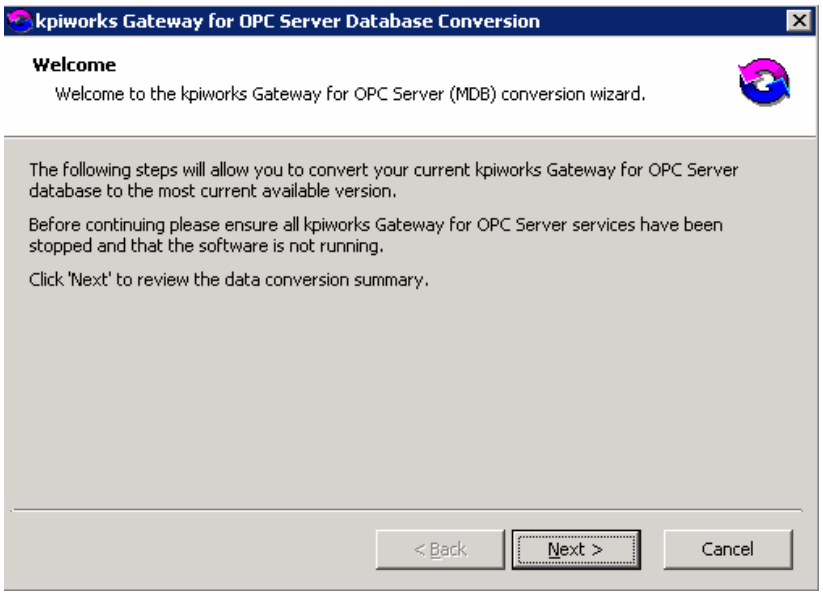
The KPIworks Gateway for OPC comes equipped with a database converter that allows the administrator to upgrade a database if they are running an older version of the gateway.

Upgrading the Database

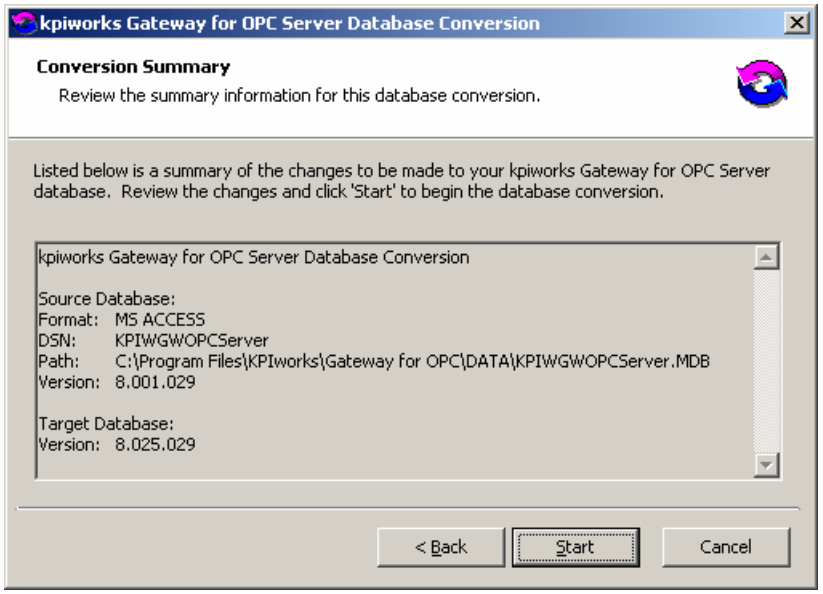
If upgrading from a previous version of KPIworks Gateway for OPC, the administrator and server databases must both be converted to run with the new version.

Running the Convert Option

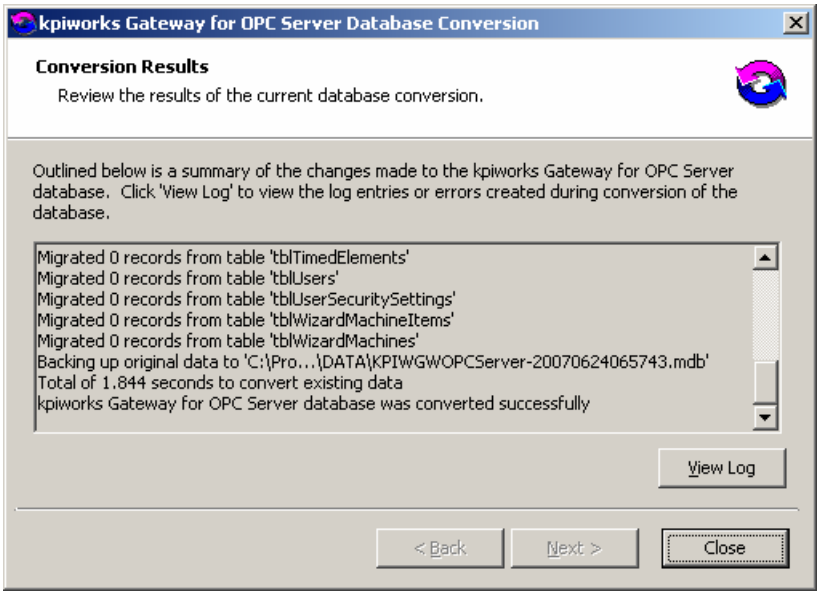
1. From the Start menu, select Programs – KPIworks - Gateway for OPC – Database Conversion. This will launch the Conversion Wizard.



2. Be sure to stop the KPIworks Gateway for OPC service via Control Panel before running the database conversion.
3. The Conversion Wizard will display a summary of changes that will be made to your KPIworks Gateway for OPC database, including the current version that is running and the target database.



4. Click Start to run the converter. Conversion results will then be displayed.



Technical Assistance

Support Contracts

You may purchase a support contract for KPIworks Server. Various levels of support are available. View the KPIworks web site (www.KPIworks.com/support <http://www.KPIworks.com/support>) and submit an inquiry for the product you are using.

For all support related issues, please provide the version of the software that you are running. This may be verified by browsing your Start menu, Programs, then selecting the application in question (i.e. KPIworks\Server), then selecting Version Info. This will provide the install kit version that is currently running.

Help Desk

To reach our help desk please use one of the following methods:

Telephone: +1.800.558.7022 x519
Fax: +1.414.357.2029
Web: www.KPIworks.com <http://www.KPIworks.com/support> - Customer Care
E-Mail: support@KPIworks.com <mailto:support@KPIworks.com>

Please have your version information and support contract or product license key ready before calling or include it in your correspondence. Support is free for product trials and for the first 30 days of product ownership. To view your product version select Start – Programs – KPIworks – Server – Version Info.

Glossary

Administrator

Typically a GUI application, this component facilitates configuration and monitoring of a server engine. If changes are made to the server configuration the administrator notifies the engine to reload its running configuration either automatically or on user demand. An example of an administrator component is FirstPAGE Administrator.

This administrator allows you to maintain the FirstPAGE server's engine configuration.

Administrator Kit

An administrator kit contains the product's administration component only. After installing this kit on a workstation you may utilize any of the features of the Administrator component.

Client

A client component utilizes the facilities of a standard ADAPTIVE server. Typically a GUI application, this component provides a user-friendly interface of the available services offered by the server engine. An example of a client tool would be FirstPAGE Client, which presents the user with a list of known messaging destinations and allows them to send messages to one or more destinations.

Cumulative Values

Calculated values from the OPC server that can be obtained as follows: Threshold – Start time + Rollover x Threshold. Cumulative values are available for Data Access Items and are referenced via the .CUMUL extension.

Current Values

Values that currently exist in the OPC Server. i.e. a tag pulling TANKLEVEL.CURR values would display the current tank level value

DA Item

Data Access item which refers to the current data available in the OPC Server

Device

A KPIworks Gateway for OPC device is a name assigned to an OPC server, which will be used to collect item values.

Engine

An engine component implements a unified interface to a set of common, related protocols. The engine provides services to clients and gateways such that a common interface may be used to manipulate many different types of devices. Engines are administered via Administrator components and are utilized by clients, gateways or use written components.

Event

A condition that contains a rule that when true, will display text, items, timed items and virtual items to a specified marquee or play a tune to a specified speaker.

Event Text

A virtual item type that has been created to display a message based on a string of multiple events.

Gateway

A gateway component creates a bridge between a third party product and a standard ADAPTIVE server. Typically an engine this component provides a conduit for forwarding events from the third party product into a ADAPTIVE standard server.

An example of a gateway would be an interface to an HMI or SCADA system forwarding events from that system to FirstPAGE Alarm Manager for processing. An example of a gateway is KPIworks Gateway for VisualPlant. This gateway forwards VisualPlant incidents to KPIworks.

HDA Item

Historical Data Item that refers to the historical data that may be retrieved for a certain period of time.

Marquee

A sign display that serves as a visualization communication tool, providing the means to display time, date and message text such as production counts, and what areas of a plant are experiencing problems.

OPC Item

An OPC tag that has been configured in the OPC Server.

OPC Server

A standard mechanism for communicating to numerous data sources, either devices on the factory floor, or a database in a control room.

Server Kit

A server kit typically contains the server engine and administrator components. In some cases a client component is also included with this kit. The server kit is usually installed on a centralized host, and one or more clients or gateways utilize this server. An example of a server kit is FirstPAGE Server. This kit contains the FirstPAGE engine, administrator and client.

Snapshot

A picture of the current tag value for a given time. You can specify at what time and how often this picture will be taken.

Timed Item

A schedule of configured datatype elements that determine which items will be utilized based on time of day.

Virtual Item

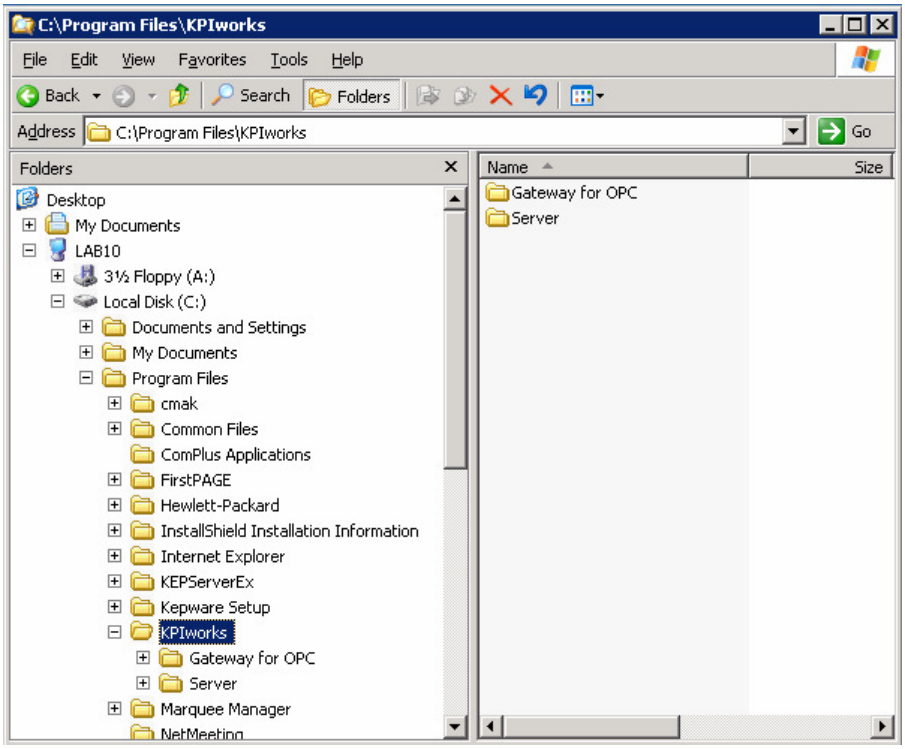
A calculated value derived from a formula consisting of tags, numeric integer constants and the operators ‘+’, ‘-‘, -*’ and ‘/’

APPENDIX A – Installing KPIworks Gateway for OPC Administrator

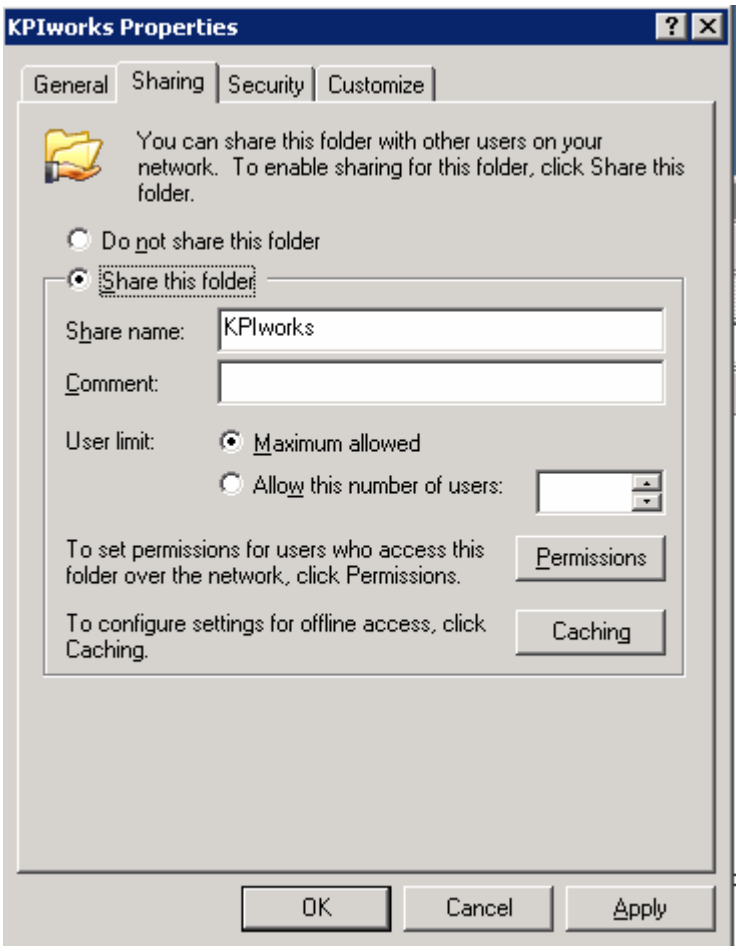
Before installing and configuring KPIworks Gateway for OPC Administrator, there are two steps that must be completed. The first is to share the files on the server running KPIworks Gateway for OPC.

Sharing an Application Folder

1. In the Program Files folder, chose your Application folder – in this case, KPIworks. Expand the folder and chose the part of the application you would like to share. In this example, Gateway for OPC is the folder we want to share because it contains the data and log files.

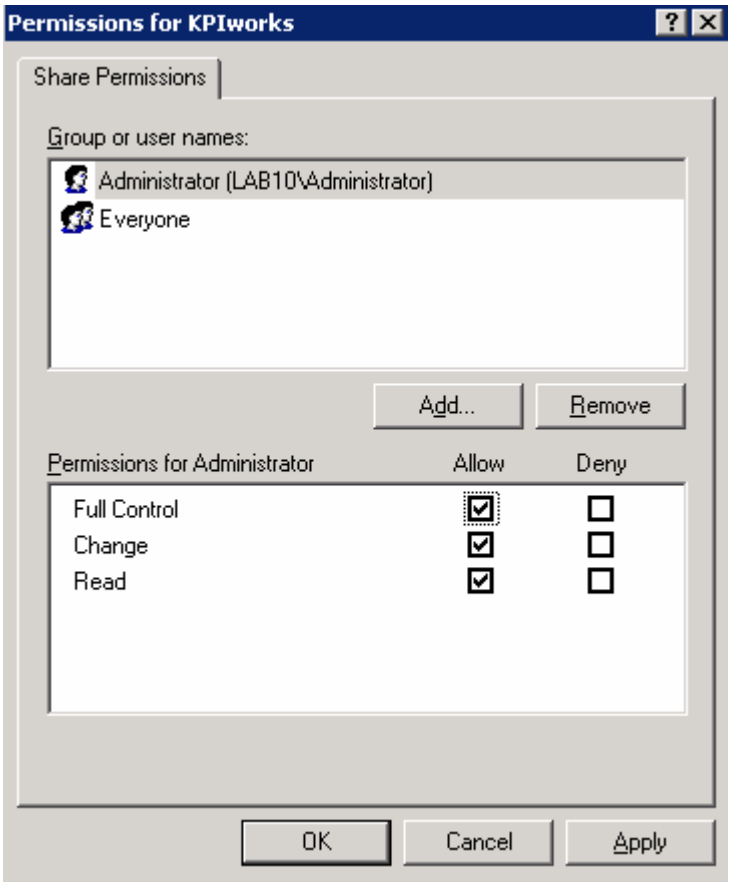


2. Right click on the folder and chose Sharing and Security. You should get the following screen:



3. Chose “Share this folder” and chose OK. An icon of a hand holding a folder will appear before the folder you are sharing.

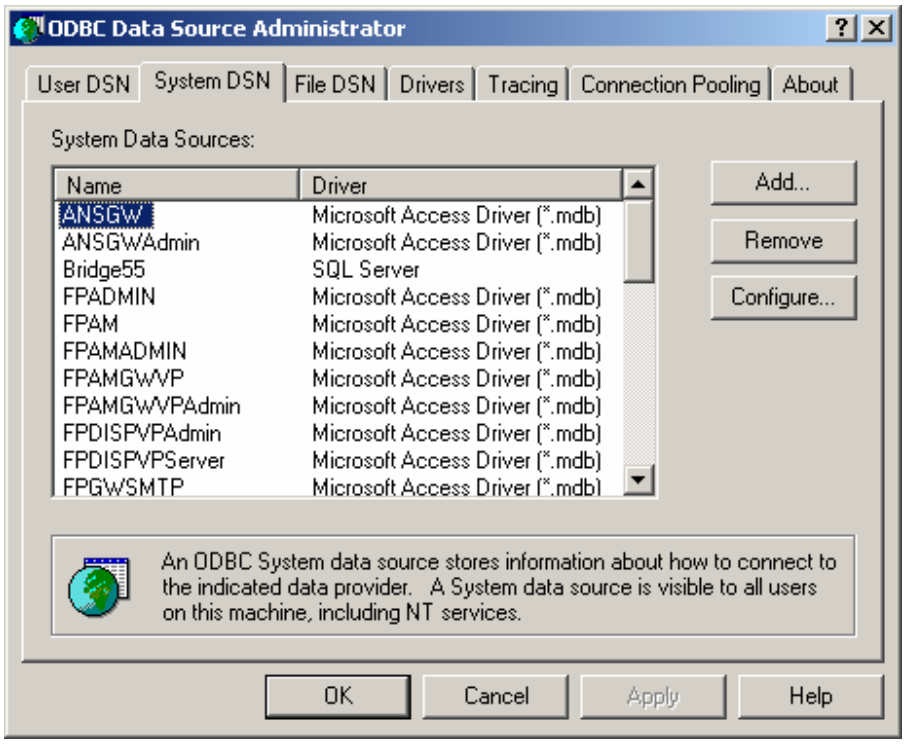
4. Click on the Permissions button. Make sure under Permissions for Administrators, Full Control is checked off under Allow and then click Apply.


Permissions for KPIworks
Share Permissions
Group or user names:
Administrator (LAB10\Administrator)
Everyone
Add...
Remove
Permissions for Administrator
Allow
Deny
Full Control
Change
Read
OK
Cancel
Apply

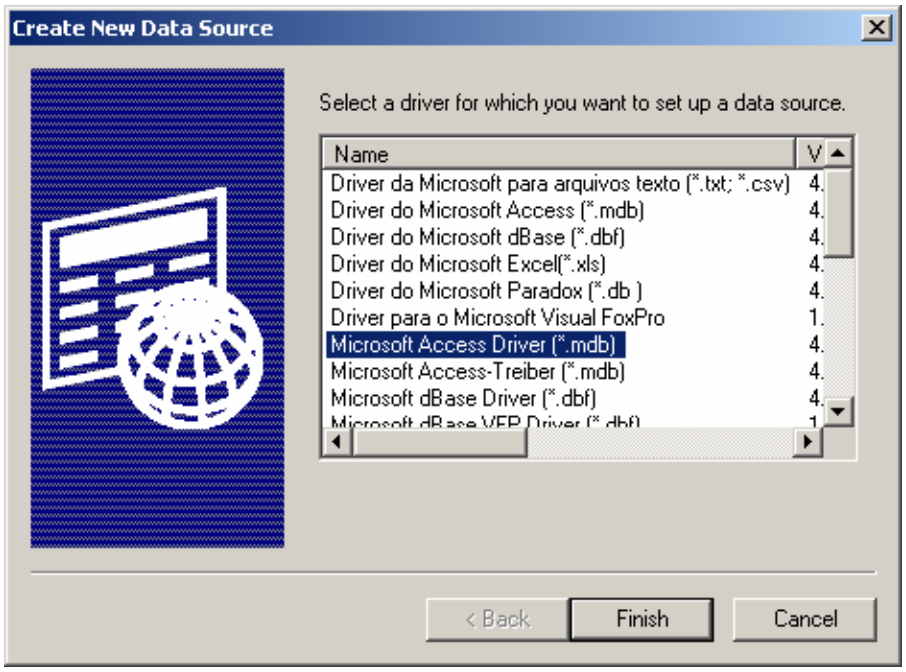
Creating a DSN

The next step is to create a DSN. This must be done on the computer where the Marquee Manger Gateway for OPC Administrator will be installed.

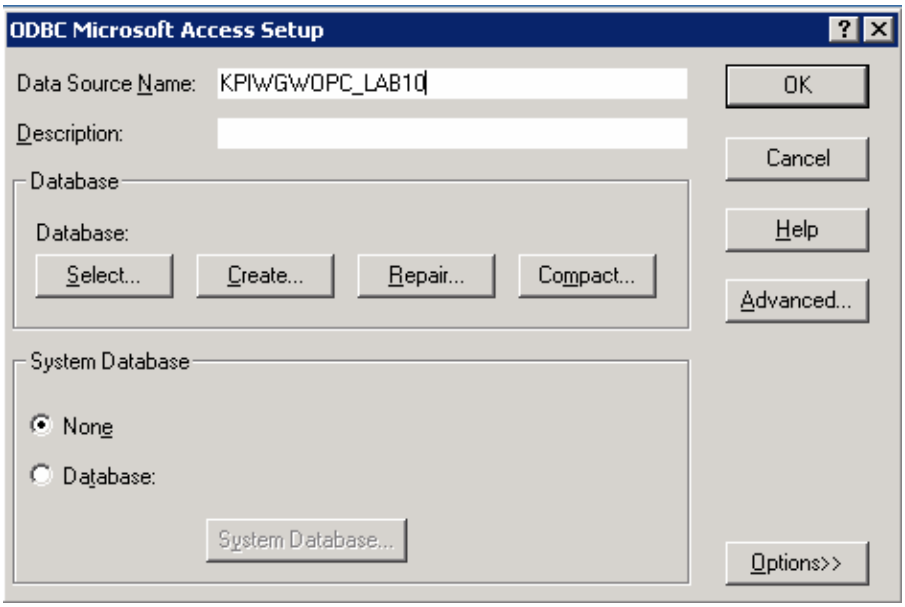
1. In Windows, go to Start > All Programs > Administrative Tools > Data Sources (ODBC). Chose the System DSN tab:



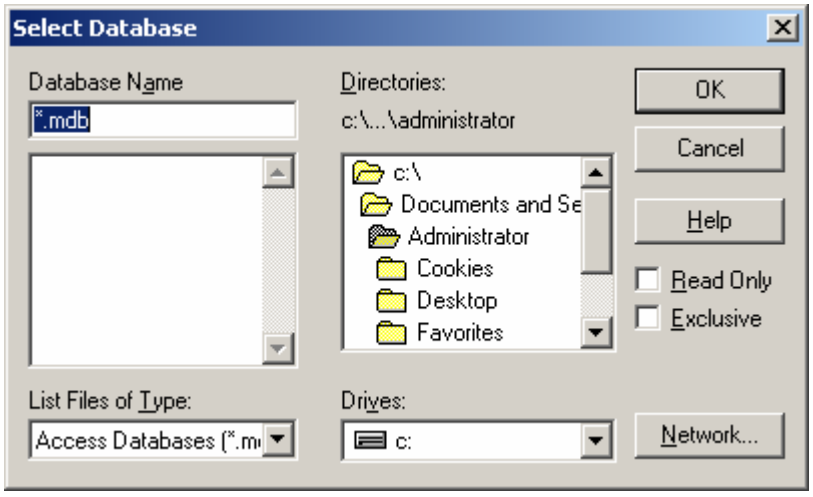
2. Chose the Add button to get this screen:



3. Double click on Microsoft Access Driver (*.mdb) and enter the name of the application, adding the name of the computer where it resides.

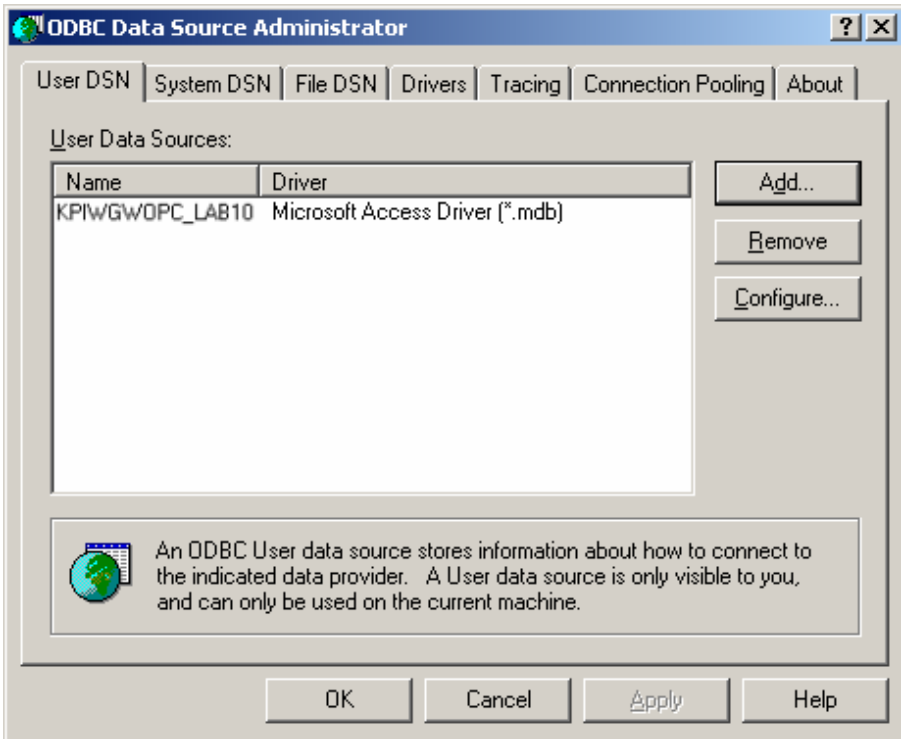


4. Chose Select to choose an existing database. The following screen will appear:



5. In the Database Name, type “\\”, the name of the computer the Server Application is installed on, “\” the share name, “\” data “\” and the name of the database file. An example would look like this:
\\Lab12\Gateway for OPC\data\MMGWOPC.mdb

6. Click OK and your new DSN name should appear.

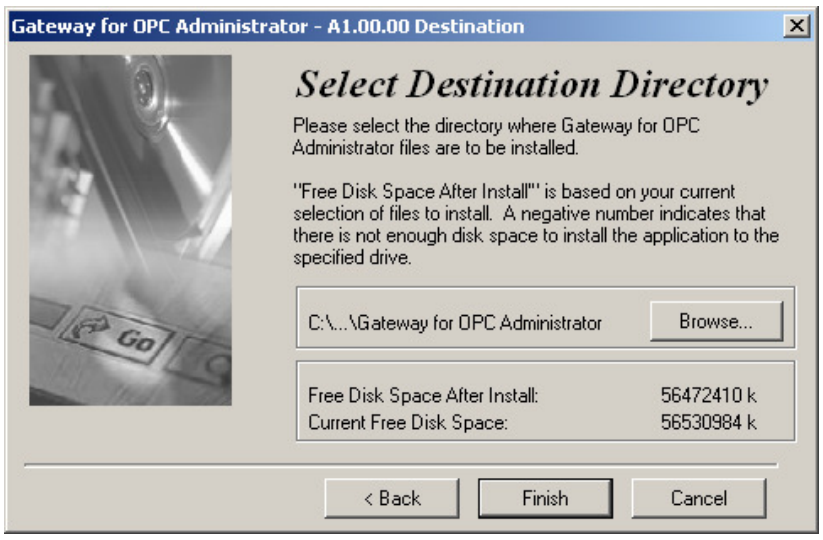


7. Click OK.

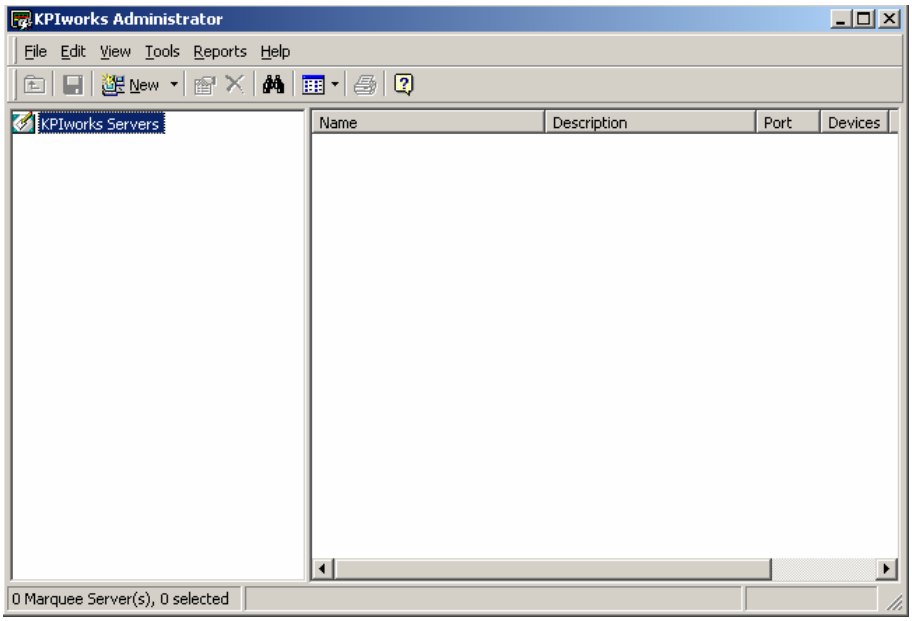
Setting up the Administrator

1. Run SETUP.EXE and the following screen will appear:

2. Click Continue. During install, you will only be prompted for the install directory:



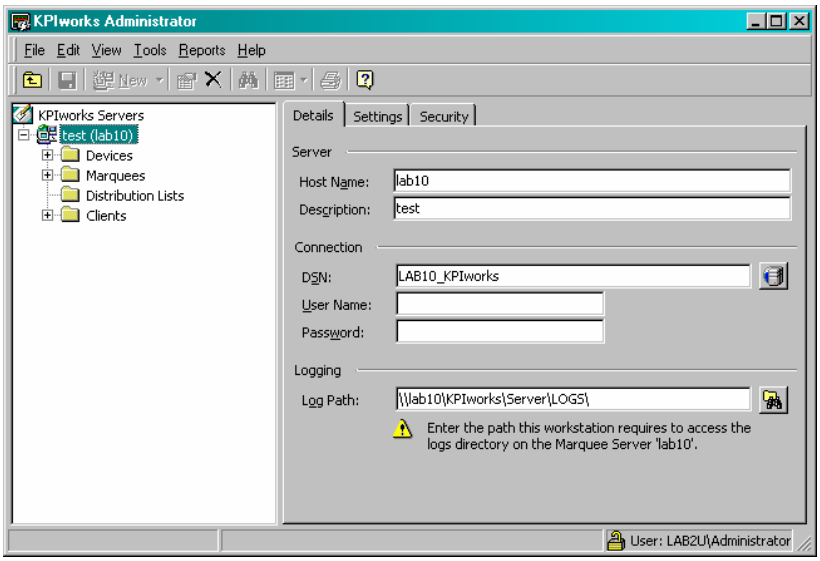
3. Select Finish. When you launch KPIWGWOPC Administrator, you will get the following screen:



4. Select “New “ and choose the DSN that you created in the previous steps, and hit OK.

5. On the Details tab, under Server, enter your Host Name. This should be the name of the computer your Server Application is installed on. Enter a description. Then enter a Description.

6. Select the Log Path required to view the log on the KPIworks Gateway for OPC server machine.



7. The Settings tab displays the details from the KPIworks Gateway for OPC server. These fields are greyed out and cannot be edited from the remote Administrator.

8. The Security tab displays the security type that was set up on the server. These fields are greyed out and cannot be edited from the remote Administrator.
9. Click the Save icon in the toolbar to save changes.
10. The Items and Events that have been configured on the KPIworks Gateway for OPC server will now be displayed. You may now begin to add or configure routing rules from the KPIworks Gateway for OPC Administrator.

APPENDIX B – Configuration Examples

Configuration Examples for OPC

Before attempting any of the following configurations examples, connect to all required OPC servers and define all required data items as described in Chapter Five. (USING KPIWORKS GATEWAY FOR OPC – Creating and Modifying Items)

Example 1 – Showing a Count

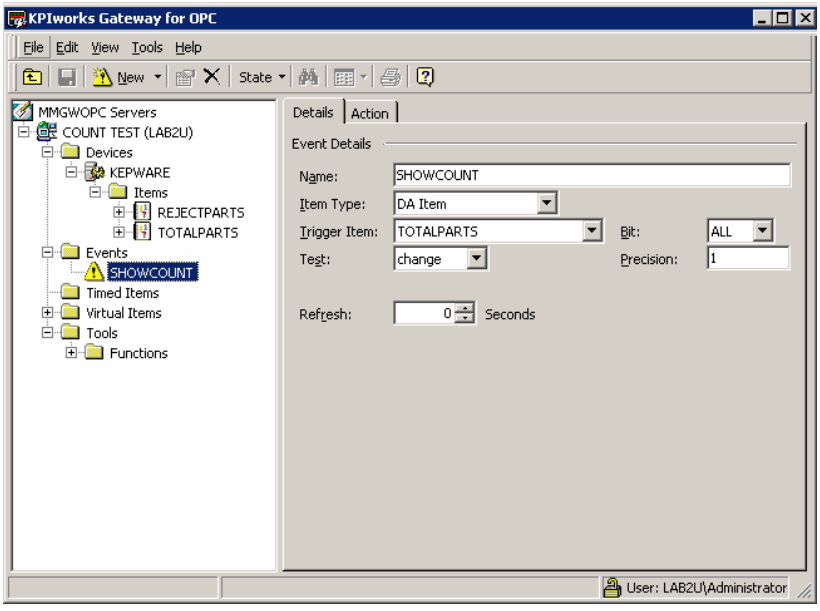
The following example will show a count, updating the marquee with each part built.

- Required items: OPC items, which have previously been set up
- TOTALPARTS (a running count of how many parts are built in total)
- REJECTPARTS (a running count of how many of the total parts built are rejected)

Create a New Event

1. Click the Events folder then pick the New icon on the toolbar.

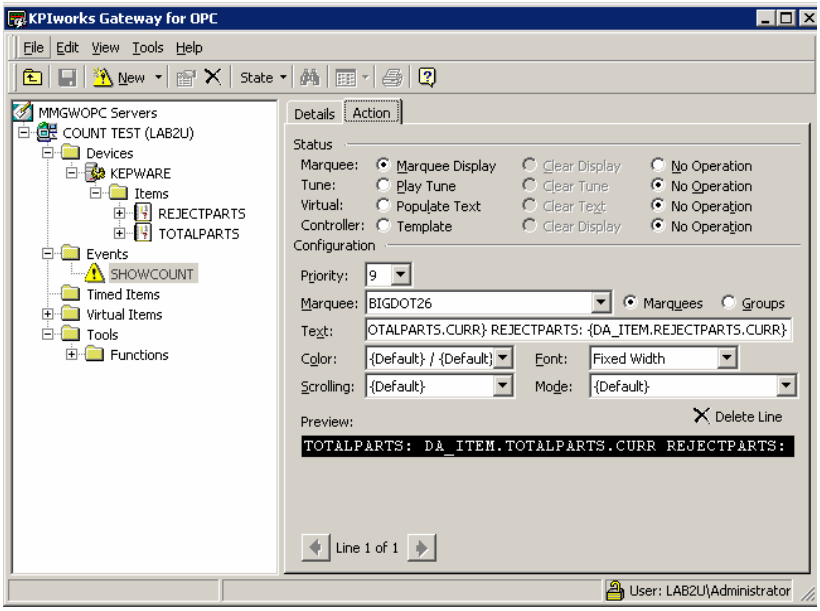
   Details Tab:
   Name – choose name which makes sense about the count that will be displayed (SHOWCOUNT)
   Item Type – what item you want to monitor (DA_ITEM)
   Trigger Item – the item that will trigger the count (TOTALPARTS)
   Test – this value will determine what action will cause the marquee to update (CHANGE)
   Precision – this number represents the quantity of parts built before the marquee refreshes (1)
   Refresh – can remain at “0” as the change of the marquee is triggered by the Precision amount.



   Actions Tab:
   Status – how you want to be notified of the event – in this case, marquee
   Priority – defaults to 9

Marquee – chose which marquee you want to display the count
Text – involves entering what text you want to see displayed on the marquee.
a) enter the name of the count(s) to be displayed (TOTALPARTS)
b) type :
c) type {
d) pick what item type you will be using (DA_ITEM)
e) choose your item name (TOTALPARTS)
f) choose the current value (CURR)
g) now pick the values for Color, Scrolling, Font and Mode

You are able to display more than one count on the marquee if you have more than one item set up. The text to display the number of parts produced and the rejected parts produced would be:
TOTALPARTS: {DA_ITEM.TOTALPARTS.CURR}
REJECTPARTS: {DA_ITEM.REJECTPARTS.CURR}



2. Once this information is saved, the marquee will display the count results and will continue updating.
   i.e. TOTALPARTS: 100 REJECTPARTS: 5

Example 2 – Showing a Count Using a Formula

The following example will show how to calculate the total parts built minus the rejected parts built to display total good parts.

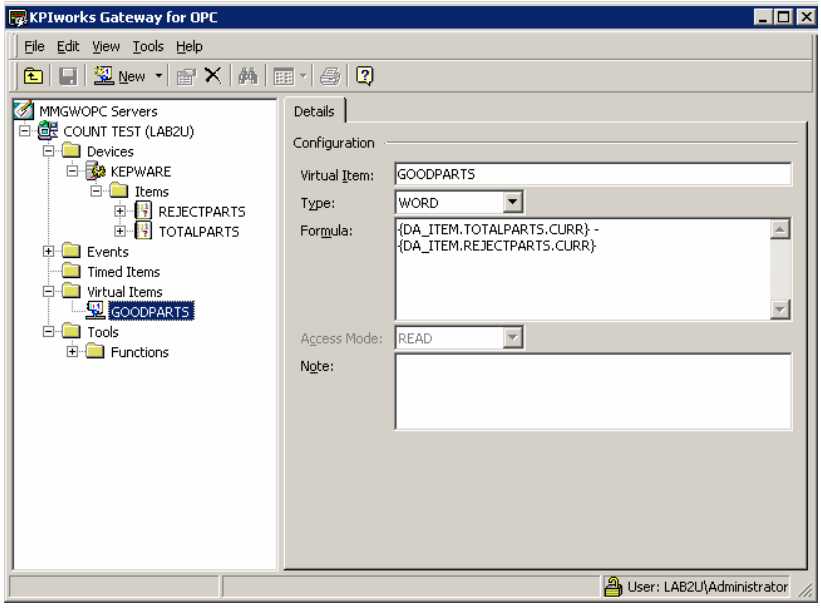
- Required items: OPC items, which have previously been set up
- TOTALPARTS (a running count of how many parts are built in total)
- REJECTPARTS (a running count of how many parts are rejected of the total parts built)

Create a Virtual Item

1. Click the Virtual Items folder then pick the New icon on the toolbar.

   Details Tab:

Virtual Item –name which relates to the information calculated (GOODPARTS)
Type – Unsigned/Signed word
Formula – enter a mathematical equation by:
a) type {
b) pick an item (DA_ITEM)
c) choose first item (TOTALPARTS)
d) select the value (CURR)
e) enter the math equation you want to use (-)
f) choose the second item (REJECTPARTS)
Your formula will look like this:
{DA_ITEM.TOTALPARTS>CURR} – {DA_ITEM.REJECTPART.CURR}
g) follow a,b,c,d



To use your Virtual Item, you must create a new Event.

Under the Details tab, call the new Event GOODCOUNT, with the Trigger Item being GOODPARTS.

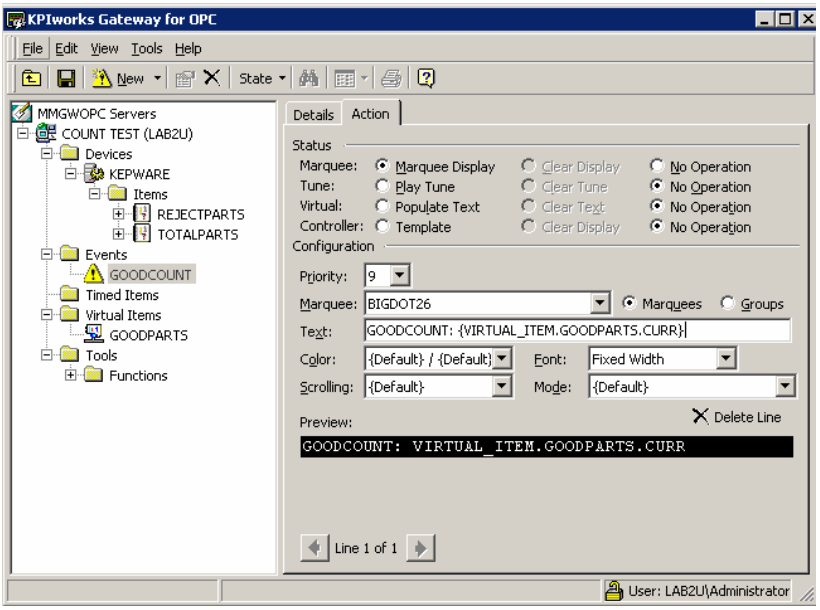
Under the Actions tab, for Text:
a) enter the name of the count(s) that will be displayed
b) type :
c) type {
d) pick the item you will be using from the dropdown menu (VIRTUAL_ITEM)
e) select your Virtual Item (GOODPARTS)
f) choose the value (CURR)
g) now select the values for Color, Scrolling, Font and Mode

2. The marquee will display the total number of good parts produced e.g. GOODPARTS: 95

Example 3 – Showing a Problem with Machine Operation

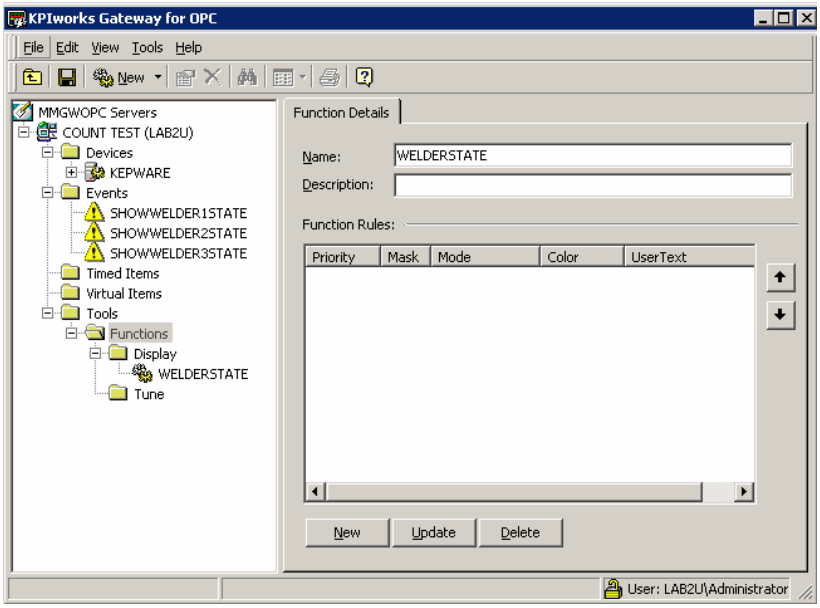
The following example will show how to setup notification of problems with machinery.

- Required items: OPC items, which have previously been set up
- WELDER1STATE, WELDER2STATE, WELDER3STATE – the state of the welder with values ranging from 0-10, 0 being normal, all other numbers indicating faults.



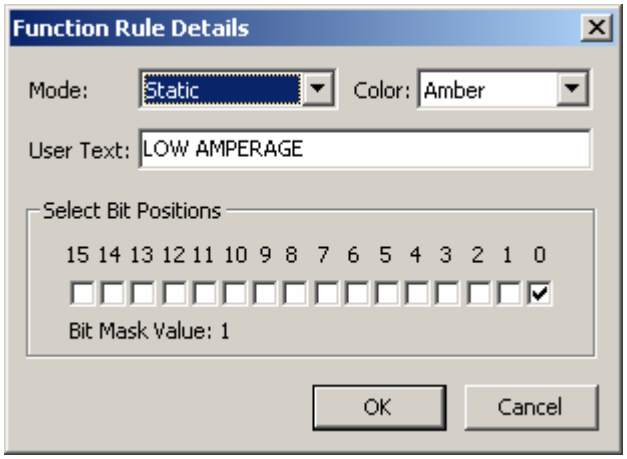
Create a Function

1. Expand the Tools folder, and then the Functions folder. Click on the Display folder and click New on the toolbar. The following screen appears:



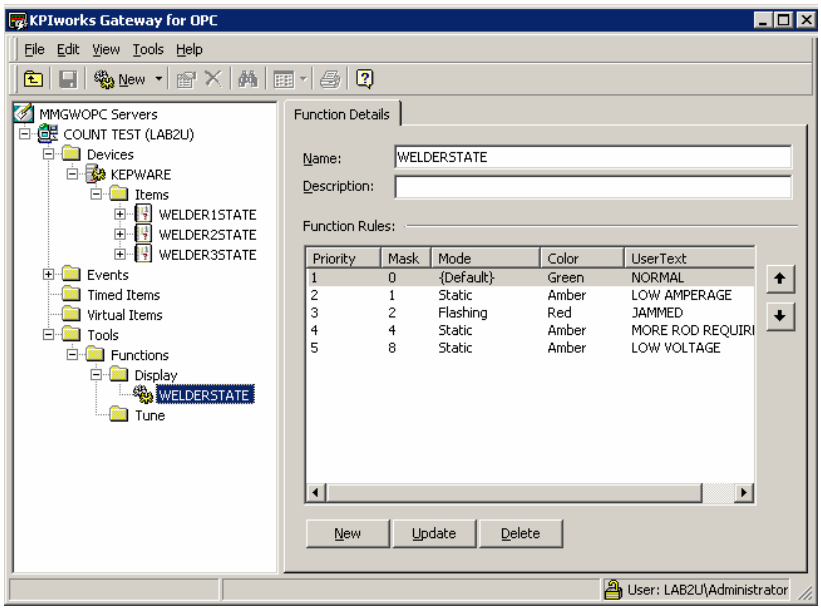
2. On the Function Details tab, enter a name that relates to the information evaluated (WELDERSTATE)

3. Select the Function Details New button on the bottom of the form.
   Mode/Color – how you want your text to appear
   User Text – the event you want to convey (LOW AMPERAGE)
   Select Bit Positions – your choice will determine when the rule will be implemented.
   e.g. if bit is 0, the text LOW AMPERAGE will be displayed on the marquee.

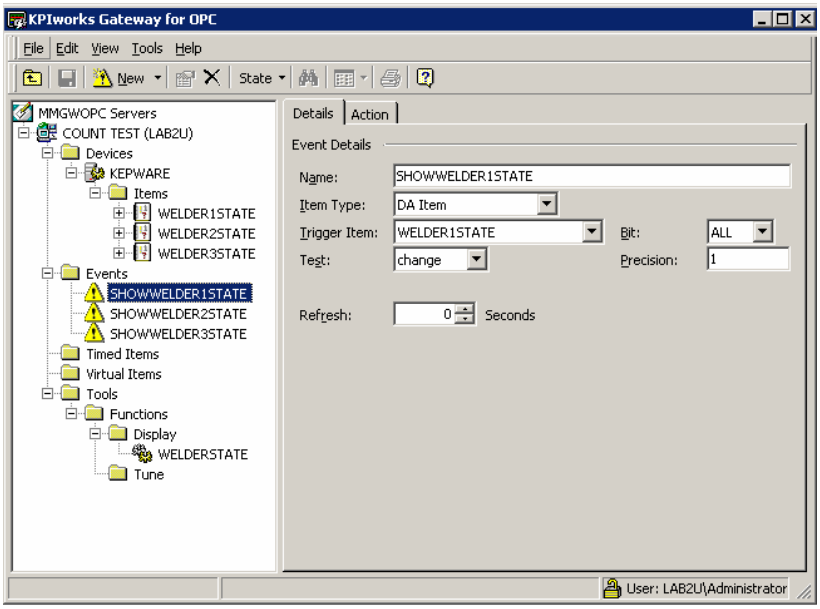


   You can add multiple Rules to each Function.

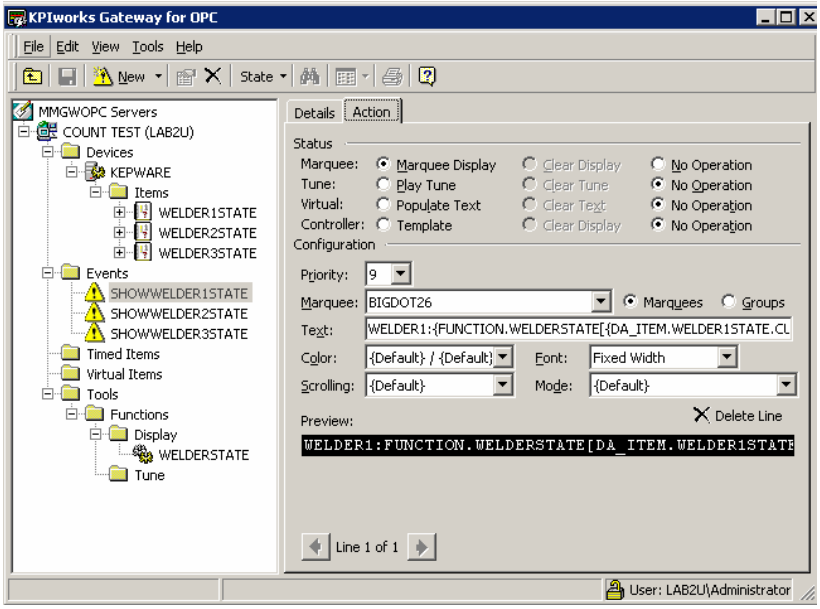
4. Click OK. Your screen will now appear like this:



5. Create a new Event, using the steps in the Example 1, first filling out the fields under the Details tab.



6. Under the Actions tab, the text will be set up as follows:
   a) enter the name of the machine your are monitoring (WELDERS)
   b) type :
   c) type {
   d) pick appropriate Function from the dropdown menu
   e) select your Function (WELDERSTATE)
   f) square brackets are inserted into the statement automatically WELDER1:{FUNCTION, WELDERSTATE[]}
   g) between the square brackets, type {
   h) choose what item you wish to evaluate from the dropdown menu (DA_ITEM)
   i) select your DA_ITEM (WELDER1STATE)
   j) choose the value (CURR) so your statement looks like the following:
   WELDER1:{FUNCTION.WELDERSTATE[{DA_ITEM.WELDER1STATE.CURR}]}
7. Click Save.



8. As the state of WELDER1 changes, your marquee will display the appropriate text; using the functions you have created to display any faults that occur. e.g
   WELDER1: LOW AMPERAGE
   WELDER2: NORMAL
   WELDER3: JAMMED etc.