Essential Insight®
Studio User's Guide
Version 8.1

Integrated
Systems
Engineering

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1.0 Introduction

The main components of the Essential Insight System are the **Engine**, the **Studio**, and the **Portal**. The *Essential Insight Engine* component interfaces with and collects the data from the devices on the plant floor. The *Essential Insight Engine*, configured to run in the background of the host PC, auto starts when the server is booted. The *Essential Insight Studio* allows the User to interact with the *Engine*. The Studio can be loaded on any PC connected to the same network as the host PC. *The Essential Insight Portal* provides view ability, of various production data and an intuitive interface for editing database tables associated with the Essential Insight process. The primary purpose of this manual is to give the User a working knowledge of these components.

1.1. System Architecture

Essential Insight runs on Microsoft Windows Server, version 2000 or 2003, and stores the data collected from the plant floor in a Microsoft SQL Server database. *Essential Insight* communicates, via TCP/IP, with *tool controllers, RFID tag readers, barcode scanners, label printers, PLCs* or any other device with a known protocol. The Portal runs on Microsoft IIS (Internet Information Services) and is viewable through either Microsoft's Internet Explorer or Mozilla's Firefox browser.

2.0 Essential Insight System Management

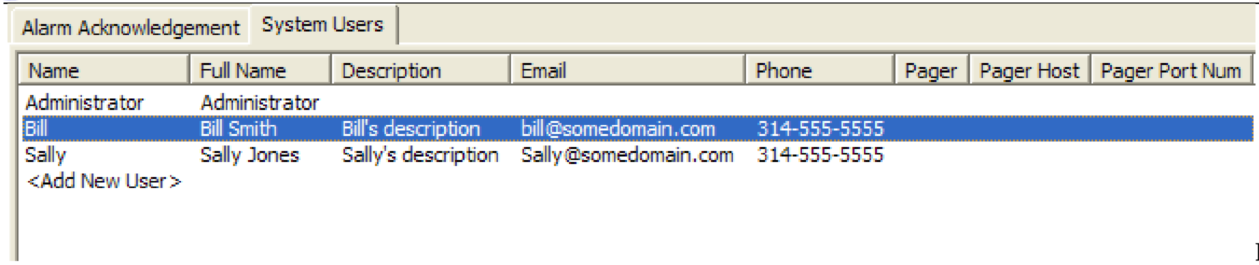
It is wise to configure your system settings before using *Essential Insight*. The *Administrator* or any other User logged on with the *Configure System Settings* privilege may perform this configuration. For information on logging on to *Essential Insight*, see section 3.1

2.1. User Management

The *Administrator* or any other User with the *Manage User Accounts* privilege may add, edit or delete users and manage User privileges.

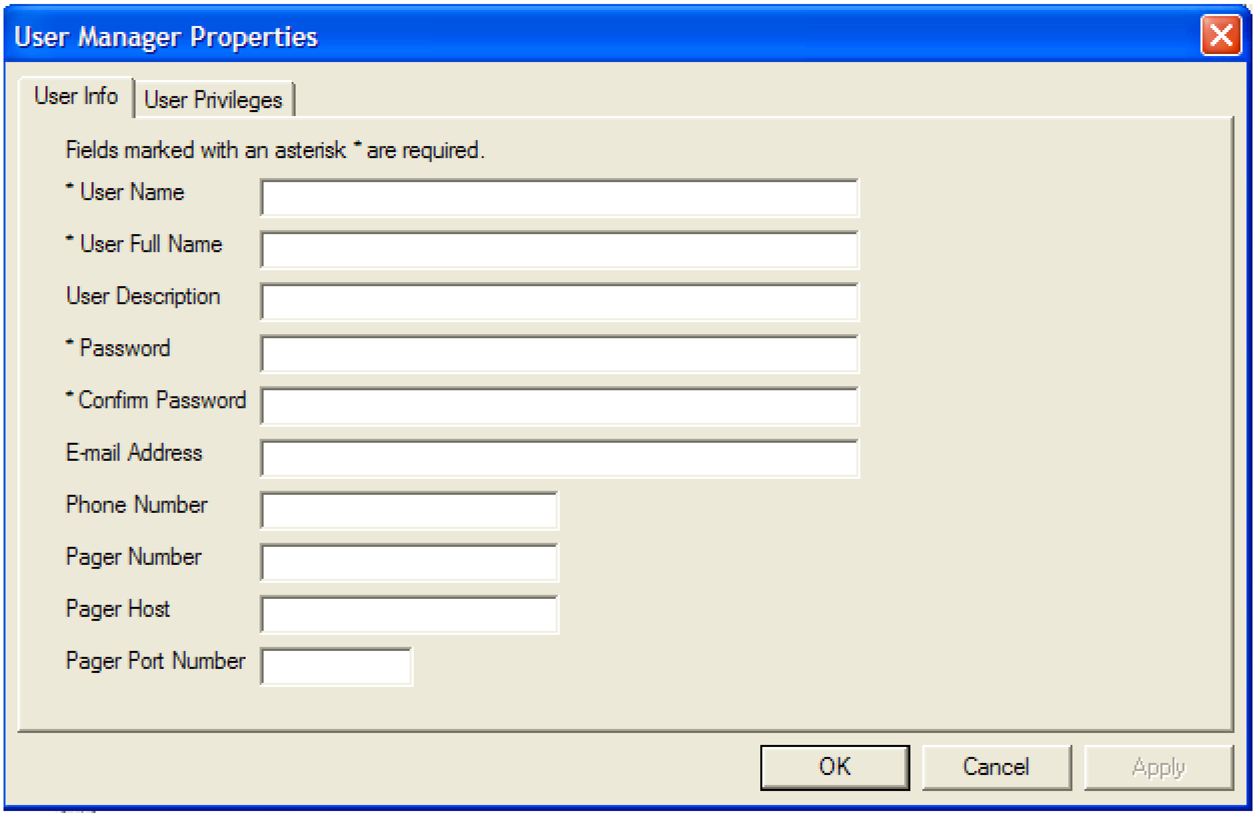
2.1.1 Add a User

To add a User, select *User Manager* under *System* on the main menu. This menu selection creates the *User Manager view* in the right pane of the *Essential Insight Studio* as seen in figure 1. On the *User Manager* view, right-click <*Add New User*> and select *Add User* from the resulting pop up menu or double left-click <*Add New User*>. This produces the *User Manager Properties* dialog. Selecting the *User info tab* on this dialog exposes the User information area (See figure 2).



Name	Full Name	Description	Email	Phone	Pager	Pager Host	Pager Port Num
Administrator	Administrator						
Bill	Bill Smith	Bill's description	bill@somedomain.com	314-555-5555			
Sally	Sally Jones	Sally's description	Sally@somedomain.com	314-555-5555			
<Add New User>							

Figure 1



Fields marked with an asterisk * are required.

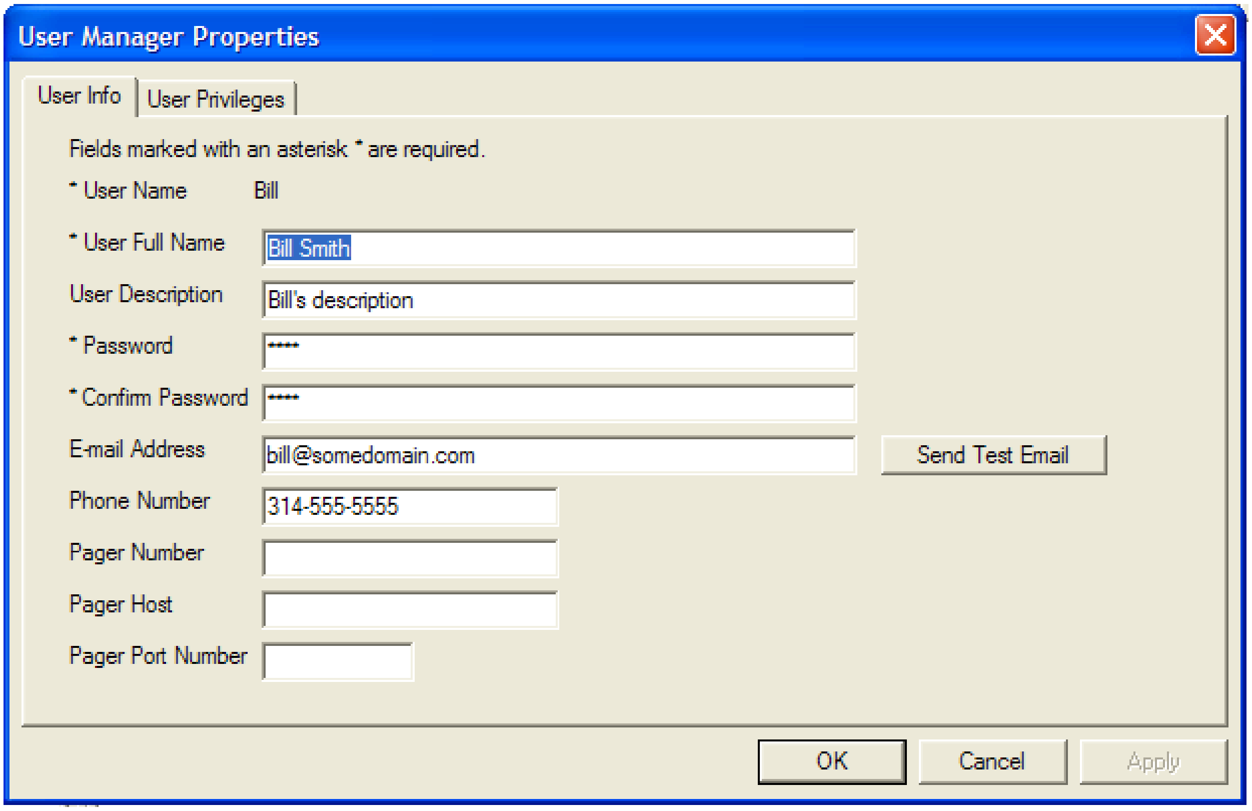
* User Name
* User Full Name
User Description
* Password
* Confirm Password
E-mail Address
Phone Number
Pager Number
Pager Host
Pager Port Number

Figure 2

2.1.2 Edit a User

To edit a User, select *User Manager* under *System* on the main menu. This action creates the *User Manager* view in the right pane of the *Essential Insight* Studio as seen in figure 1. On the *User Manager* view, either right-click the name you wish to edit and select *Edit User* from the pop up menu or double left-click the User name. This produces the *User Manager Properties* dialog as seen in Figure 2. Selecting the *User info tab* on this dialog exposes the User information area. The User can then edit all properties with the exception of *User Name*. An additional feature is the User may click the *Send Test Email* button to make sure the email account is functioning properly. When satisfied with the changes the User must select *OK* or *Apply* to save the changes (see figure 3).

* *System Email Properties* configuration is required for the *Send Test Email* feature to be successful (see section 2.6).



Fields marked with an asterisk * are required.

* User Name Bill

* User Full Name Bill Smith

User Description Bill's description

* Password ****

* Confirm Password ****

E-mail Address bill@somedomain.com

Phone Number 314-555-5555

Pager Number

Pager Host

Pager Port Number

Figure 3

2.1.3 Delete a User

To delete a User, select *User Manager* under *System* on the main menu. This action creates the *User Manager* view in the right pane of the *Essential Insight* Studio as seen in figure 1. On the *User Manager* view, right-click the name you wish to delete and select *Delete User* from the pop up menu.

2.2. User Privileges

The *Administrator* User comes with full privileges. *Administrator* privileges are not editable. All other users need their privileges assigned by someone with the *Manage User account* privilege. See section 2.2.1 for information on setting User privileges.

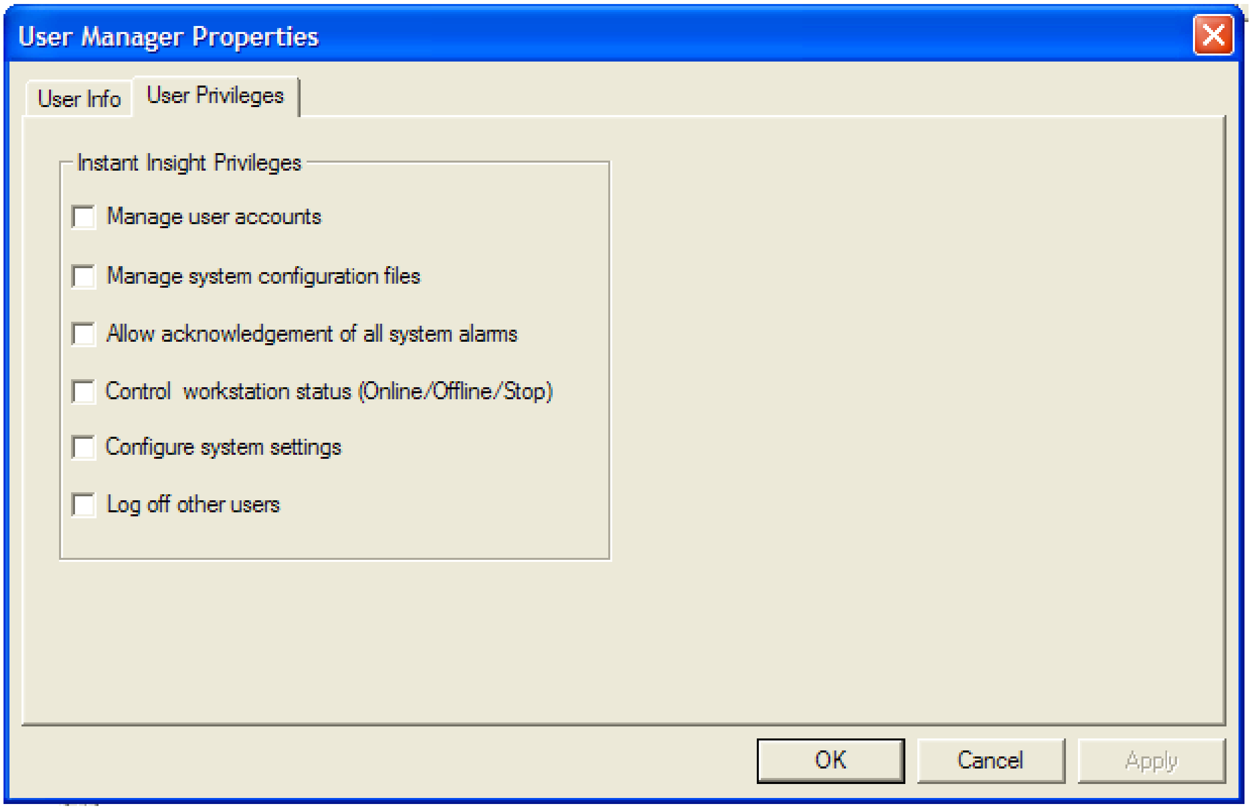
The following list contains a brief description of all User privileges available in the Essential Insight application.

1) *Manage User accounts*. This privilege allows a User to add, edit and delete users and to manage *User privileges*.
2) *Manage system configuration files*. This privilege allows a User to add, configure and remove devices from a *system configuration file* and to mange all device variables. This privilege also allows a User to configure W*orkstations* and to edit and compile *Workstation workscripts*.
3) *Manage acknowledgement of all system alarms*. This privilege allows users to acknowledge all system alarms regardless of the notified User.

4) *Control Workstation status (Online/Offline/Stop).* This privilege allows a User to control the status of all *Workstations*.
5) *Configure System Settings*. This privilege allows a User to control all system settings described in section 2 of this guide.
6) *Log off other users*. This privilege allows a User to logoff any other User logged on to Essential Insight.

2.2.1 Setting User Privileges

To set *User privileges* select *User Manager* under *System* on the main menu. This action creates the *User Manager view* in the right pane of the *Essential Insight Studio* as seen in figure 1. On the *User Manager view*, either right-click the name you wish to edit and select *Edit User* from the pop up menu or double left-click the User name. This produces the *User Manager Properties* dialog. Selecting the *User privileges tab* on this dialog exposes the *User privileges* information area (See figure 4).



Instant Insight Privileges

□ Manage user accounts

□ Manage system configuration files

□ Allow acknowledgement of all system alarms

□ Control workstation status (Online/Offline/Stop)

□ Configure system settings

□ Log off other users

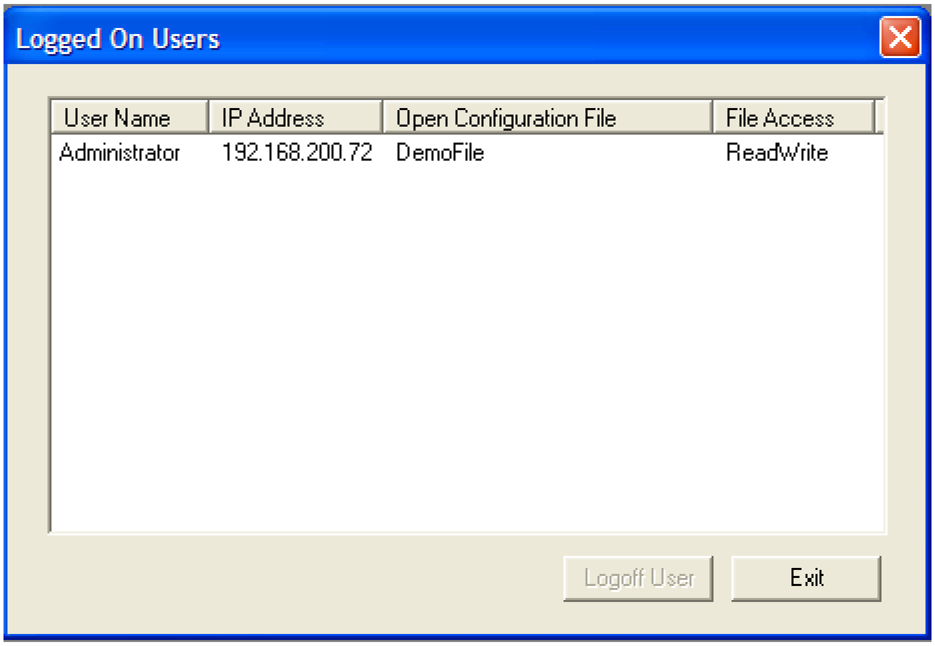
Figure 4

2.3. Logged On Users

Essential Insight only allows one read/write instance of the *Essential Insight Studio* logged on at a time. All other logged on users are assigned read only status. A read only User can still monitor the system and perform system diagnostics. A User with the *Log off other user* privilege may log off a User and take over as the read/write user. For information on logging off other users, see section 2.3.1.

2.3.1 Log Off Users

To log off a User select *Logged on Users* under *System* on the main menu. This produces the dialog seen in section 28. Select the User you wish to log off and click the *Log off User* button. The User who performed this action then gains control or the system.



User Name	IP Address	Open Configuration File	File Access
Administrator	192.168.200.72	DemoFile	ReadWrite

Figure 5

2.4. System Notification

The *System Notification* component makes email notification possible when certain system events occur. The following list contains a brief description of those events.

1) *Database exception event*: This event occurs when a transaction between the *Essential Insight* application and the Sql Server database generates an exception.
2) *Primary disconnect event*: This system event happens when the primary server of the system has failed and the backup server has overtaken the process.
3) *Engine is shutting down event*: This event comes about when the *Essential Insight* Engine is in the process is shutting down
4) *Workstation down event*: This event occurs when a Workstation changes to a *Stopped* state.

2.4.1 System Notification Configuration

To configure *System Notification* select the *System Notification menu item*. This is a submenu item of *System Settings* under System on the main menu (see figure 6). This creates the *System Notification dialog* as seen on figure 7. Use the *Notification Event drop down box* to select the desired event. Then select the User(s) you wish to add or remove from the notification and use the *Assign* and *Remove* buttons to set their notification status. To finalize the choice, select the OK or Apply button on the dialog.

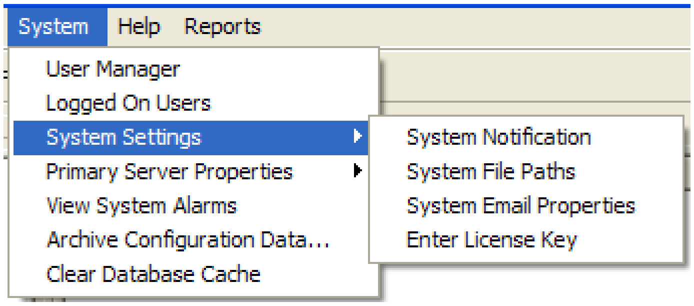
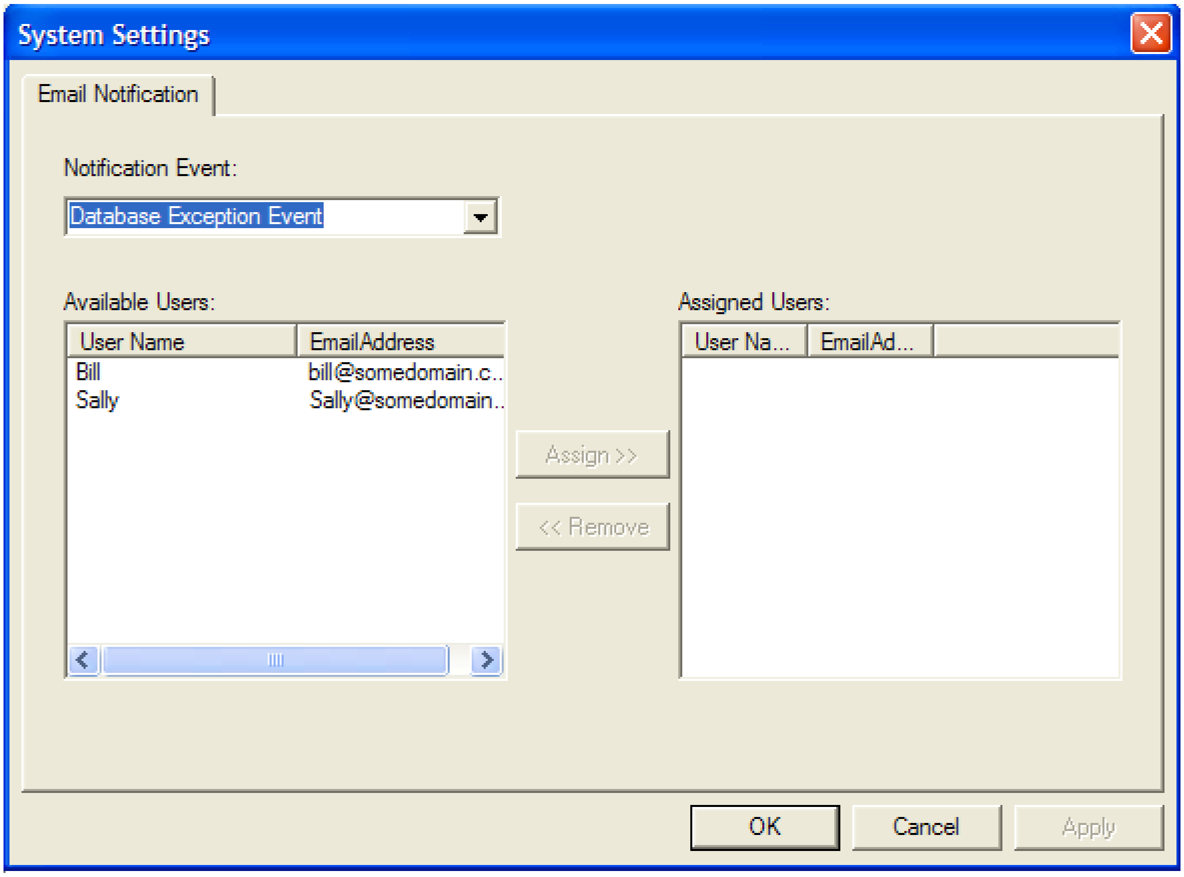


Figure 6



Notification Event: Database Exception Event

Available Users:

User Name	EmailAddress
Bill	bill@somedomain.c..
Sally	Sally@somedomain..

Assigned Users:

User Na...	EmailAd...

Figure 7

2.5. System File Paths and Log Files

The *System File Paths* component enables the User to set the file paths to which *Essential Insight* system event files are stored.
Those files include the following:

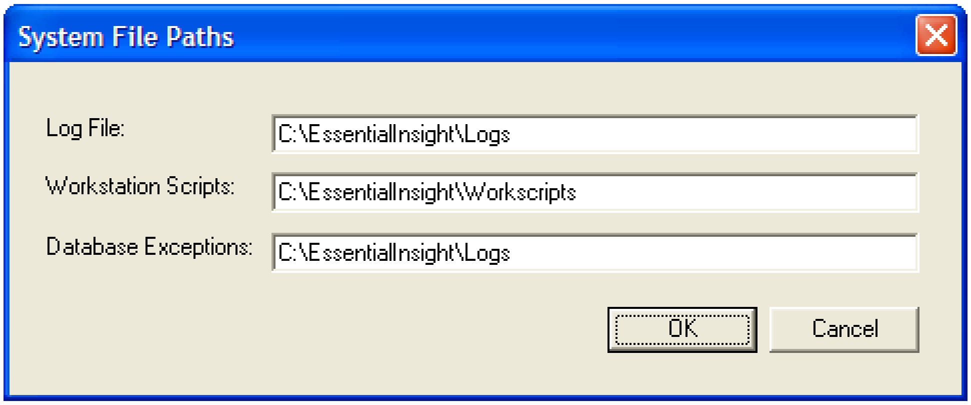
1) *Log file*: This file stores information gathered by *Essential Insight* when system level events occur. The default path is C:\InstantInsight\Logs.

2) *Workstation scripts*: These files are the script files created by the User as described in section 3.9. The default path is C:\InstantInsight\Workscripts.
3) *Database exceptions*: This file contains any database exceptions that may occur during interaction with the Essential Insight system. The default path is C:\InstantInsight\Logs.

For more information on Log Files, see section 5.

2.5.1 System File Path Settings

To set *System File Paths* select the *System File Paths menu* item. This is a submenu item of *System Settings* under *System* on the main menu (see figure 6). This creates the *System File Paths* dialog as seen on figure 31. After entering a valid file path, select OK to save the changes.



Log File: C:\EssentialInsight\Logs
Workstation Scripts: C:\EssentialInsight\Workscripts
Database Exceptions: C:\EssentialInsight\Logs

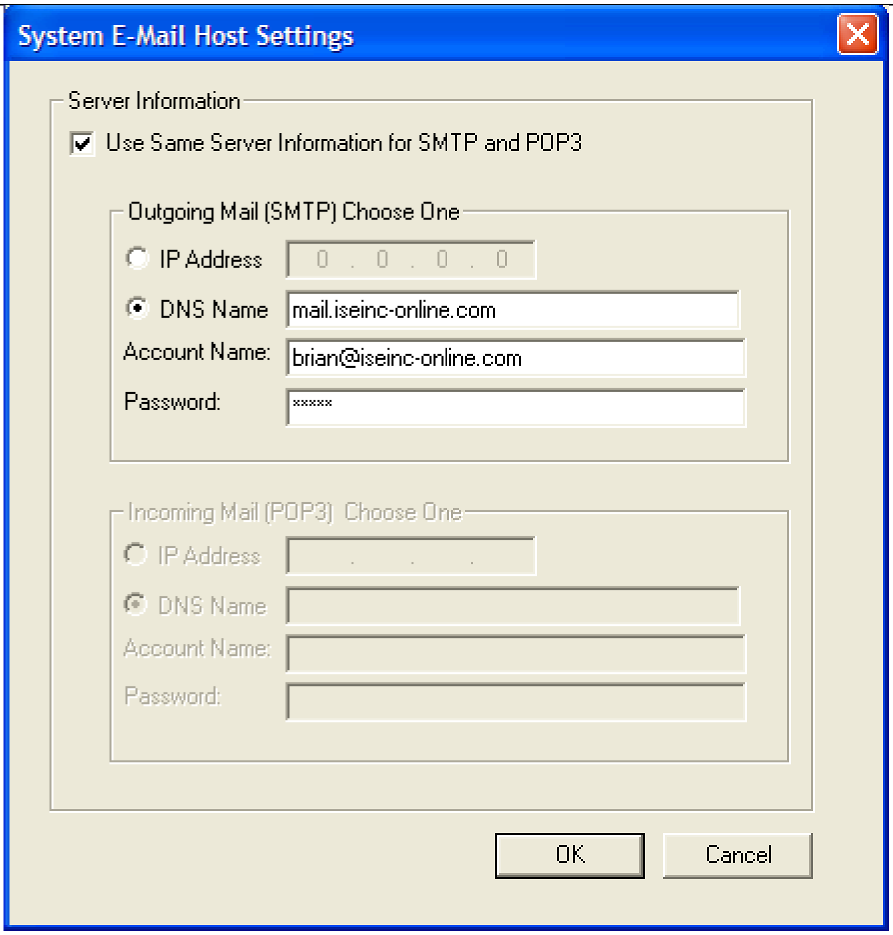
Figure 8

2.6. System Email

Essential Insight uses these settings to handle email notifications within the system. If an organization plans to use the *System Notification* component *of Essential Insight*, configuration is required to enable *Essential Insight* to communicate with that organizations email servers. This component configures the IP address or DNS name of the SMPT and POP 3 email servers and the account name for the User account designated for incoming and outgoing email notifications.

2.6.1 System Email Settings

To set *System Email Settings*, select the *System Email Properties menu* item. This is a submenu item of *System Settings* under *System* on the main menu (see figure 6). This menu selection launches the *System Email Host Settings* dialog as seen on figure 9. Check the *Use Same Server Information for SMTP and POP 3 box* if the incoming and outgoing email server settings are the same. If left unchecked, both the SMTP and POP 3 servers require configuration settings. The DNS name is the domain name of the email server. The *Account Name* is the email account that handles incoming and outgoing mail. The *Account Name* must be a member of the assigned domain.



System E-Mail Host Settings

Server Information

☑ Use Same Server Information for SMTP and POP3

Outgoing Mail (SMTP) Choose One

○ IP Address 0 . 0 . 0 . 0

● DNS Name mail.iseinc-online.com

Account Name: brian@iseinc-online.com

Password: *****

Incoming Mail (POP3) Choose One

○ IP Address . . .

● DNS Name

Account Name:

Password:

Figure 9

2.7. Essential Insight License

Each installation of *Essential Insight* requires a license. The license determines the expiration date of the installation and the number of *devices* allowed on the active system configuration. To view your license information, select *Essential Insight Information* under *Help* on the main menu.

2.7.1 Essential Insight License Key Entry

Integrated Systems Engineering must provide an *Essential Insight license key* per installation of *Essential Insight*. If the *Essential Insight license* expires, the system will no longer function. To purchase a new license key call Integrated Systems Engineering customer support at (314)-821-6060.

To enter a license key, select the *Enter License Key menu* item. This is a submenu item of *System Settings* under *System* on the main menu (see figure 6). This menu selection activates the License Key dialog as seen in figure 10. Enter the *license key* provide by Integrated Systems Engineering and select OK. The system then regains its functionality.

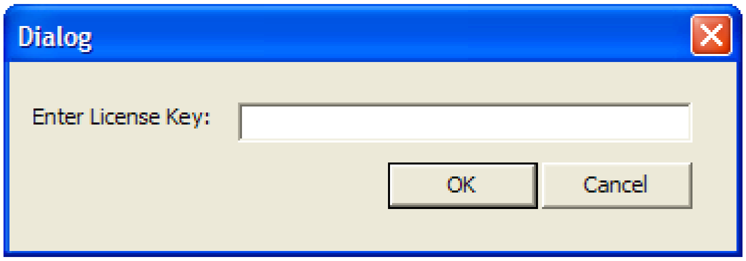


Figure 10

2.8. View System Alarms

To view system alarms select the *View System Alarms menu item* under *System* on the main menu (see figure 11). This creates the *System Alarms* view in the right pane of *the Essential Insight Studio*. This view presents all existing *System Alarms*.

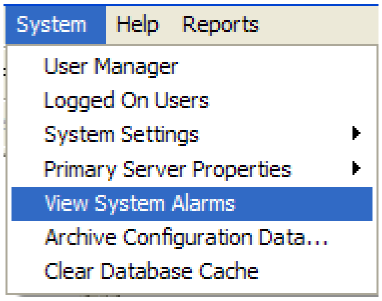


Figure 11

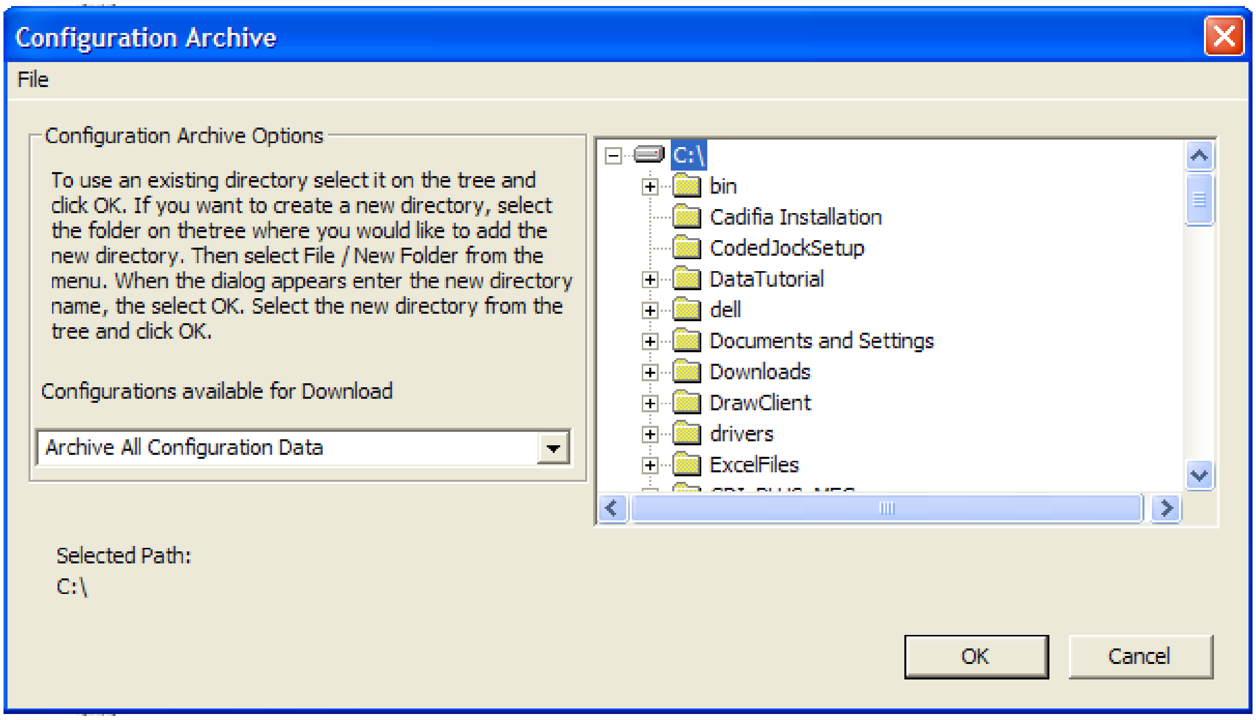
2.9. Configuration Archive

Essential Insight allows the User to archive the current system configuration data. This includes the Sql Server *configuration data*, *device variable data* and the configuration *workscripts files*. It is wise to archive your data, especially when a User makes changes to the systems *device configuration*, *Workstation Configuration* or *Workscript Files*.

2.9.1 Archiving Configuration Data

To archive configuration data select the *Archive Configuration Data menu item* under *System* on the main menu (see figure 11). This launches the *Configuration Archive dialog* as seen in figure 12. To successfully archive your data, follow the sequence below.

1) To create a new directory for archive storage, select a path on the directory tree in the right pane of the dialog. Then select the *New Folder menu item* under *File* on the main menu. Enter a new folder name in the *New Directory Dialog* and click OK.
2) To use an existing directory, select it on the directory tree in the right pane of the dialog.
3) Use the *Configurations available for download drop down box* to select which configuration data to archive or use the default value, *Archive all Configuration Data*,
to download all available configuration data.
4) Select OK
5) View the progress bar as seen in figure 13 to monitor the progress of the archive. When the progress bar reaches 100% for the workscript (.scp) files, the process is complete.

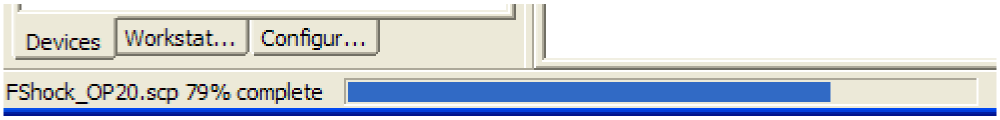


To use an existing directory select it on the tree and click OK. If you want to create a new directory, select the folder on thetree where you would like to add the new directory. Then select File / New Folder from the menu. When the dialog appears enter the new directory name, the select OK. Select the new directory from the tree and click OK.

Configurations available for Download: Archive All Configuration Data

Selected Path:
C:\

Figure 11



FShock_OP20.scp 79% complete

Figure 12

3.0 Using the Essential Insight System

To use the *Essential Insight* system a User must first log on. *Essential Insight* comes delivered with an *Administrator* logon account. The *Administrator* account is not removable; however, the *Administrator* password may be changed. Additional logon accounts are addable and editable through the *Manage Users component* of the Studio as shown in sections 2.5.4 and 2.5.5 of this guide. All accounts require a password to log on. It is possible for many instances of the *Essential Insight Studio* to log on to the *Engine* at any one time, and from any computer on the same network as the host server. However, only one User can have read/write access at a time. See section 2.3.1 for information on how to gain read/write access when other Users are logged on.

The *Administrator* account gives the User full control of the *Essential Insight* application, providing the ability to start and stop data collection, modify devices, perform system diagnostics and manage users.

3.1. Logging On to Essential Insight

To start *the Essential Insight Studio*, double-click on the *Essential Insight* icon on the desktop.
The options for logging on are as follows:

1.) Click the *Logon* icon on the toolbar or select Logon from the main menu of the application to activate the *Logon dialog*. See figure 16.

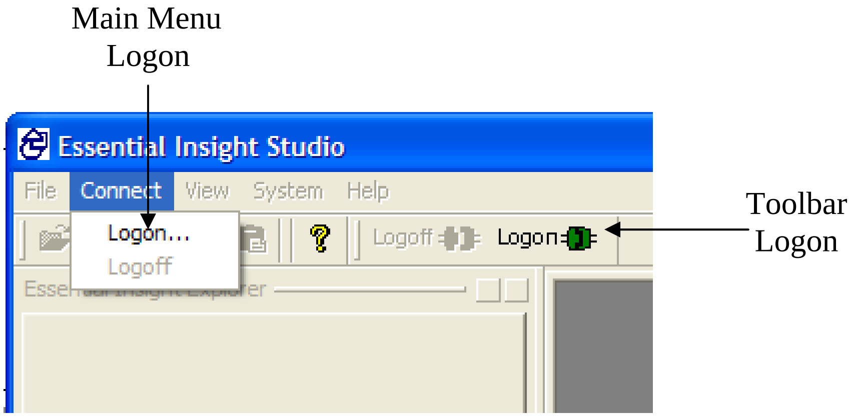
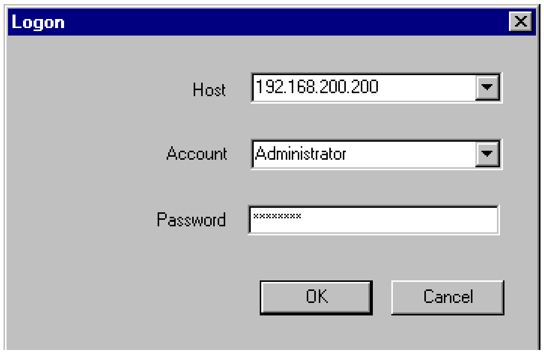


Figure 16

2.) Enter the TCP/IP address of the PC hosting *the Essential Insight Engine*, select the *Account edit box* and select the account from the drop down or type in the account name if it does not exist in the drop down. Then enter the case sensitive password. The default password for *Administrator* is *dcs*.

3.) Click OK



Host: 192.168.200.200

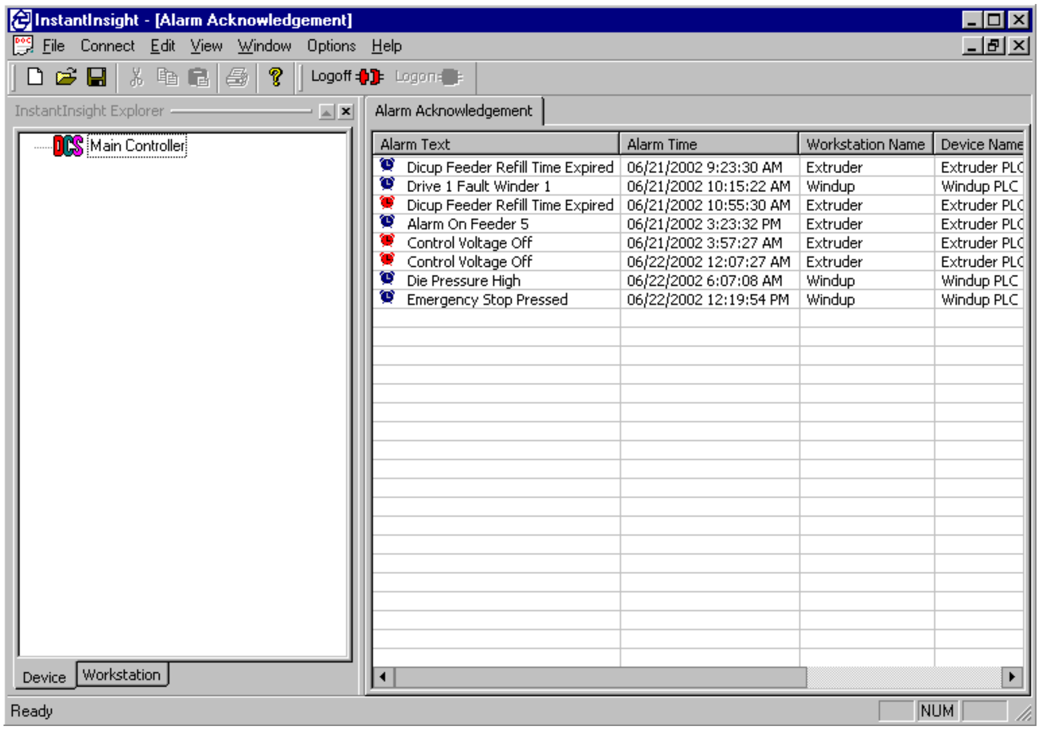
Account: Administrator

Password: ********

Figure 17

3.2. Alarms

After a successful logon, *Essential Insight* will default to a window with the right pane showing all system alarms. A red icon indicates the alarm acknowledgement has not occurred. A blue icon indicates the alarm acknowledgement has occurred. If there are no visible alarms then no system alarms have occurred. (See Figure 18)



Alarm Text	Alarm Time	Workstation Name	Device Name
🔵 Dicup Feeder Refill Time Expired	06/21/2002 9:23:30 AM	Extruder	Extruder PLC
🔵 Drive 1 Fault Winder 1	06/21/2002 10:15:22 AM	Windup	Windup PLC
🔴 Dicup Feeder Refill Time Expired	06/21/2002 10:55:30 AM	Extruder	Extruder PLC
🔵 Alarm On Feeder 5	06/21/2002 3:23:32 PM	Extruder	Extruder PLC
🔴 Control Voltage Off	06/21/2002 3:57:27 AM	Extruder	Extruder PLC
🔴 Control Voltage Off	06/22/2002 12:07:27 AM	Extruder	Extruder PLC
🔵 Die Pressure High	06/22/2002 6:07:08 AM	Windup	Windup PLC
🔵 Emergency Stop Pressed	06/22/2002 12:19:54 PM	Windup	Windup PLC

Figure 18

3.2.1 Alarm Acknowledgement

The notified User, the *Administrator*, or a User with the, Allow *Acknowledgement of All System Alarms* privilege may initiate alarm acknowledgement. To acknowledge an alarm, right-click the alarm from the list, then select *Acknowledge Alarm* from the pop-up menu. If successful, the alarm icon will change color from red to blue. If not successful, a message box will appear informing the User why the acknowledgement was not successful.

The *Administrator*, or a User with the *Acknowledge System Alarms* privilege, also has the ability to acknowledge all alarms. To use this feature, right click on any unacknowledged alarm in the list and select *Acknowledge All Alarms* from the pop-up menu. The icons for all unacknowledged alarms will change color from red to blue. If the User does not have the privilege, the *Acknowledge All Alarms* selection in the pop-up menu is disabled.

3.2.2 Alarm Removal

A notified User, the *Administrator*, or a User with the, Allow *Acknowledgement of All System Alarms* privilege has the ability to remove acknowledged alarms. To remove an acknowledged alarm, right-click on the alarm from the list, and select *Remove Acknowledged Alarm* from the pop-up menu. If the User does not have the privilege, the *Acknowledge All Alarms* selection in the pop-up menu is disabled.

3.3. File Management

System configuration files store the system configuration as created by the user. These files are stored in the database with a $cfg extension. There is no limit to the number of *configuration* files created by the User, however only one *configuration file* can be active at a time.

3.3.1 Opening a Configuration File

There are two methods for opening a *configuration file*. Either select *Open* under *File* on the menu bar or click on the *Open File icon* on the tool bar. A dialog will appear containing all available configuration files. After selecting a file, click OK and the file will be loaded into the *Essential Insight Studio*.

3.3.2 Saving a Configuration File

There are two methods for saving a configuration file. Either select *Save* under *File* on the menu bar or click on the *Save File* icon on the tool bar. A window will appear for the User to name the file if the file is new.

3.3.3 Changing the Active Configuration File

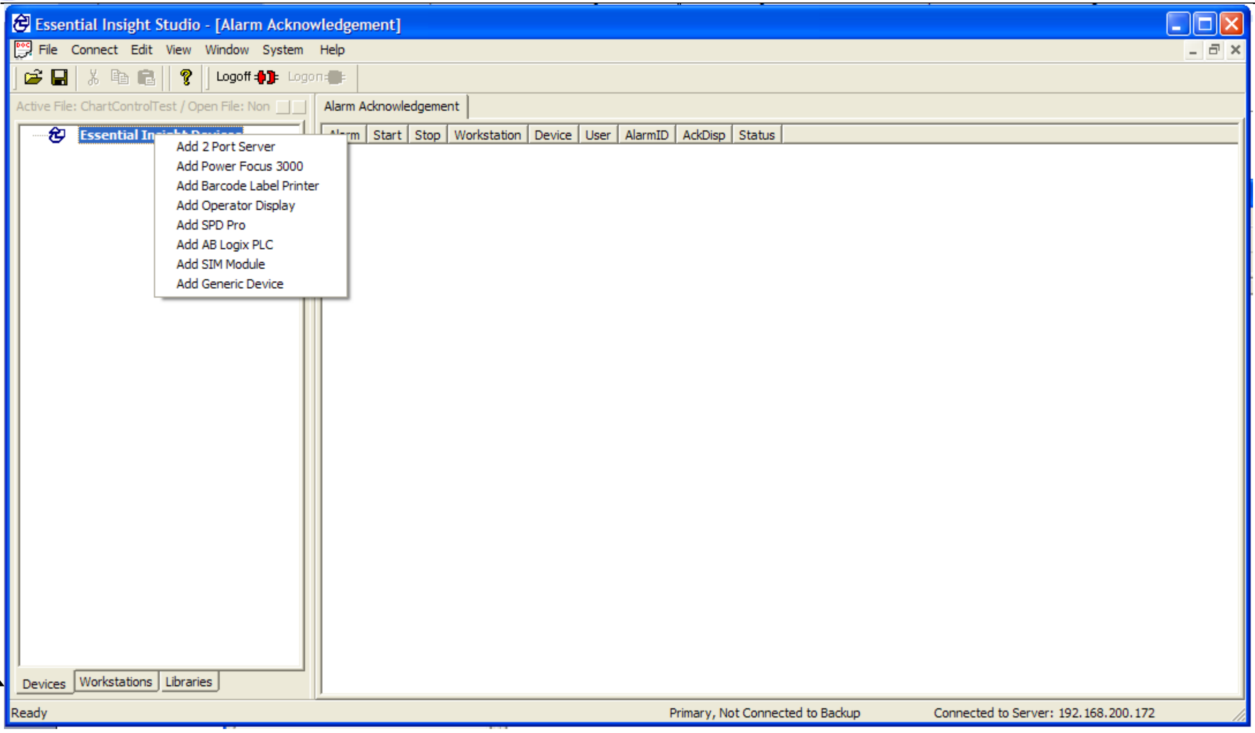
The *active file* is the file running on the *Essential Insight Engine*. To switch active files the User must set all online *Workstations* on the active file to a stopped state. After stopping all *Workstations,* the User must close the active file by selecting *Close* under *File* on the main menu bar. Once the *active file* is closed, the User will have the option of opening a different file.

3.3.4 Deleting a Configuration File

To delete a configuration file, select *Delete* under *File* on the main menu bar. A dialog box will appear containing all files available for deletion. The User must select the desired file and click the *Delete* button.

3.3.5 Creating a Configuration File

To create a configuration file, the logged on User must have the, *Manage system configuration files* privilege. Close any open configuration file before beginning. To start building the configuration file, select the *Device tab* on the *Essential Insight Studio*. Right clicking the *Plant Network Devices* icon on the *Device tab* will present all available *Ethernet devices* available to the system (See figure 19). Section 3.4 gives a detailed description on how to add devices available to the system.


Essential Insight Studio - [Alarm Acknowledgement]
File Connect Edit View Window System Help
Logoff Logon
Active File: ChartControlTest / Open File: Non
Alarm Acknowledgement
Essential Insight Devices
Add 2 Port Server
Add Power Focus 3000
Add Barcode Label Printer
Add Operator Display
Add SPD Pro
Add AB Logix PLC
Add SIM Module
Add Generic Device
Alarm Start Stop Workstation Device User AlarmID AckDisp Status
Devices Workstations Libraries
Ready
Primary, Not Connected to Backup
Connected to Server: 192.168.200.172

vice
ab

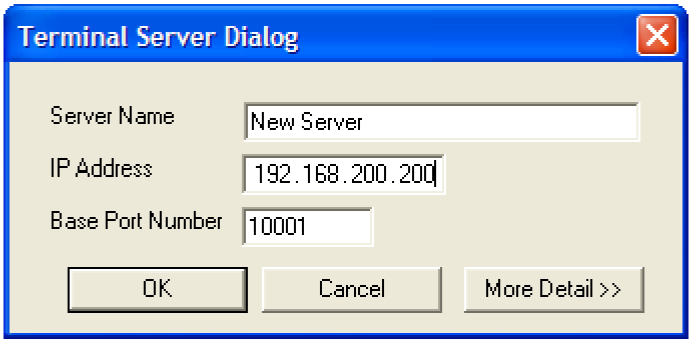
Figure 19

3.4. Adding and Editing Ethernet Devices

An *Ethernet device* is any available device which connects directly to a network switch or router and has it's own unique IP address. To add an *Ethernet device*, select the desired device from the menu shown above on figure 19. This section will show the User how to add and edit some of the most common Ethernet devices.

3.4.1 Adding a two Port Server

A *Two-Port Server* is an *Ethernet device*, which has two available ports to which a User can add serial devices, such as *Barcode Scanners* and *RFID Tag Readers*. To create a *Two-Port Server* device, select *Add 2 Port Server* from the menu detailed in section 2.4. This menu selection creates the *Terminal Server Dialog* as seen in figure 20. The required settings for a *Two-Port Server* are a *unique name*, a unique *IP address* and a *base port number*. After entering the required settings, select OK to add the *Two-Port Server* to your configuration file. The new *Two-Port Server* becomes visible on the *Device tab* as shown in figure 21.



Server Name: New Server

IP Address: 192.168.200.200

Base Port Number: 10001

Figure 20

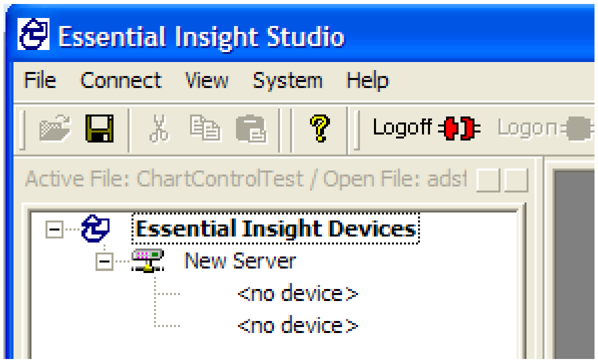


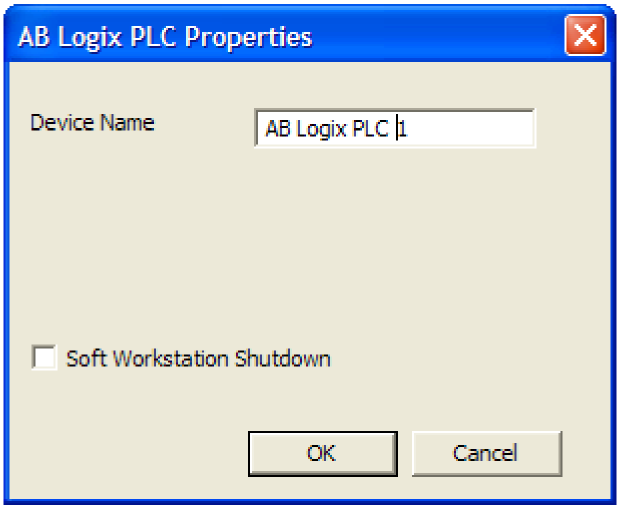
Figure 21

3.4.2 Editing a Two-Port Server

Right clicking the server icon on the *Device tab* and selecting *Properties* from the pop-up menu creates the dialog box for editing a *Two-Port Server*. This dialog is the same as shown in figure 20. Edit the desired setting on the dialog and select OK. This saves the changes automatically.

3.4.3 Adding an AB Logix PLC

An *AB Logix PLC* is a device that allows communication with devices on the plant floor.
To add this device, select *Add AB Logix PLC* from the menu shown above in figure 19. This selection generates the dialog shown in figure 22. The required setting is a unique name. The *Soft Workstation Shutdown* check box is an optional setting. Enter the properties, and then select OK to add the PLC to your configuration file. The *AB Logix PLC* becomes visible on the *Device tab* as shown in figure 23. Notice the unassigned nodes one level below the new *AB Logix PLC* icon. To configure these nodes see section 3.4.5.

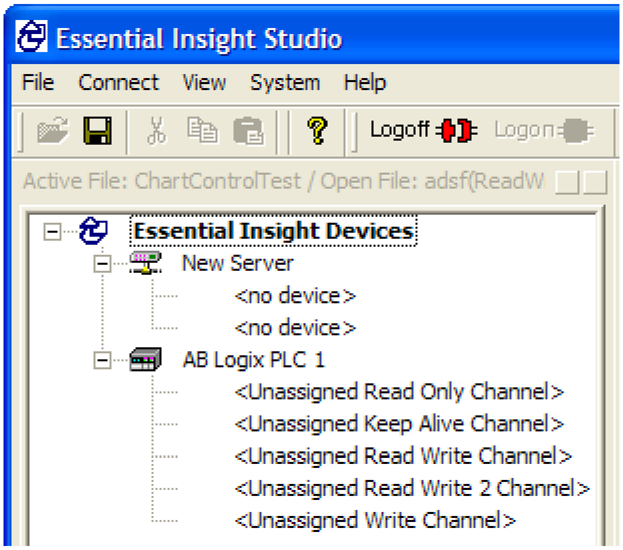


AB Logix PLC Properties

Device Name: AB Logix PLC 1

□ Soft Workstation Shutdown

Figure 22



Essential Insight Studio

Active File: ChartControlTest / Open File: adsf(ReadW

- Essential Insight Devices
  - New Server
    - <no device>
    - <no device>
  - AB Logix PLC 1
    - <Unassigned Read Only Channel>
    - <Unassigned Keep Alive Channel>
    - <Unassigned Read Write Channel>
    - <Unassigned Read Write 2 Channel>
    - <Unassigned Write Channel>

Figure 23

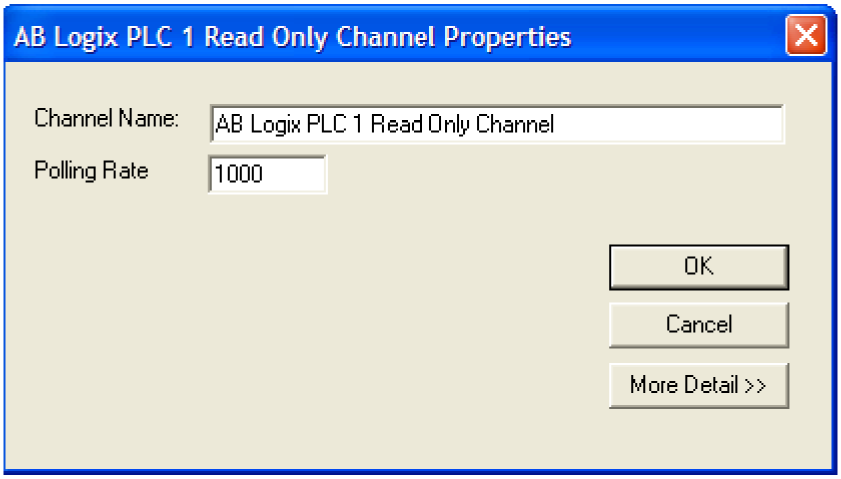
3.4.4 Editing an AB Logix PLC

To edit the *AB Logix PLC* device, right click its icon on the device tab and select *Properties* from the pop up menu. This selection generates the same dialog shown in figure 22. Change the desired setting and select OK.

3.4.5 Configuring AB Logix PLC Unassigned Channels

Right click any unassigned channel as seen in Figure 23 and the *Properties* dialog as shown in figure 24 will appear. The *Channel* name must be unique. The *polling rate* is the time in milliseconds that the Essential Insight Engine polls the channel.

Select OK to save the settings. The configured channel now appears on the previously unassigned node of the *AB Logix PLC* as shown in Figure 10. Notice the new Connection node that is added one level below the configured channel. See section 3.6, for more information on device connections.

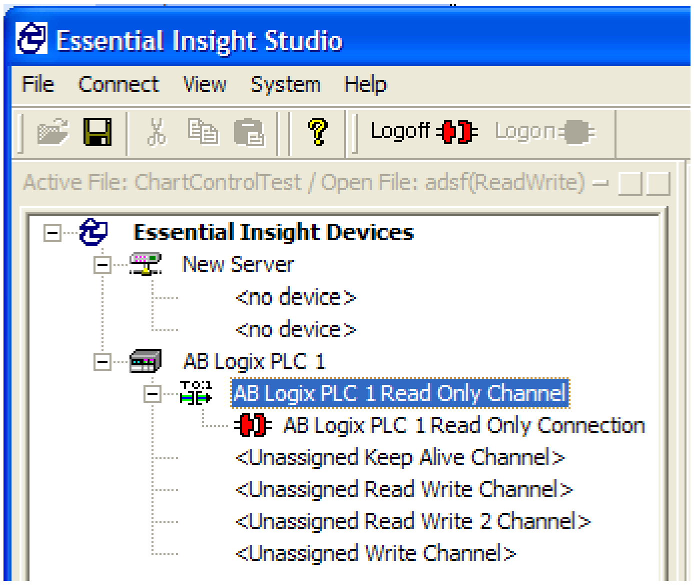


AB Logix PLC 1 Read Only Channel Properties

Channel Name: AB Logix PLC 1 Read Only Channel

Polling Rate 1000

Figure 24



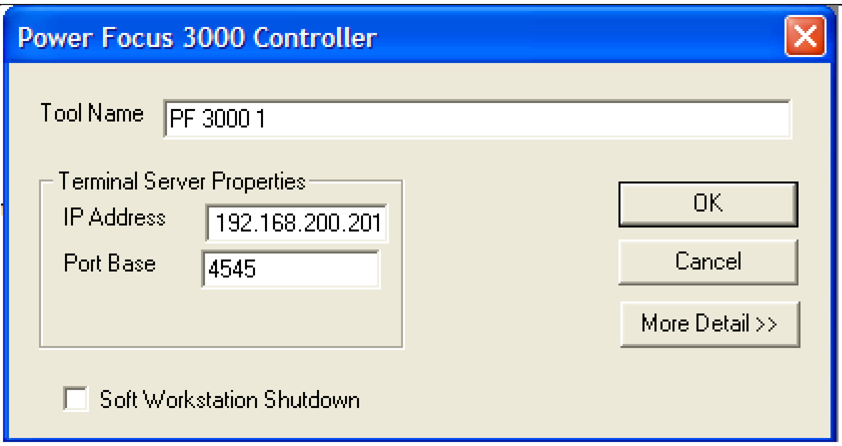
Active File: ChartControlTest / Open File: adsf(ReadWrite)

- Essential Insight Devices
  - New Server
    - <no device>
    - <no device>
  - AB Logix PLC 1
    - AB Logix PLC 1 Read Only Channel
      - AB Logix PLC 1 Read Only Connection
    - <Unassigned Keep Alive Channel>
    - <Unassigned Read Write Channel>
    - <Unassigned Read Write 2 Channel>
    - <Unassigned Write Channel>

Figure 25

3.4.6 Adding a Power Focus 3000 Tool Controller Device

To add a *Power Focus 3000 Tool Controller Device*, right click *the Plant Network Devices* icon on the *Device tab* and select *Add Power Focus 3000* from the pop up menu. The dialog shown in figure 25 appears. The required settings are a unique tool name, an *IP address*, and a *base port number*. The *Soft Workstation Shutdown* check box selection is optional. The base port default is 4545. Enter the desired settings, select OK, and the new Power Focus device, its preconfigured channel, and its connection appear as shown in figure 26.


Power Focus 3000 Controller

Tool Name: PF 3000 1

Terminal Server Properties

IP Address: 192.168.200.201

Port Base: 4545

□ Soft Workstation Shutdown

Figure 25

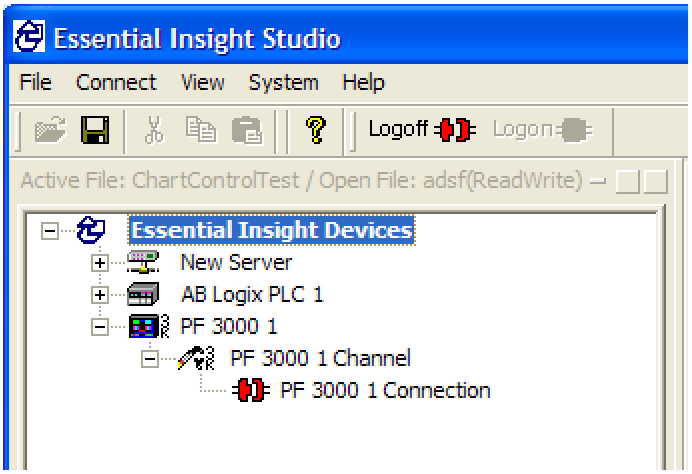


Figure 27

3.4.7 Editing a Power Focus 3000 Tool Controller

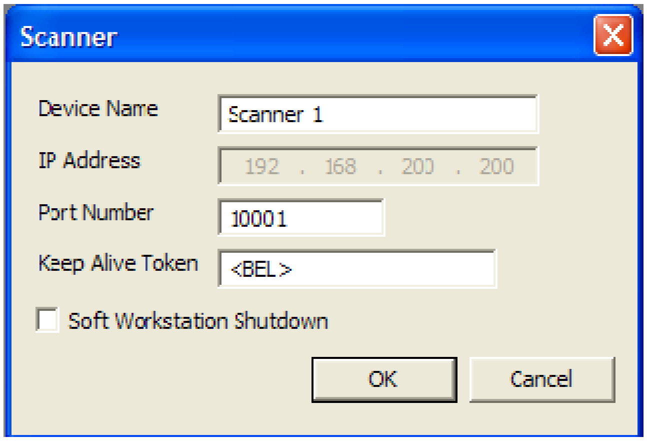
To edit a *Power Focus 3000 Tool Controller Device*, right click the *PF 3000 Tool Controller icon* on the *Device tab* and select *Properties* from the pop up menu. The dialog shown in figure 25 appears. Change the desired properties and click OK to save the edits.

3.5. Adding and Editing Serial Devices

The two most common *Serial Devices* are *Barcode Scanners* and *RFID Tag Readers*. These devices share the IP address of the host terminal server. These devices have a unique *port number*, which is relative to the base port of the host server.

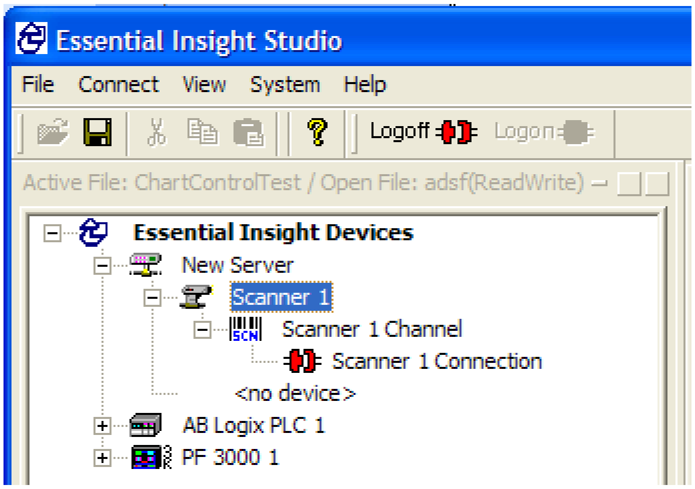
3.5.1 Adding a Barcode Scanner

To add a *Barcode Scanner*, right-click on an available server port and select, *Add Single Channel Scanner* from the pop up menu. An available port is recognized by its <no device> designation. The dialog will open as seen in figure 28. A unique *name*, *port number* and a *keep alive token* are required for the scanner. The purpose of this token is to keep the connection to *Essential Insight* active during periods of inactivity. The *Soft Workstation Shutdown check box* selection is optional. Enter the properties and select OK. The new *Barcode Scanner* device, its preconfigured *Channel* and *Connection* appears on the selected port. See Figure 29.



Device Name: Scanner 1
IP Address: 192 . 168 . 200 . 200
Port Number: 10001
Keep Alive Token: <BEL>
□ Soft Workstation Shutdown

Figure 28



Active File: ChartControlTest / Open File: adsf(ReadWrite)

- Essential Insight Devices
  - New Server
    - Scanner 1
      - Scanner 1 Channel
        - Scanner 1 Connection
    - <no device>
  - AB Logix PLC 1
  - PF 3000 1

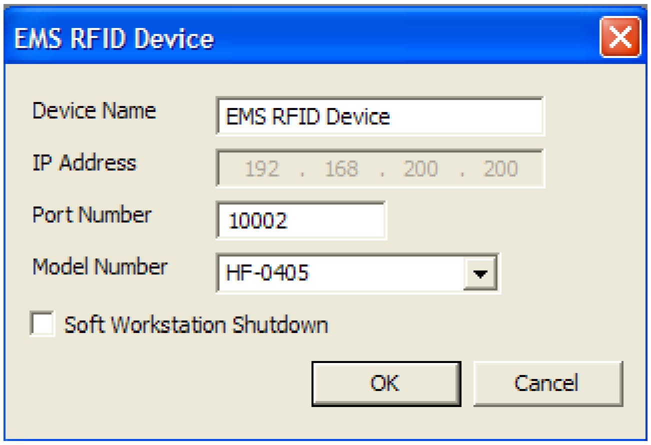
Figure 29

3.5.2 Editing a Barcode Scanner

To edit *a Barcode Scanner*, right-click on the *Barcode Scanner Icon*, then select *Properties* from the pop up menu to generate the properties dialog as shown in figure 28. Edit the desired properties and select OK.

3.5.3 Adding a RFID Tag Reader Device

To add a *RFID Tag Reader Device*, right-click on an available *Two-Port Server* port and select, *Add EMS RFID Device* from the pop up menu. An available port is recognized by its <no device> designation. The dialog will open as seen in figure 30. The *RFID Tag Reader* requires a unique *name*, *port number* and a model number. The *Soft Workstation Shutdown check box* selection is optional. Enter the properties and select OK. The new *Barcode Scanner* device and its *Unassigned Channel* appear on the selected port. See Figure 31.



Device Name: EMS RFID Device
IP Address: 192 . 168 . 200 . 200
Port Number: 10002
Model Number: HF-0405
□ Soft Workstation Shutdown

Figure 30

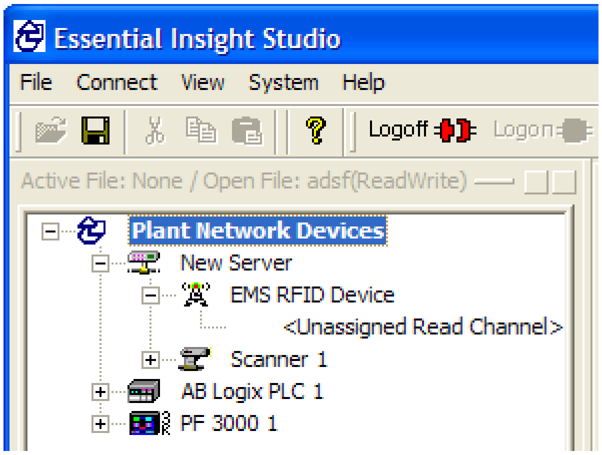


Figure 31

3.5.4 Editing an RFID Tag Reader Device

To edit a *RFID Tag Reader*, right-click on the *RFID Tag Reader* icon, then select *Properties* from the pop up menu to generate the properties dialog as shown in figure 30. Edit the desired properties and select OK.

3.5.5 Configuring an unassigned RFID Tag Reader Channel

Right click the *unassigned channel* as seen on Figure 31 and the *Properties* dialog as shown in figure 30 will appear. The *Channel* name must be unique. Select OK to save the settings. The configured channel now appears on the previously unassigned node of the *RFID Tag Reader*. Notice the new *Connection node* that is added one level below the configured channel. See section 3.6.2 for more information on device connections.

3.6. Production Lines and Workstations

Production lines represent distinct physical areas of activity in a facility. *Production lines* consist of one or more *Workstations. Workstations* are a logical grouping of devices, which perform specific tasks on a *Production line*.

3.6.1 Adding a Production Line

To add a *Production line* click the *Workstation tab*, then right-click the *Plant Workstations icon* at the top of the *Workstation tab* as shown in figure 32. Choosing the option, *Add Production Line*, from the pop up menu will produce a dialog box as shown in figure 33. The only required property is a unique *Production line* name. Enter a name, then click OK and you will see the new *Production line* appear on the *Workstation tab* one level below the *Plant Workstations icon*. See figure 34

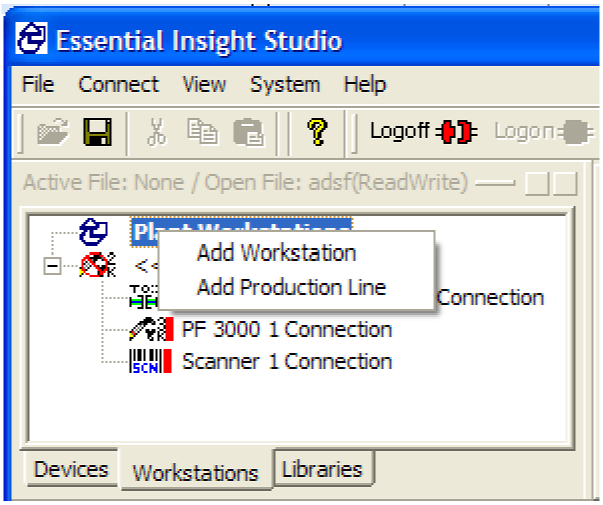
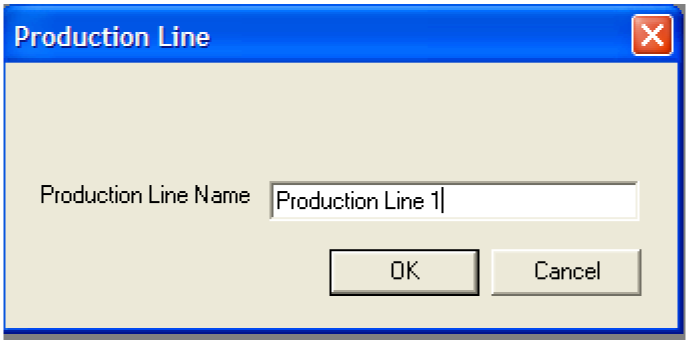


Figure 32



Production Line Name: Production Line 1

Figure 33

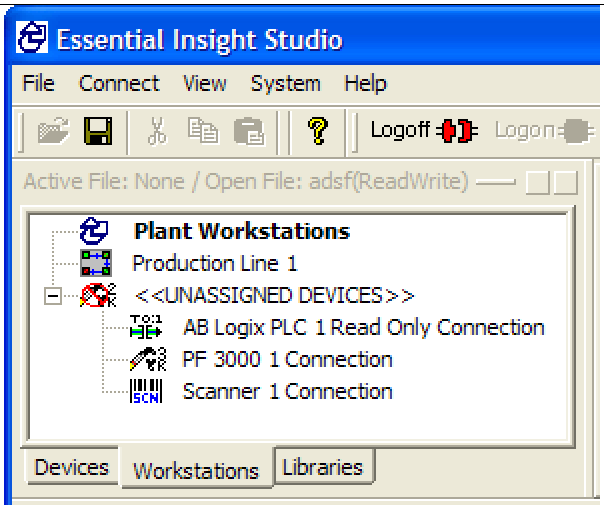

Essential Insight Studio
File Connect View System Help
Logoff Logon
Active File: None / Open File: adsf(ReadWrite)
Plant Workstations
Production Line 1
<<UNASSIGNED DEVICES>>
AB Logix PLC 1 Read Only Connection
PF 3000 1 Connection
Scanner 1 Connection
Devices Workstations Libraries

Figure 34

3.6.2 Adding and Editing Workstations

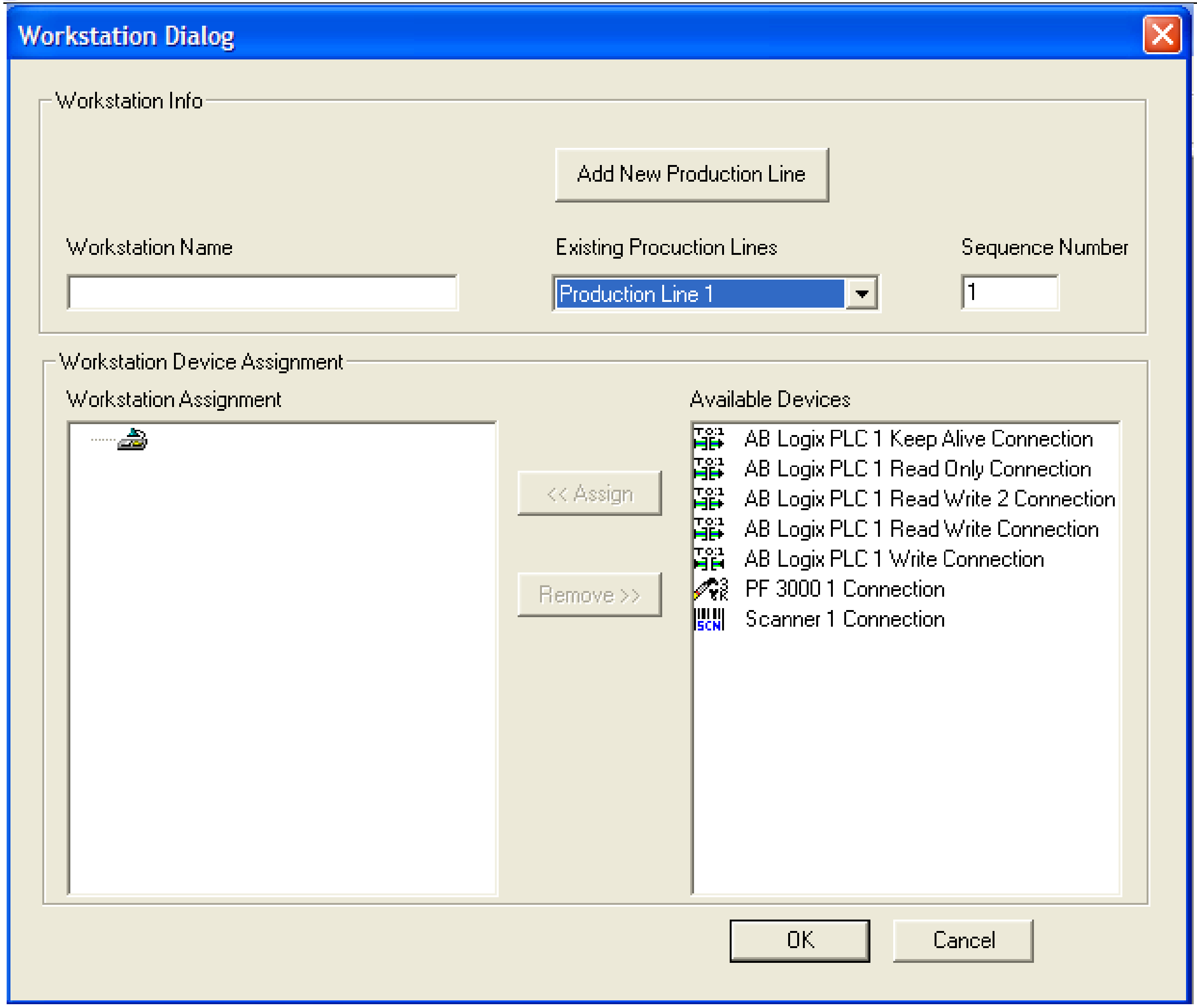
Before adding a *Workstation*, it is important to understand the concept of *Unassigned Devices*. If you review the sections on adding and editing devices, you will see that each device has one or more channel and one or more connection associated with it. See figure 26. After creating a device, the device connections become available for *Workstation* assignment. These available connections appear under the <<UNASSIGNED DEVICES>> icon on the *Workstation tab* as seen on Figure 34.

To add a *Workstation* click the *Workstation tab*, then right-click the *Plant Workstations icon* at the top of the *Workstation tab* as shown in figure 32. Choosing the option, *Add Workstation*, from the pop up menu will produce the *Workstation dialog* as shown in figure 35.

Successfully adding a *Workstation* requires the following steps.

1) Enter a unique name for the *Workstation*.
2) Assign the *Workstation* to a production line by making a selection from the *Existing Production Lines* drop down list.
3) Enter a numeric a sequence number to associate the *Workstation* with its position on the production line.
4) Assign one or more connections to the *Workstation*. Select an available connection from the *Available device* window, then click the <<*Assign button*.
5) Click OK

You will see the newly created *Workstation* under its assigned production line. See figure 36.



Workstation Dialog

Workstation Info

Workstation Name:

Existing Procution Lines: Production Line 1

Sequence Number: 1

Workstation Device Assignment

Available Devices:

- AB Logix PLC 1 Keep Alive Connection
- AB Logix PLC 1 Read Only Connection
- AB Logix PLC 1 Read Write 2 Connection
- AB Logix PLC 1 Read Write Connection
- AB Logix PLC 1 Write Connection
- PF 3000 1 Connection
- Scanner 1 Connection

Figure 35

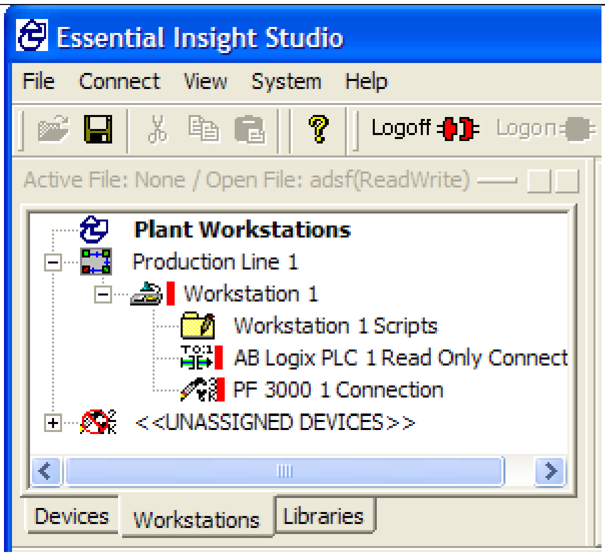


Figure 36

3.6.3 Editing a Workstation

Workstations are editable as long as the *Workstation* status is not *Online*. For information on *Workstation status*, see section 2.6.4. To edit a *Workstation*, right-click a *Workstation* icon under the production line dialog and select, *Edit Workstation* from the pop up menu. This will launch the dialog seen in figure 35. At this time, the *Workstation* can have its name edited, be repositioned by production line and sequence and can have its associated connections removed or added.

3.7. Workstation Status

A *Workstation* has three possible states, *Stopped*, *Online*, and *Offline*.

1) *Stopped* indicates that all *Workstation connections* have been terminated. In this state, there is no communication between *Essential Insight* and the *Workstation*.
2) *Online* indicates that all *Workstation connections* are successfully established and *Essential Insight* is communicating with each *Device* associated with the *Workstation*.
3) *Offline* indicates that one or more *Workstation connections* failed while attempting to bring a *Workstation Online* or after a previously established connection experienced interruption.

3.7.1 Changing a Workstation's Status

To change a *Workstation's status*, the User must right-click the *Workstation's* icon and select *Stopped*, *Online* or *Offline* from the pop up menu. The *Workstation connection* icons reflect the status of the *Workstation*. Red bars indicate *Stopped*. Yellow indicates *Offline*. Green indicates *Online*. See figure 36.

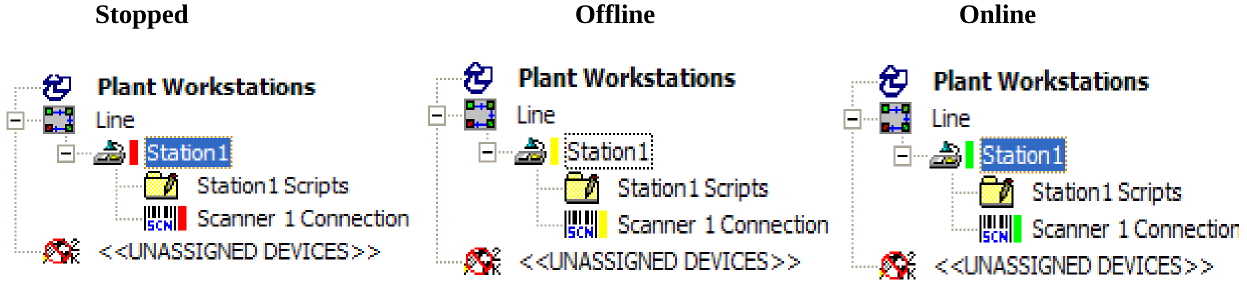
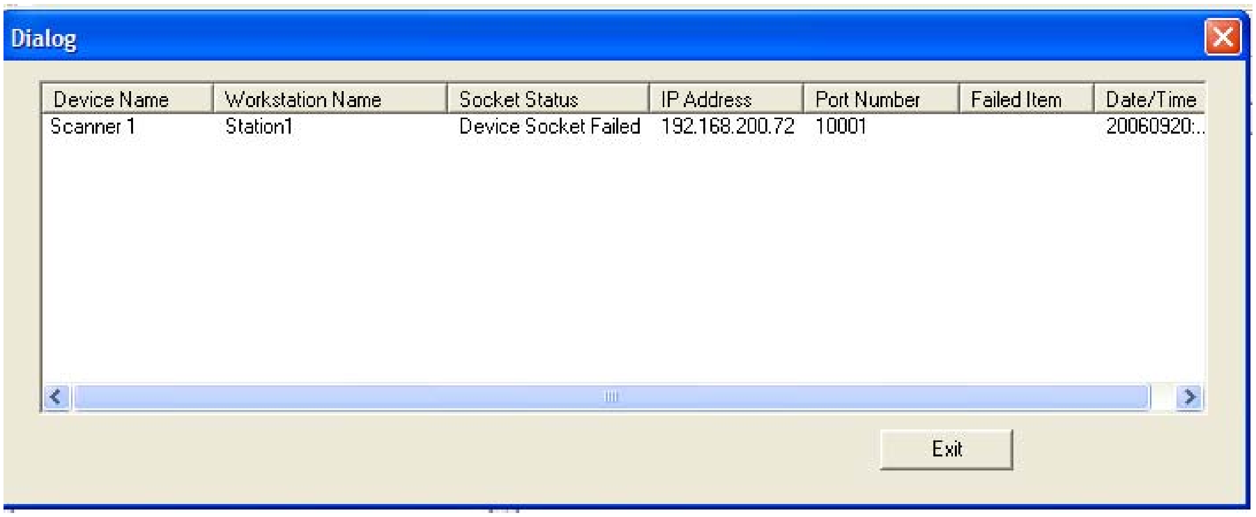


Figure 36

If a *Workstation* will not go online from a stopped status, the dialog in figure 37 will appear. This will give the User information on which device *connection*(s) failed.



Device Name	Workstation Name	Socket Status	IP Address	Port Number	Failed Item	Date/Time
Scanner 1	Station1	Device Socket Failed	192.168.200.72	10001		20060920:..

Figure 37

3.8. Device Variables and Alarms

Essential Insight uses *device variables* to communicate *with Essential Insight workscript files*. See the section 3 for more information on *workscript files*. *Device variable* names must be unique only to the *Workstation* with which the device is associated. See section 3.6.2

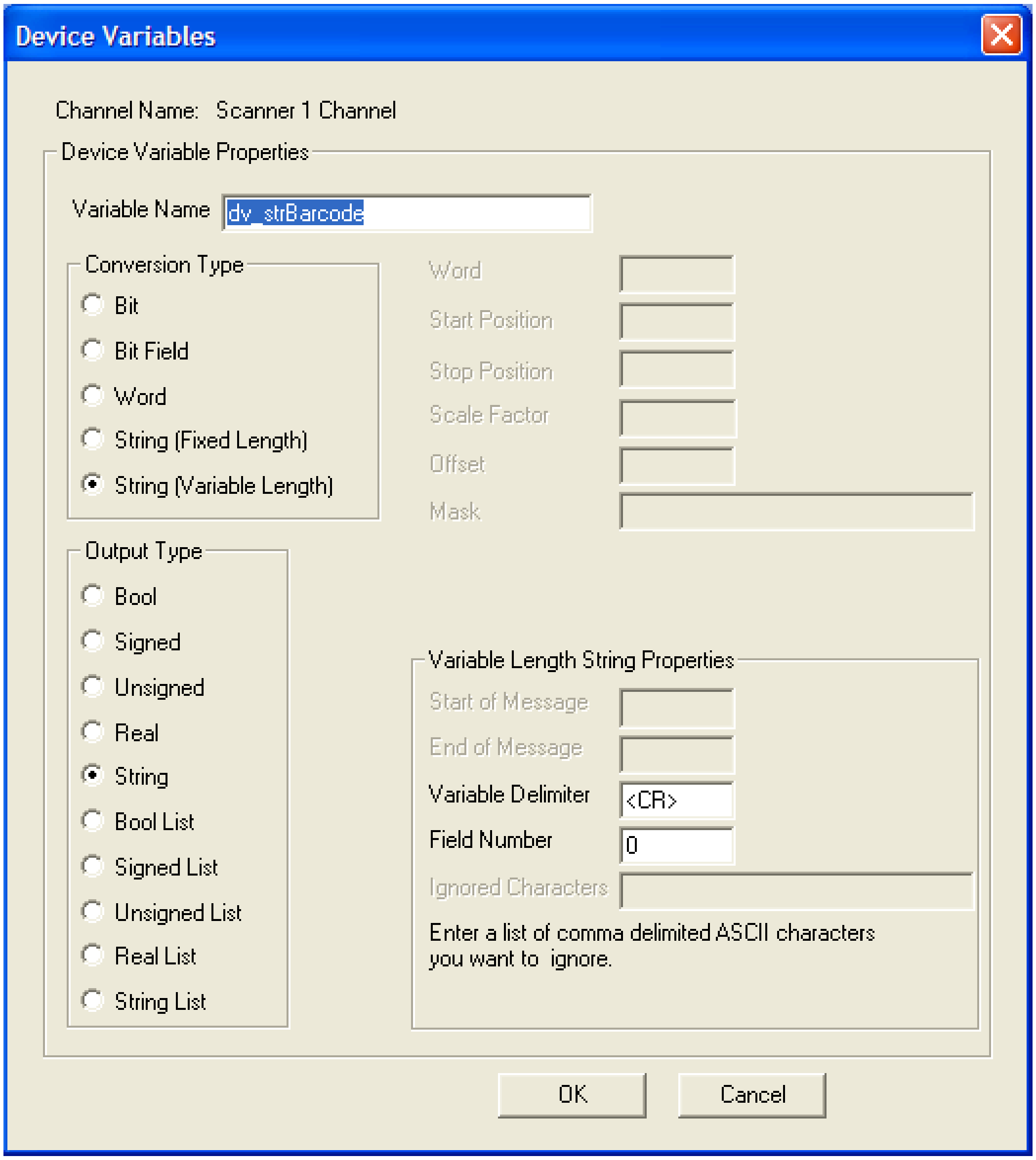
Essential Insight has the ability to generate alarms for various conditions set by the User. One alarm can be set per device variable. See section 2.8.2, *Adding Alarms to a Device Variable* for information.

3.8.1 Assigning Device Variables

Device variables enable *Essential Insight* to exchange information with devices. The type of variable is dependent upon the device. *Device variable* assignment occurs at the *device channel* level. A *device channel* can accept any number of *device variables*. A User can only add or edit *device variables* when the *Workstation* associated with the *device channel* is in a *Stopped* state.

To add or edit a *Device Variable*, select the *Device tab*, right-click on the desired *Device Channel*, and select *Edit Device Variables* from the pop-up menu. In the right pane of the *Essential Insight Studio* window a tab with the name of the channel will appear. In the pane will be a list of variables and the item <*Add New*>. If no *Device Variables* exist for that channel, just the item <*Add New*> will appear. When numerous *Device Variable* views exist, all windows are viewable simultaneously by selecting Tile or Cascade under Window on the main menu bar.

Right-click on a *Device Variable* name and select Edit from the pop-up menu to open the *Device Variables Properties* dialog for that variable or double-click on the <*Add New*> to open a blank *Device Variable Properties* dialog. (See Figure 38)



Device Variables

Channel Name: Scanner 1 Channel

Device Variable Properties

Variable Name: dv_strBarcode

Conversion Type
○ Bit
○ Bit Field
○ Word
○ String (Fixed Length)
● String (Variable Length)

Word
Start Position
Stop Position
Scale Factor
Offset
Mask

Output Type
○ Bool
○ Signed
○ Unsigned
○ Real
● String
○ Bool List
○ Signed List
○ Unsigned List
○ Real List
○ String List

Variable Length String Properties
Start of Message
End of Message
Variable Delimiter <CR>
Field Number: 0
Ignored Characters
Enter a list of comma delimited ASCII characters you want to ignore.

Figure 38

Enter the *Device Variable Name* exactly as declared in the *workscript file*. Selecting the *Input type* determines which other parameters are required. The type *Bit* requires *Word* and *Start Position*. The type *Bit Field* requires *Word*, *Start Position*, *Stop Position*, *Scale Factor* and *Offset*. The type *Word* requires *Word*, *Scale Factor*, and *Offset*. The type *String (Fixed Length)* requires the selection of *Output*

Type as *String* as well as entries for *Start Position*, *Stop Position* and *Mask*. The type *String (Variable Length)* requires the selection of *Output Type* as *String* as well as entries for *Field* and *Variable Delimiter* while *Ignored Characters* is optional. Select OK and the new or edited variable appears in the channels view.

3.8.2 Adding Alarms for a Device Variable

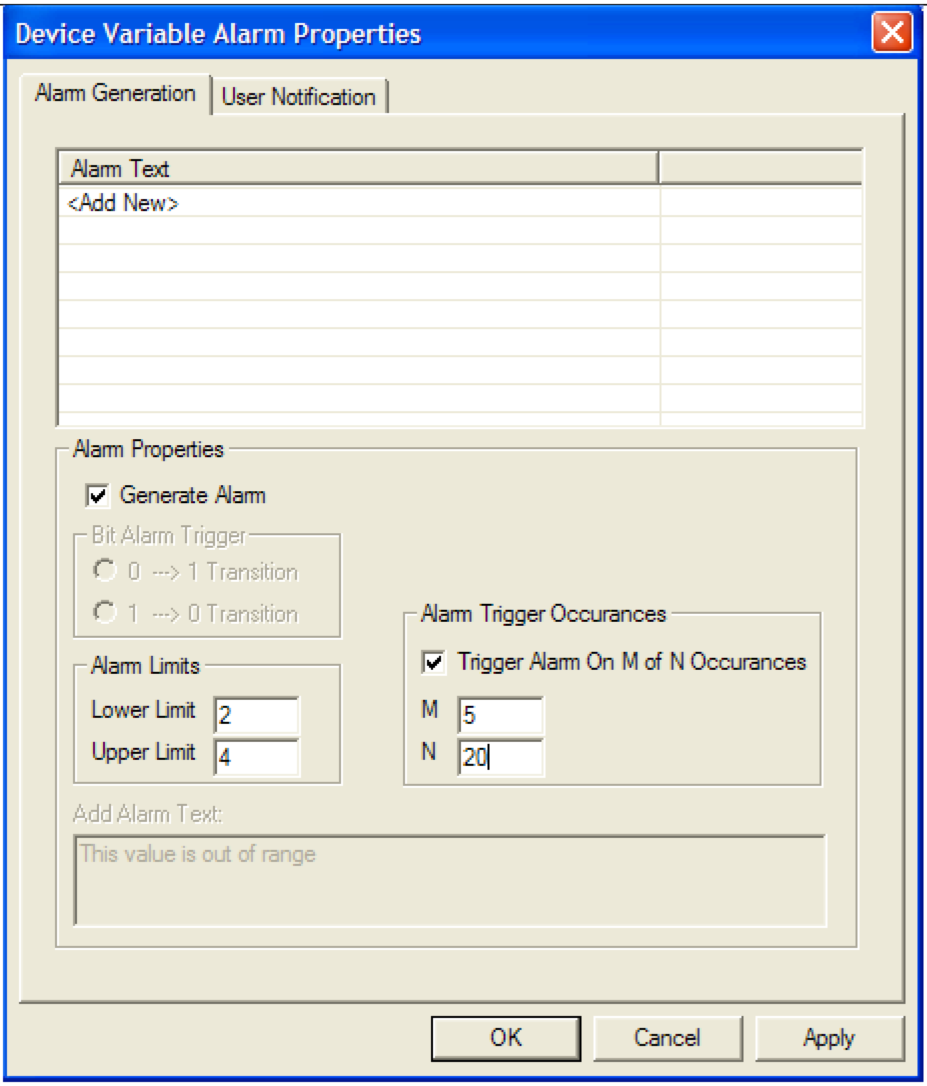
To add an alarm to a *Device Variable*, right-click on a variable name in the device variable view and select *Alarm Setup* from the pop-up menu to open the *Device Variable Alarm Generation* dialog for that variable as shown in figure 39. Select the *Alarm Generation tab* for adding an alarm associated with that *Device Variable*. The dialog will display a list of the currently used alarm text from other *Device Variables*. To use one of these texts for the selected device variable, select the text and the text will appear in the *Add Alarm Text edit box*. To add a new alarm text, select <*Add New*> from the list and type the new text in the *Add Alarm Text Box*.

The *Generate Alarm checkbox* turns the alarm on or off. Alarms only occur if the box is checked.

If the *device variable* is bit type, then the User has the option of selecting *Inverted Bit Logic*. With this box checked, an alarm occurs if the bit is low. With this box unchecked, an alarm occurs if the bit is high.

If the *Device Variable* is not a bit type, then the User must choose from *Lower Limit Only*, *Upper Limit Only* or *Lower* and *Upper Limits*. Depending on the selection made, the User must enter values for all *active limit boxes*. If both boxes are active, the *Upper Limit* must be greater than the *Lower Limit.*

Alarm Generation Rate determines the alarm notification frequency, based on the number of infractions incurred. The User enters the frequency by entering the number of infractions per samples received. *Essential Insight* will look at the last number of samples received for the *Device Variable* and if the number of infractions equals or exceeds the number prescribed by the User an alarm will be issued.



<Add New>

Alarm Properties

☑ Generate Alarm

Bit Alarm Trigger
○ 0 ---> 1 Transition
○ 1 ---> 0 Transition

Alarm Limits
Lower Limit 2
Upper Limit 4

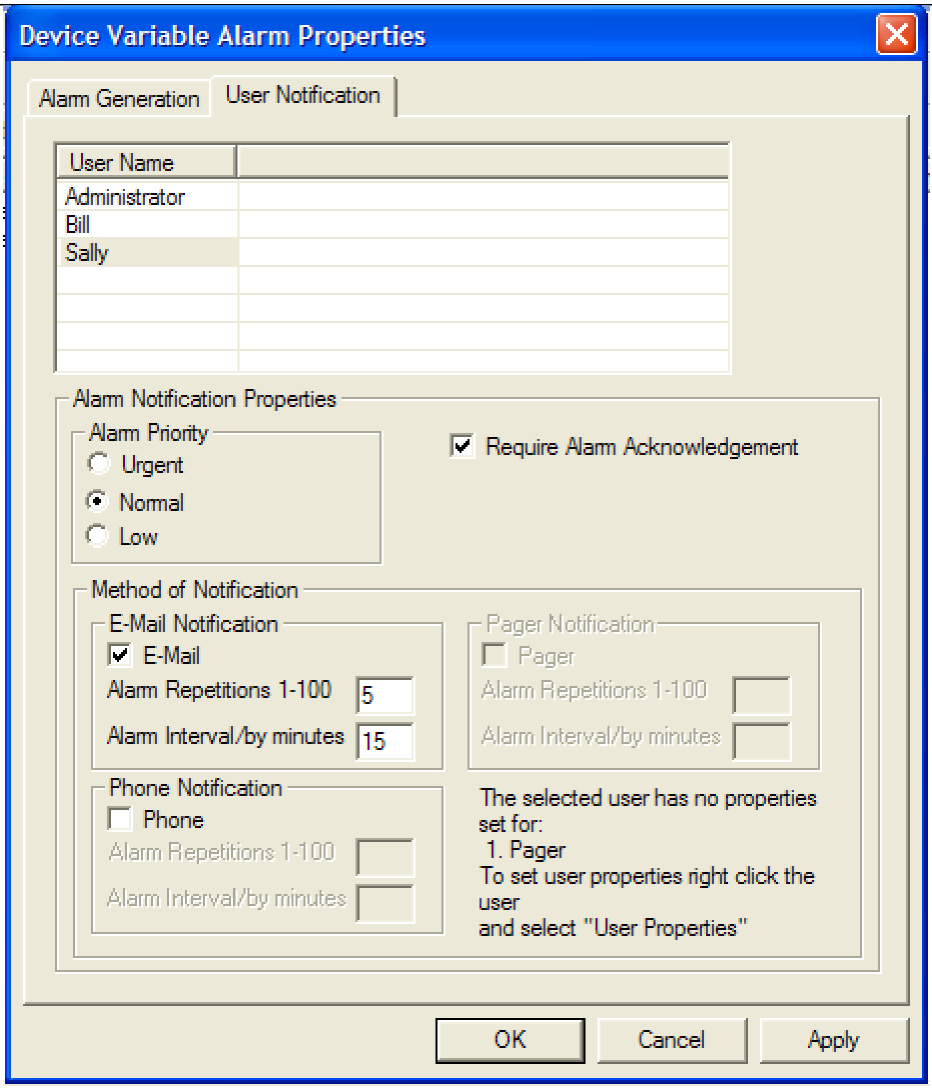
Alarm Trigger Occurances
☑ Trigger Alarm On M of N Occurances
M 5
N 20

Add Alarm Text:
This value is out of range

Figure 39

3.8.3 User Notification

The *User Notification tab* allows a User with the *manage User accounts* privilege to assign the notified User(s) of the alarm and method of notification. Selecting this tab without an alarm assigned to the *Device Variable* has all users "grayed out" and a message that alarms do not exist for this *Device Variable*. See figure 40.



User Name	
Administrator	
Bill	
Sally	

Alarm Notification Properties

Alarm Priority
○ Urgent
● Normal
○ Low

☑ Require Alarm Acknowledgement

Method of Notification

E-Mail Notification
☑ E-Mail
Alarm Repetitions 1-100: 5
Alarm Interval/by minutes: 15

Pager Notification
□ Pager
Alarm Repetitions 1-100
Alarm Interval/by minutes

Phone Notification
□ Phone
Alarm Repetitions 1-100
Alarm Interval/by minutes

The selected user has no properties set for:
1. Pager
To set user properties right click the user
and select "User Properties"

Figure 40

3.9. Workscript Files

Workscript files are software files used to define the operations of a *Workstation*. For example, a *workscript file* will tell the *Essential Insight Engine* what to do with a barcode scan received from a scanner. *Workscript Variables* declared in the *Workscript Files* store values as input to or output from the *workscript file*. It is required that these *Workscript Variables* share the identical name as the associated *Device Variable* as discussed in section 2.8.1.

Workscript Files are located on the *Workstations Tab* in folders under each *Workstation* labeled with the *Workstation* name followed by the extension (.scp).

3.9.1 Creating a New Workscript File

To create a *Workscript File*, select the *Workstations Tab* in the left pane of the *Studio*. Find the desired *Workstation* on the tree and right-click the *Workscript Folder* and select *Add Script* from the pop-up menu. This selection prompts the User to add any device variable definitions that already exist on the *Workstation Device Channels* and opens a *Workscript File* on the right side pane of the Studio and adds a *Workscript Icon* under the *workscripts folder* (see figure 41). The filename appears in the tab for the file. If view pane is set to *Tile* or *Cascade* by navigating *Window* under the main menu, the name appears in the title bar of the view. Enter the code for the script file using the scripting language defined in the *Workstation Scripting Language Manual*. The file can be saved at any time by clicking on the *Save button* on the *Tool Bar*.

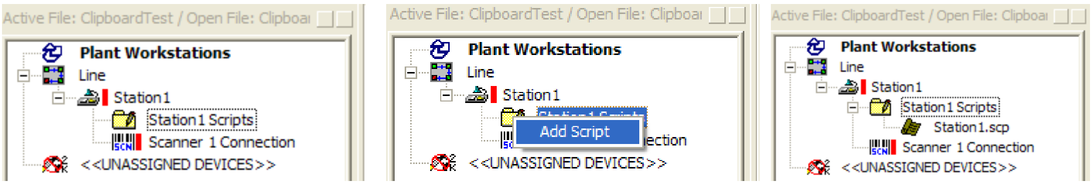


Figure 41

3.9.2 Editing a Workscript File

To edit a *Workscript File*, right-click on the *Workscript File* icon under the *Workstation's* script icon the *Workstation Tab*. Select the *Edit Script menu item* from the pop-up menu (see figure 42). To edit an open *Workscript File*, select the view in the right-pane of the Studio. To save changes made to the *Workscript File*, click on the Save button located on the main menu. To compile the changes see section 3.9.3.

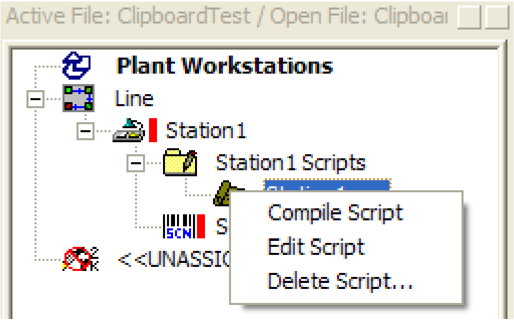
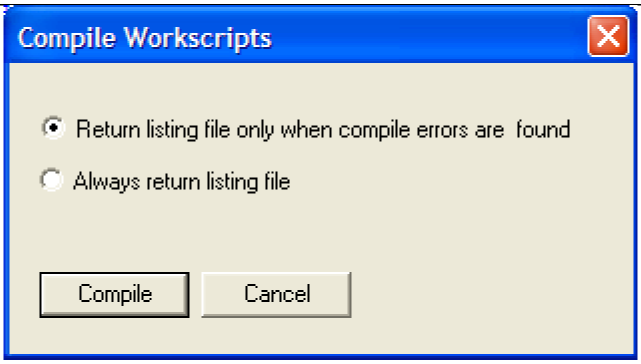


Figure 42

3.9.3 Compiling a Workscript File

All *Workscript Files* require compilation before any modifications become active in the system. To compile a *Workscript File*, right-click the *Workscript Icon* under the *Workstation Script folder* and select the *Compile Script menu item.* If unsaved changes exist in the file, the Studio prompts the User to do so. Once saved, the User is presented a dialog which gives the choice of having a listing file returned when compile errors are found (see figure 43).


Compile Workscripts

● Return listing file only when compile errors are found

○ Always return listing file

Figure 43

3.9.4 Deleting a Workscript File

To delete a *Workscript File*, the file cannot be open in the right-hand pane of the Studio. To close the file, select the correct tab or view and click on the closing X. To delete the file, right-click on the file under the *Workstation's* script icon the *Workstation tab*. Select the *Delete Script* menu item from the pop-up menu (see figure 42).

3.10. System Diagnostics

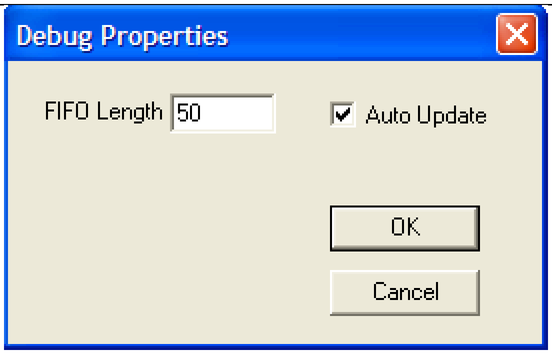
A User can monitor the performance of *Devices* and *Workstations* by initiating diagnostic views at the *Workstation level* on the *Workstation tab*, or at the *Device level* and *Device Channel* level on the *Device tab*. The *Workstation diagnostic view* shows the User real time *Workstation* data that reflects the interaction between the *Essential Insight Engine* and the configuration workscripts. The *Device* and *Channel diagnostics* views show real time data output by the *Devices* and their *Channels*. In conjunction with the system logs mentioned in section 5 of this guide, the User can effectively troubleshoot and validate the system performance.

3.10.1 Creating a Workstation Diagnostic Session

To create a *Workstation Diagnostics Session*:

1) Begin by right clicking a *Workstation icon* on the *Workstation* tab that is in an online (green bar) state.
2) Select the *Workstation Debug* menu item. This produces the *Debug Properties* dialog (See figure 44).
3) Enter a FIFO (first in first out) Length to determine the maximum number of records displayed on the *Workstation Diagnostic view* at any given time.
4) Select the *Auto Update checkbox* to force the view to update as *Essential Insight* generates new diagnostic data.
5) Select OK to create the *Workstation Diagnostic view*. As seen in figure 45.

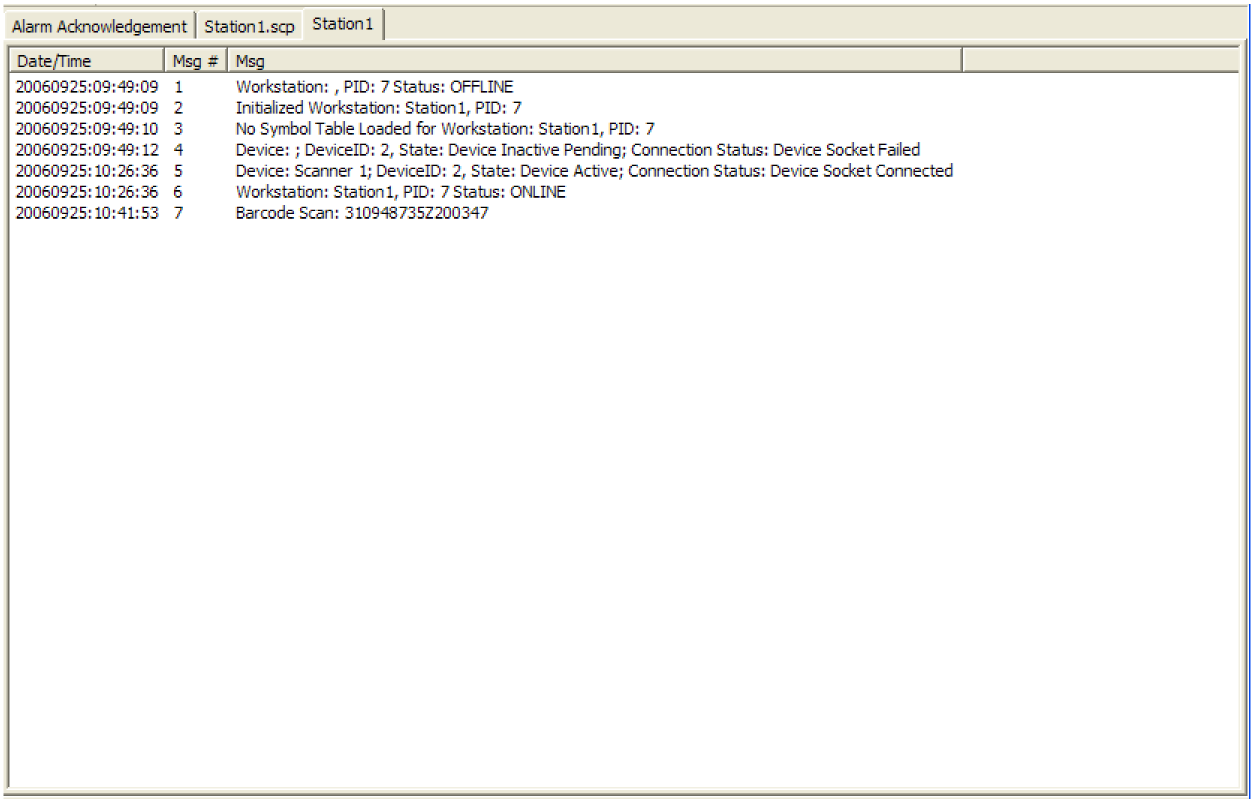
*If the *Workstation* transitions to a stopped state at anytime during the diagnostics session, the User must close the *Workstation Diagnostic view* and re-create the session when the *Workstation* returns to an online state.



FIFO Length 50

☑ Auto Update

Figure 44



Date/Time	Msg #	Msg
20060925:09:49:09	1	Workstation: , PID: 7 Status: OFFLINE
20060925:09:49:09	2	Initialized Workstation: Station1, PID: 7
20060925:09:49:10	3	No Symbol Table Loaded for Workstation: Station1, PID: 7
20060925:09:49:12	4	Device: ; DeviceID: 2, State: Device Inactive Pending; Connection Status: Device Socket Failed
20060925:10:26:36	5	Device: Scanner 1; DeviceID: 2, State: Device Active; Connection Status: Device Socket Connected
20060925:10:26:36	6	Workstation: Station1, PID: 7 Status: ONLINE
20060925:10:41:53	7	Barcode Scan: 310948735Z200347

Figure 45

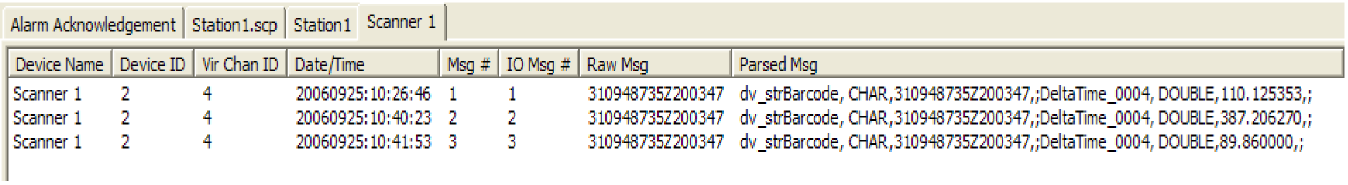
3.10.2 Creating a Device Diagnostic Session

To create a *Device Diagnostics Session*:

1) Begin by right clicking a *Device icon* or *Device Channel icon* on the *Device* tab whose connection state is online.
2) Select the *Device Debug* menu item for a device or the *Channel Debug* menu item for a channel. This produces the *Debug Properties* dialog (See figure 44).
3) Enter a FIFO (first in first out) Length to determine the maximum number of records displayed on the *Device Diagnostic view* or the *Channel Diagnostic view* at any given time.
4) Select the *Auto Update checkbox* to force the view to update as *Essential Insight* generates new diagnostic data.

5) Select OK to create the *Device Diagnostic view*. As seen in figure 46.

* If the *Device* transitions to a stopped state at anytime during the diagnostics session, the User must close the *Device Diagnostic view* or the *Channel Diagnostic view* and re-create the session when the *Device* returns to an online state



Device Name	Device ID	Vir Chan ID	Date/Time	Msg #	IO Msg #	Raw Msg	Parsed Msg
Scanner 1	2	4	20060925:10:26:46	1	1	310948735Z200347	dv_strBarcode, CHAR,310948735Z200347,;DeltaTime_0004, DOUBLE,110.125353,;
Scanner 1	2	4	20060925:10:40:23	2	2	310948735Z200347	dv_strBarcode, CHAR,310948735Z200347,;DeltaTime_0004, DOUBLE,387.206270,;
Scanner 1	2	4	20060925:10:41:53	3	3	310948735Z200347	dv_strBarcode, CHAR,310948735Z200347,;DeltaTime_0004, DOUBLE,89.860000,;

Figure 46

4.0 Troubleshooting Essential Insight

Essential Insight provides a variety of diagnostic tools for troubleshooting. The *Workstation diagnostics component* gives the user an excellent window into *Workstation* performance. See section 3.10.1 for details. The *Device Diagnostics component* presents the user the ability to monitor output from all *Devices* on the plant floor. See section 3.10.2 for details.

Essential Insight also collects information associated with system performance and it into files for the Users perusal. See section 5.1 and 5.2 for details on how to access and analyze these files.

5.0 Essential Insight Logs

Essential Insight provides log files to track any problems that may occur. The logs are files in the directory C:\InstantInsight\Logs on the host PC. Log files have .log file extensions to distinguish them from other files. The files discussed here are *Event.log*, *DBException.log* and *Synatax.log*.

5.1. Event log

Event log files record events such as User logon and logoff, starting and stopping *Workstations*, changes to the *configuration file*, etc. The *log* records the User name, date and time of the event and a description of the event. This log provides a time date stamp for when the event occurred and that the User with a method for assuring that people making these changes have authorization to do so.

5.2. DBException log

Database exception logs hold information recorded when an exception occurs while adding, modifying, retrieving or deleting data on the SQL database. The *log* records the date and time when the exception occurred, the exception as sent by SQL Server and what component of the Engine was trying to access the database when the exception occurred. This *log* provides the User with a method for determining if problems exist while writing or retrieving data.