uAutomate Server
Data Acquisition Web Server

Version: v1.0.0.0

Installation and Setup Guide

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1. Introduction

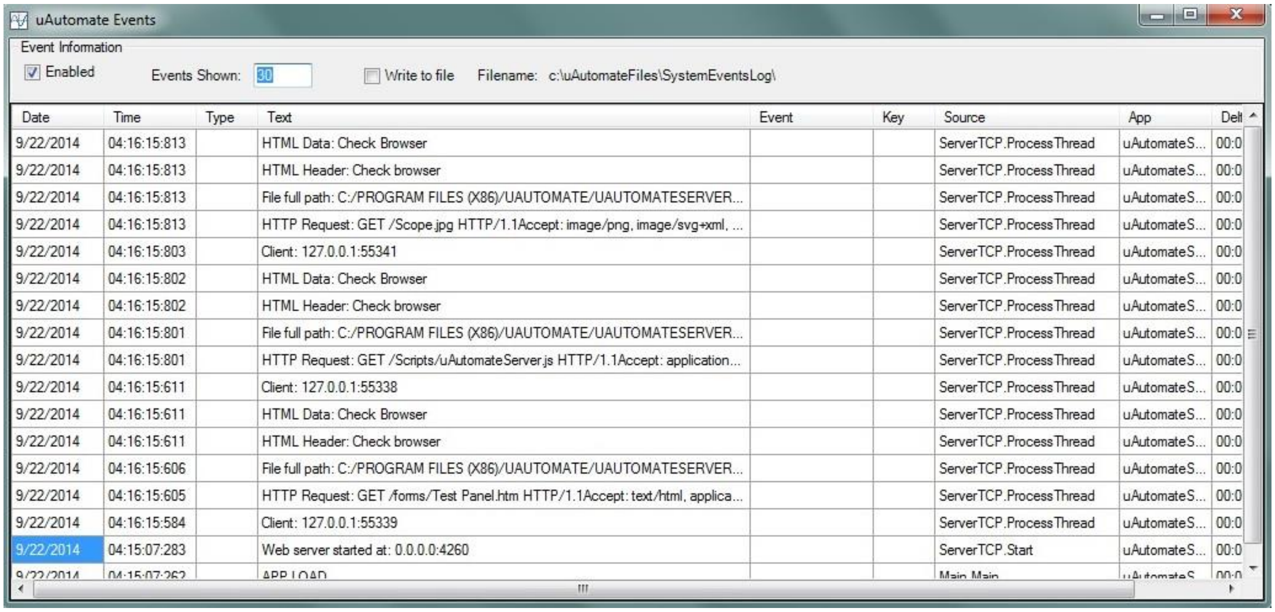
uAutomateServer is a light weight Web Server developed to serve as a gateway between various software platforms and different data acquisition devices and communications protocols.

Many applications do not have the ability to communicate with certain devices such as COM ports or USB devices etc… uAutomate Server was designed to bridge that gap and allow these applications to work with these devices using more common protocols such as AJAX.

The underlying theory behind the uAutomate Server is that it consists of a script evaluator. Script commands are created on the client applications then sent over to the server to process and to return values if applicable. A collection of different data acquisition devices or protocols are exposed to the scripts using a “Tags” collection. So scripts written properly can now access these devices and protocols.

The main reason for developing this application, and the perfect example of how it is intended to be used was the need to be able to read/write to an RS232 Serial port from HTML and Javascript.

Cross Browser Support for accessing uAutomate Server and Serial Ports. Web Browsers viewing client pages served up from uAutomate Server will have access to the same functions the local computer would have. This allows you to write pages that can be viewed by compatible web browsers on other computers, Android devices/ tablets, and Iphone. This can give you access to the computer's COM Ports from these remote devices. This software package has not been tested on every version of web browser that is in the market. If the browser you wish to use supports scripting along with AJAX or remote HTTP requests then this package will work for you.



Event Information

☑ Enabled   Events Shown: 30   □ Write to file   Filename: c:\uAutomateFiles\SystemEventsLog\

Date	Time	Type	Text	Event	Key	Source	App	Delt
9/22/2014	04:16:15:813		HTML Data: Check Browser			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:813		HTML Header: Check browser			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:813		File full path: C:/PROGRAM FILES (X86)/UAUTOMATE/UAUTOMATESERVER...			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:813		HTTP Request: GET /Scope.jpg HTTP/1.1Accept: image/png, image/svg+xml, ...			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:803		Client: 127.0.0.1:55341			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:802		HTML Data: Check Browser			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:802		HTML Header: Check browser			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:801		File full path: C:/PROGRAM FILES (X86)/UAUTOMATE/UAUTOMATESERVER...			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:801		HTTP Request: GET /Scripts/uAutomateServer.js HTTP/1.1Accept: application...			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:611		Client: 127.0.0.1:55338			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:611		HTML Data: Check Browser			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:611		HTML Header: Check browser			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:606		File full path: C:/PROGRAM FILES (X86)/UAUTOMATE/UAUTOMATESERVER...			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:605		HTTP Request: GET /forms/Test Panel.htm HTTP/1.1Accept: text/html, applica...			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:584		Client: 127.0.0.1:55339			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:15:07:283		Web server started at: 0.0.0.0:4260			ServerTCP.Start	uAutomateS...	00:0
9/22/2014	04:15:07:262		APP LOAD			Main.Main	uAutomateS	00:0

Figure 1 Introduction Events Window

2. System Requirements

Microsoft Windows XP, Microsoft Windows 7 32 bit, Microsoft Windows 7 64 Bit

Microsoft .NET Framework 4.0

Adobe Acrobat Reader for help files

1meg of hard drive space

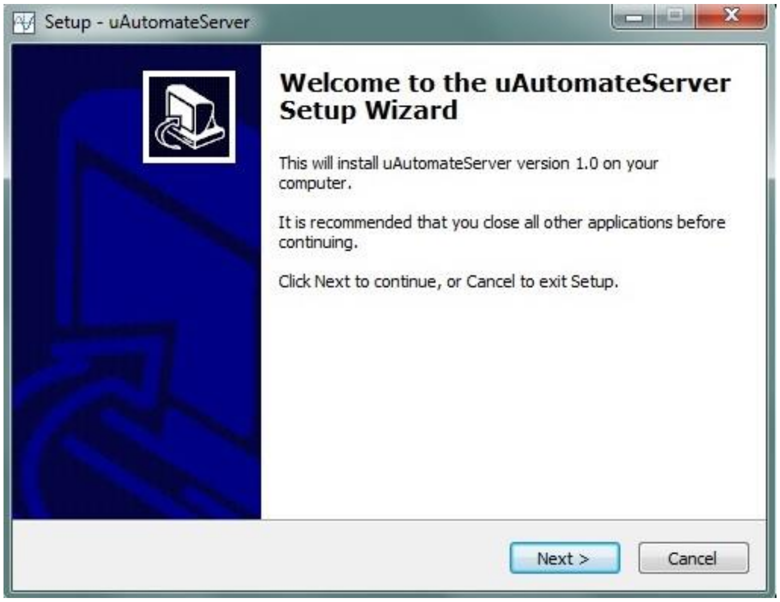
No RAM system requirements. If your computer is capable of running the above listed windows requirements then it will be capable of running this application.

3. Installation

To install the uAutomateServer, run the supplied Setup.exe file. This will handle all required installation routines. By default, the application will install into the “c:\Program Files (x86)\uAutomate\uAutomateServer\” folder.

Below is a quick guild for the installation windows that will appear with their options.

Welcome Screen



Setup - uAutomateServer

Welcome to the uAutomateServer Setup Wizard

This will install uAutomateServer version 1.0 on your computer.

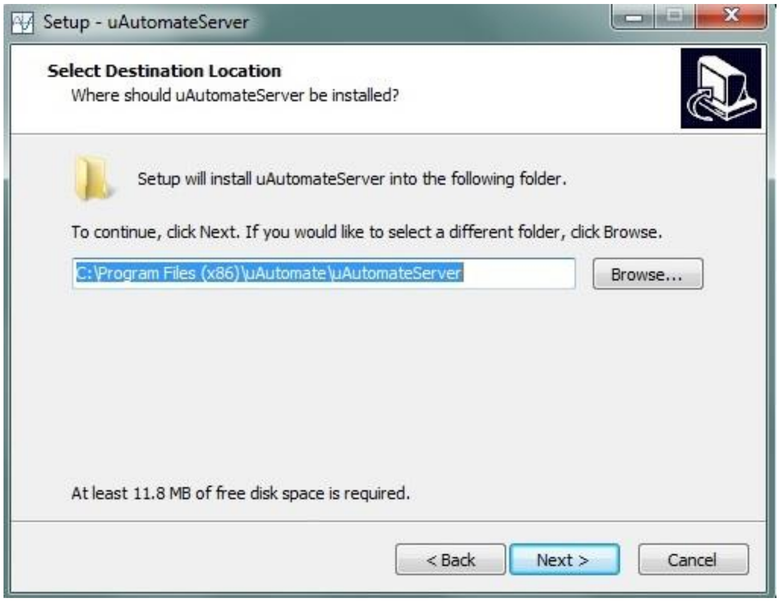
It is recommended that you close all other applications before continuing.

Click Next to continue, or Cancel to exit Setup.

Figure 2 Setup Welcome Screen

The welcome screen gives the user a quick introduction to the application.

Installation Folder Screen


Setup - uAutomateServer

Select Destination Location

Where should uAutomateServer be installed?

Setup will install uAutomateServer into the following folder.

To continue, click Next. If you would like to select a different folder, click Browse.

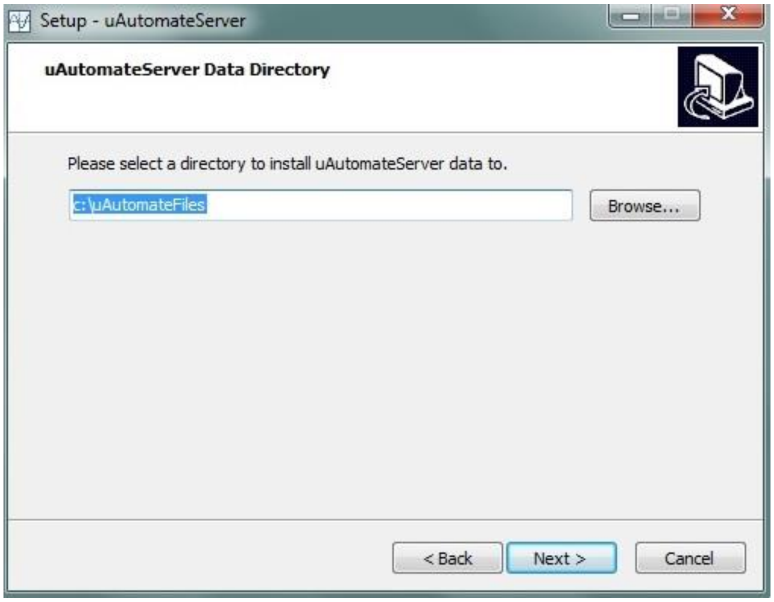
C:\Program Files (x86)\uAutomate\uAutomateServer

At least 11.8 MB of free disk space is required.

Figure 3 Setup Installation Folder Screen

The installation folder screen will give the installer the ability to change the installation folder.

Data Directory Screen


Setup - uAutomateServer

uAutomateServer Data Directory

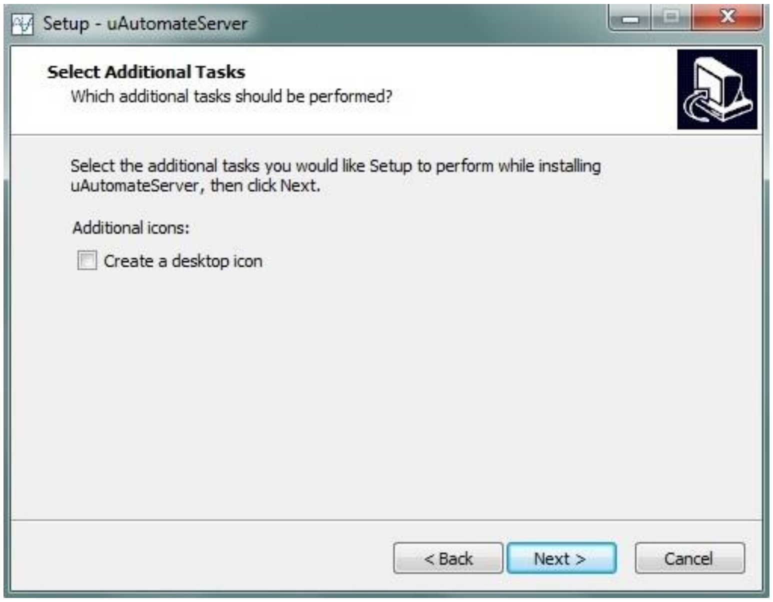
Please select a directory to install uAutomateServer data to.

c:\uAutomateFiles

Figure 4 Data Directory Screen

The data folder screen will give the installer the ability to change the support file installation folder.

Additional Options Screen



Setup - uAutomateServer

Select Additional Tasks

Which additional tasks should be performed?

Select the additional tasks you would like Setup to perform while installing uAutomateServer, then click Next.

Additional icons:

□ Create a desktop icon

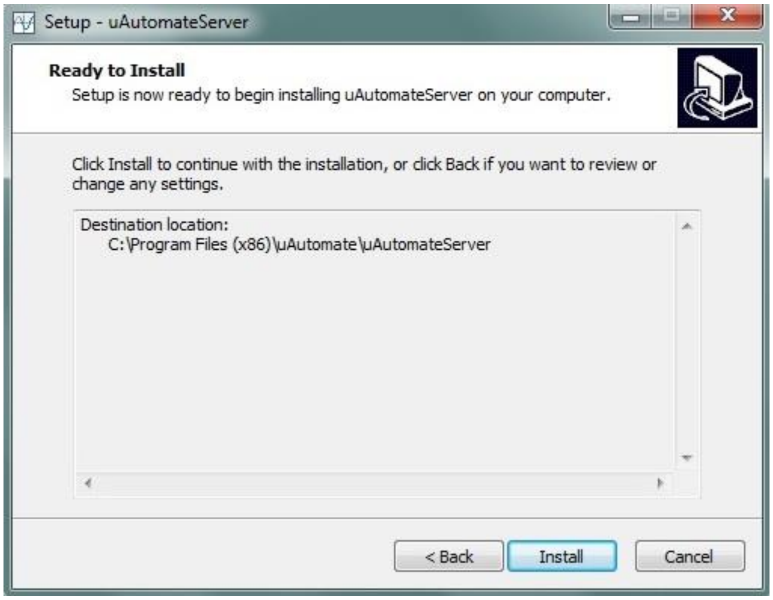
Figure 5 Additional Options Screen

This screen will give the installer the ability to change the additional setup options for this application.

Additional Options Include

- Create a desktop icon: If selected upon installation a desktop shortcut icon will be created.

Ready to Install Screen



Ready to Install

Setup is now ready to begin installing uAutomateServer on your computer.

Click Install to continue with the installation, or click Back if you want to review or change any settings.

Destination location:
C:\Program Files (x86)\uAutomate\uAutomateServer

Figure 6 Ready to Install Screen

This screen will give the installer the ability to exit out of the application before installation.

4. Running uAutomateServer

Once the application has been installed, it can be run by double clicking the shortcut generated on the desktop or start menu. If a shortcut has not been created the uAutomateServer.exe file can be run directly from windows explorer. uAutomateServer.exe can be found in the "C:\Program Files (x86)\uAutomate\uAutomateServer \" folder.

4.1.Running Multiple Instances

The uAutomateServer.exe application can run multiple times. You will have to copy the uAutomateServer folder and create a new duplicate copy of the folder. From within this folder you can change the Settings.ini file to reflect how you wish this new copy of the application to run. The most important setting in the Settings.ini file to change would be the TCPPort setting.   If this setting is not changed both instances of the server running in memory will try to send and receive TCP traffic on the same port and collide.

4.2.Starting uAutomateServer on Windows Startup

Frequently it is desired to have the server application start on startup of the computer. There are ways to have the application start as a service in the Windows operating system but for this explanation we will keep if very simple. Creating a shortcut and putting it in the Windows "Startup" menu should suffice for starting the application each time Windows starts. The application can also be added as a Windows Startup Service if needed.

5. System Tray Icon and Menu

While the uAutomateServer.exe is running and operational, it will appear as an icon in the Windows system tray as shown in the figure above. Clicking this icon will display a menu of options available.

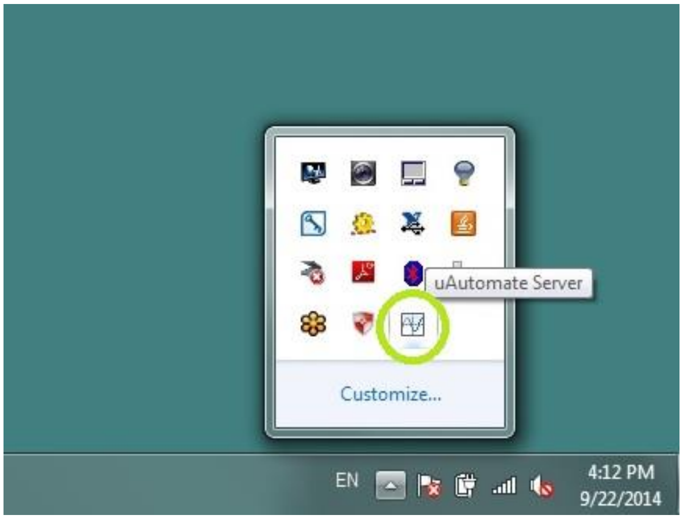


Figure 7 Task Tray Icon

The Task Tray menu for this application only has a few options available, which are listed below.

- **Display Events:** Loads and displays the Main Event Window.
- **About:** Loads and displays the About Window.
- **Exit:** Quits the uAutomate Server application.

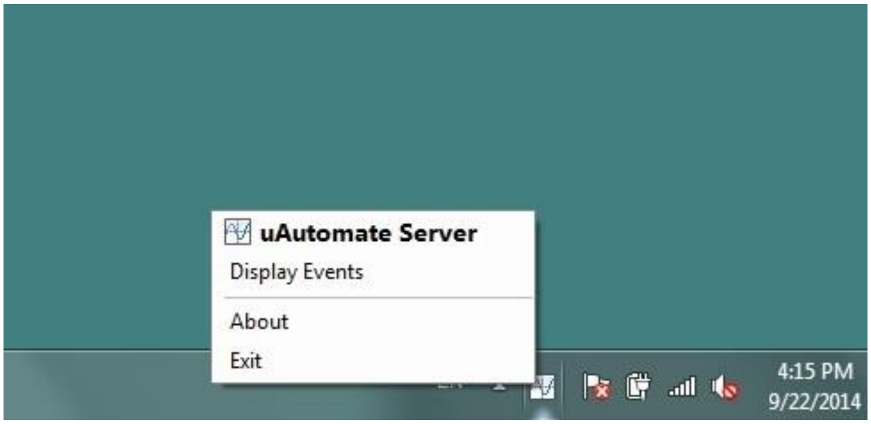
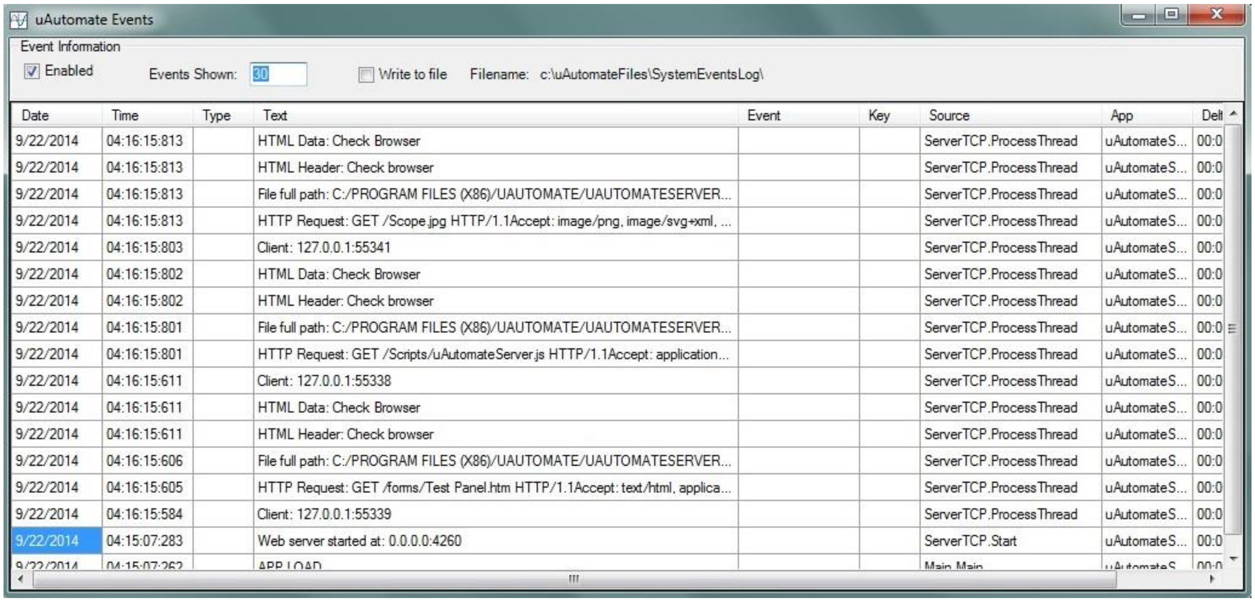


Figure 8 Task Tray Menu

6. Main Server Events Window

Once the application has started, there is one main window that will appear for monitoring the status of the uAutomate Server application. From this window a user can monitor all displayed events and control logging to file of these events.



uAutomate Events

Event Information

☑ Enabled   Events Shown: 30   ☐ Write to file   Filename: c:\uAutomateFiles\SystemEventsLog\

Date	Time	Type	Text	Event	Key	Source	App	Delt
9/22/2014	04:16:15:813		HTML Data: Check Browser			ServerTCP.ProcessThread	uAutomateS...	00:0
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9/22/2014	04:16:15:813		HTTP Request: GET /Scope.jpg HTTP/1.1Accept: image/png, image/svg+xml, ...			ServerTCP.ProcessThread	uAutomateS...	00:0
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9/22/2014	04:16:15:802		HTML Header: Check browser			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:801		File full path: C:/PROGRAM FILES (X86)/UAUTOMATE/UAUTOMATESERVER...			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:801		HTTP Request: GET /Scripts/uAutomateServer.js HTTP/1.1Accept: application...			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:611		Client: 127.0.0.1:55338			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:611		HTML Data: Check Browser			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:611		HTML Header: Check browser			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:606		File full path: C:/PROGRAM FILES (X86)/UAUTOMATE/UAUTOMATESERVER...			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:605		HTTP Request: GET /forms/Test Panel.htm HTTP/1.1Accept: text/html, applica...			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:16:15:584		Client: 127.0.0.1:55339			ServerTCP.ProcessThread	uAutomateS...	00:0
9/22/2014	04:15:07:283		Web server started at: 0.0.0.0:4260			ServerTCP.Start	uAutomateS...	00:0
9/22/2014	04:15:07:262		APP LOAD			Main.Main	uAutomateS	00:0

Figure 9 Main Server Events Window

6.1.Title Bar

The title bar is the topmost region of the main window that shows the name of the application icon, application title, and the window control buttons.

6.1.1. Window Control Buttons

The window control buttons are the buttons located at the top right most region of the main window. These buttons allow the user to minimize, maximize, and close the main window. If the x is clicked to close the window and pending database changes need to be saved the user will be prompted if they wish to save.

6.2.Event Information Bar

The Event Information bar is located just below the Title Bar. These are the controls used to activate and control various functions of the logging and event control of the program. These functions are described below.

- **Enabled** (Checkbox): Turns on and off event recording and displaying.
- **Events Shown** (numeric entry): Amount of events to display in the events table on this window.
- **Write To File** (Checkbox): Turns on and event recording to file.
- **Filename** (label): Read only display of the folder where logs will be stored. This value can be edited in the Settings.ini file.

6.3.Events Table

The Events table is the large grid area just below the main menu. This is the region where the list of current events will be displayed. The different columns are described below.

- **Date**: Date when the event occurred.
- **Time**: Time when the event occurred.
- **Type:** Type of event. TCP, Debug, Error, etc…
- **Text:** Text description of event.
- **Event:** Event number of the event.
- **Key:** Unique Key for this event.
- **Source:** Where in the application was the event generated.
- **App:** What application generated the event. This is when multiple applications log to the same event file.
- **DeltaT:** Time difference in milliseconds since the previous event.

6.4.Status Bar

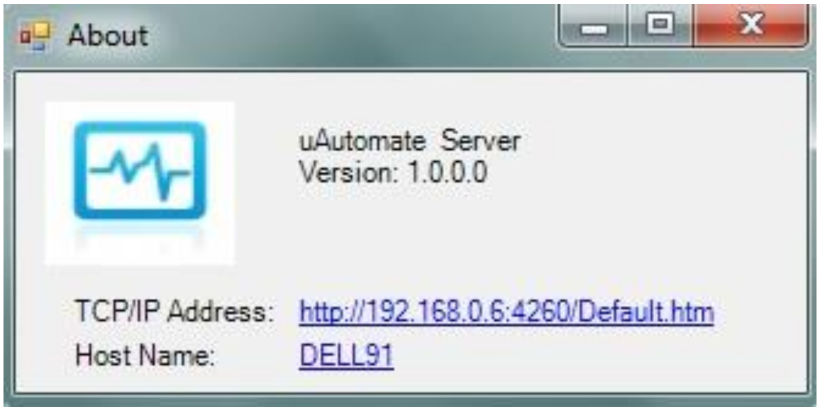
The status bar is the bar that runs along the bottom of the uAutomate Events Window. This status bar displays the current Time and Date so you can ensure that the application is not in a locked state.

7. Additional Windows

Additional popup windows are incorporated into this application to display different windows with their own functionality.

7.1.About Window

The About Window can be displayed by clicking the “About” menu item in the Task Tray Menu for the uAutomate Server Icon. About window will show application title along with version. Users can also find the TCP/IP number of the computer if looking to connect remotely.



uAutomate Server
Version: 1.0.0.0

TCP/IP Address: http://192.168.0.6:4260/Default.htm
Host Name: DELL91

Figure 10 About Window

8. Event Logging

When event logging is enabled the uAutomate Server application will log data to the path that is specified in the Setttings.int file. Event logs are recreated daily and are TAB separated text files. The log files will be named using the application name of the application that is writing the log along with the date. The extension will be CSV but is actually TAB separated text fields. These files can be easily viewed and edited in Microsoft Excel or other desired database programs.

Example file and location would be

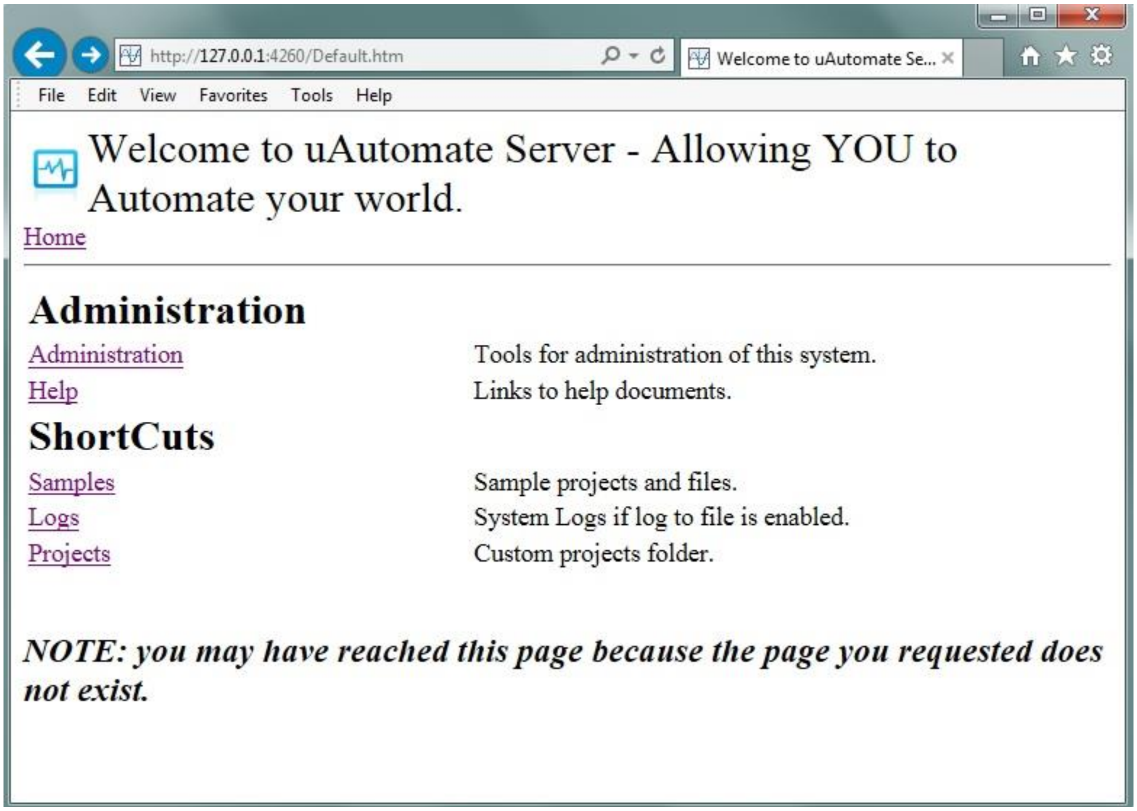
C:\uAutomateFiles\SystemEventsLog\uAutomateServer.exe_SystemEvents_ 2014-09-02.csv

9. Accessing uAutomate Server from a Web Browser

Now that the uAutomate Server is up and running, it is time to connected to it by using your favorite web browser. You can connect locally to your server by navigating to http://127.0.0.1:4260/. When using TCP/IP address 127.0.0.1 you are connecting to your local computer and the 4260 stands for the port that your uAutomate Server is configured for in the Settings.ini file.

The same connections can be tested from another computer on your network. If the computer running uAutomate Server is at TCP/IP address 192.168.0.20 then you can access it by going to the URL http://192.168.0.20:4260/ from a remote computer to access the computer running uAutomate Service.

If no additional file or path information is specified the default html page will be displayed. This page will contain information about uAutomate Server along with some useful links.


http://127.0.0.1:4260/Default.htm
Welcome to uAutomate Se...
File Edit View Favorites Tools Help

Welcome to uAutomate Server - Allowing YOU to Automate your world.

Home

Administration

Administration	Tools for administration of this system.
Help	Links to help documents.

ShortCuts

Samples	Sample projects and files.
Logs	System Logs if log to file is enabled.
Projects	Custom projects folder.

NOTE: you may have reached this page because the page you requested does not exist.

Figure 11 Default Web Form

10. Administration Web Pages

10.1. Logging In To uAutomate Server

At the top of most web forms are user name and password boxes along with a login box. In order to operate and work with the uAutomate server you must be logged in. Simply type in you user name and password then click login. The key generated for your user id will be populated to the right of the login button.

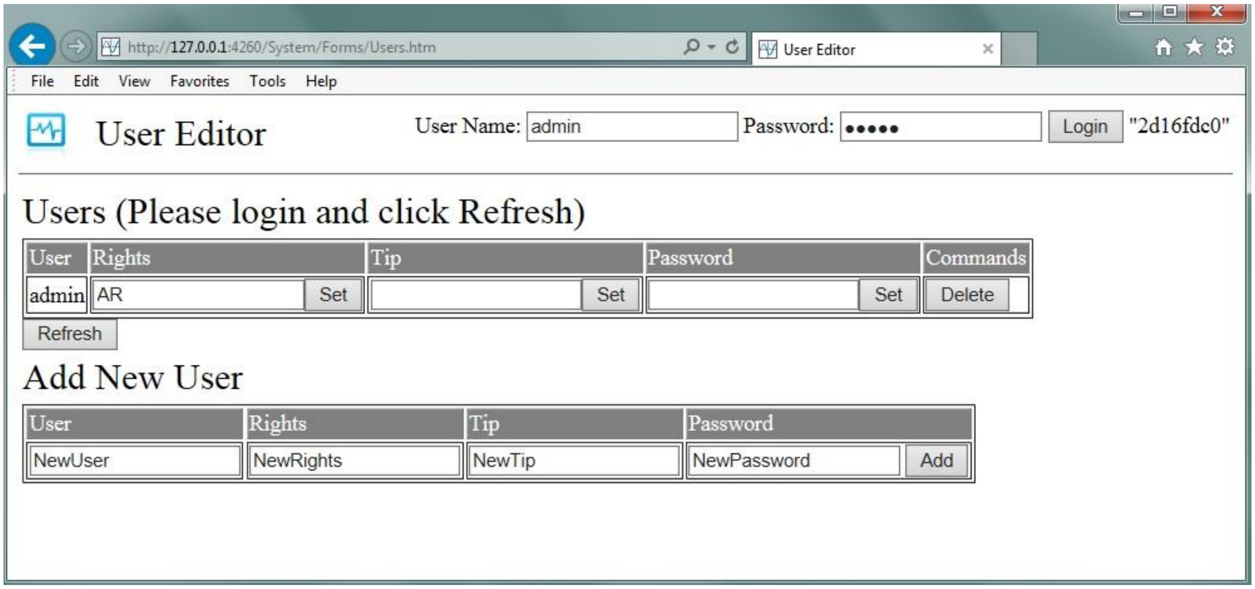
Default user name: admin

Default Password: admin

10.2. Users.htm

URL: http://127.0.0.1:4260/System/Admin/Users.htm

The Users.htm web page is in place to allow administrators to create, edit, and manage user ids passwords and user rights.



User Editor

User Name: admin Password: ●●●●● Login "2d16fdc0"

Users (Please login and click Refresh)

User	Rights	Tip	Password	Commands
admin	AR Set	Set	Set	Delete

Refresh

Add New User

User	Rights	Tip	Password
NewUser	NewRights	NewTip	NewPassword Add

Figure 12 Web Form Users.htm

User Edit Table:

User: User id of this user.

Rights: Rights granted to this user. This is just a string combination of characters where each character represents a certain access key. For example AR would be both Admin and Run rights. See User Access Rights section below.

Tip: This is a tip to help users remember there passwords.

Password: User password.

Set Buttons: This button will set the value for the edit box next to it for the operator row being edited.

Delete Button: Clicking this button will delete the user. You will be prompted first to acknowledge user deletion.

Refresh Button: Clicking this button will update the User Edit Table display.

Add New User Table:

This table allows you to create user values and add a new operator. After all text boxes have been updated click the "Add" button to add the user.

10.2.1. User Access Rights

Below are the user rights accepted by this system.

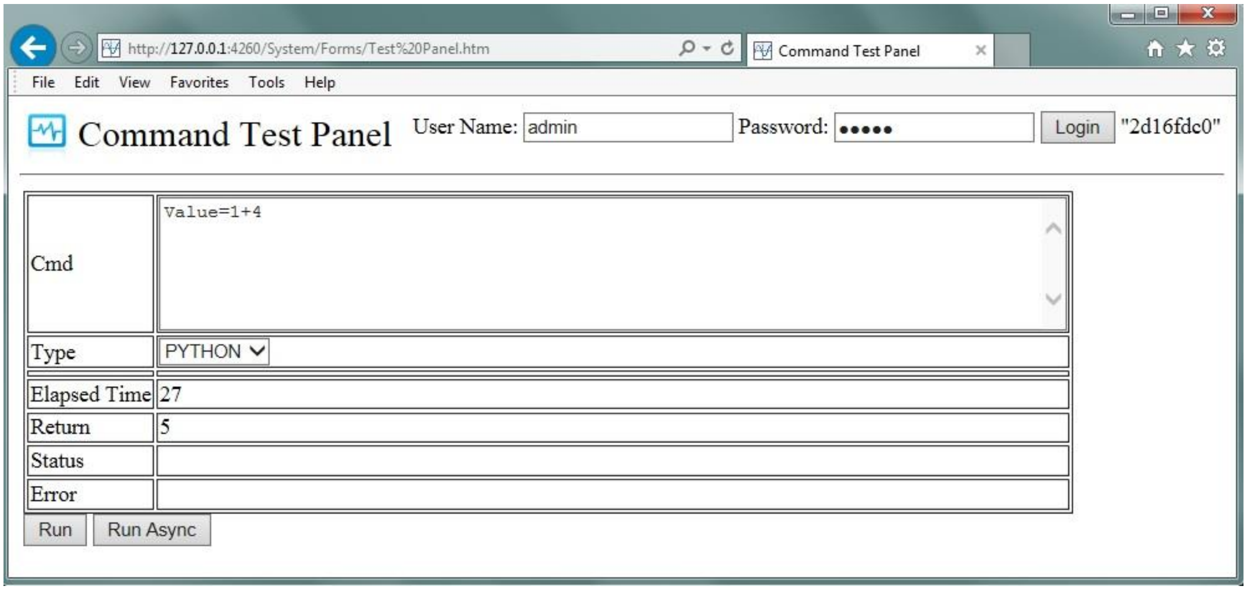
A (Admin): Access to editing users through the user screen.

R (Run): Allowed to Run commands via soap and html.

10.3. Test Panel.htm

URL: http://127.0.0.1:4260/System/Admin/Test%20Panel.htm

The Test Panel htm file was developed to help test script commands on the uAutomate server. The server uses IronPython and VB.NET script code to run commands on the server. Script code is generated on the client then sent to the server to carry out there. The Test Panel page allows a user to test these commands.



Command Test Panel

User Name: admin Password: ●●●●● "2d16fdc0"

Cmd	Value=1+4
Type	PYTHON
Elapsed Time	27
Return	5
Status	
Error	

Figure 13 Web Form Test Panel.htm

Command: Script to evaluate or execute on the server. The syntax is determined by the type drop down select list.

Command Type: This drop down will allow you to pick which scripting language to use. Options are Python and VB.NET.

Elapsed Time: This is the amount of time that elapses between from the time when the command was sent to when it was returned.

Return: This is the value returned from the executed command. If you wish to return a value from a command from the function use must set the virtual variable “Value” equal to a value. A sample “Value=1+4” with return the value of 5 in the Return box.

Status: Returns the status of the command if there is any to report.

Error: Returns any errors generated by executing the command.

Run Button: Run button will run the command script on the server and wait for a response.

Run Async Botton: This button will asynchronously run the script command on the server, and return the value to an event function.

11. Folder Paths

Main Installation Folder

Description: This is the location of the main application uAutomateServer.exe and supporting files including the Settings.ini.

Default: C:\Program Files (x86)\uAutomate\uAutomateServer

Files:

uAutomateServer.exe: Main windows application.

Settings.ini: Main configuration file for this application.

Help Folder

Description: Path where help files will be stored.

Default: C:\Program Files (x86)\uAutomate\uAutomateServer\Help

System Folder

Description: This folder holds supporting scripts, logos, icons, and html pages for system configuration and support.

Default: C:\Program Files (x86)\uAutomate\uAutomateServer\System

Folders:

Scripts\: Folder containing supporting scripts for client applications to link to and use within their code similar to JavaScript APIs.

These files can be accessed using:

http://127.0.0.1:4260/System/Scripts/uAutomateServer.js

Admin\: Maintenance forms and editors used by the program.

http://127.0.0.1:4260/System/Admin/Users.htm

http://127.0.0.1:4260/System/Admin/Test%20Panel.htm

uAutomate Data Folder

Description: This is a local data store for client custom web pages and their supporting files such as logos, icons, and scripts.

Default: C:\uAutomateFiles

Folders:

Projects\: Location to store custom client scripts and html files. Files stored here are

Samples\: Folder for installation of some sample web pages and scripts.

SystemEventsLog\: Event logs are stored here. If logging to file is enabled this is where the log files will be kept.

Users\: This folder hold local user rights and password (pwd) files. This file cannot be opened and edited directly. You must use uAutomateServer along with the Users.htm form.

12. Files

Descriptions and paths for files used by this software package. Folder paths are abbreviated by {app} is the main application path and {data} is the installation location of the support folders.

{app}\uAutomateServer.exe: Server windows application.

{app}\Settings.ini : Main settings file for configuring the application. The uAutomateServer.exe application will use the Settings.ini file in the same folder as it resides for setup. If you have multiple folders that run the uAutomate Server application you can configure each independently by editing their Settings.ini file.

{data}\Users\Users.pwd: Local user id and password storage file. This file is a locked encrypted file that the uAutomate server can open.

13. Settings.ini Configuration File

The Settings.ini file configures the application and can be used to customize how the application runs. This file is a basic Windows configuration file and can be editing in notepad. This chapter covers the sections and settings used by this application. Each area of the file is broken up by sections as defined in closing brackets []. For example [Setup]. Keys are the variables defined in a section and are formatted as such “TCPport=4260”.

Default Settings.ini File settings are below with descriptions

```
//**********************************************
//Section for general setup information.
//TCPPort: For this instance of uAutomate Server (http://127.0.0.1:4260/)
[Setup]
TCPport=4260

//**********************************************
//Virtual Paths to be shared by the web server.
//Each of the paths listed here will be available as virtual paths when navigated to via a web
//browser
//For example Projects=c:\uAutomateFiles\Projects will show up as
//http://127.0.0.1:4260/Projects/
[VirtualPaths]
System=C:\Program Files (x86)\uAutomate\uAutomateServer\System
Projects=c:\uAutomateFiles\Projects
Samples=c:\uAutomateFiles\Samples
Logs=c:\uAutomateFiles\SystemEventsLog
Help=C:\Program Files (x86)\uAutomate\uAutomateServer\Help

//**********************************************
//SystemLog section contains setup information regarding logging.
//EventsShown: Number of events to display in the events window.
//ToFile: Should the server log to the on disk files see logging section of manual.
//Path: Path to the folder where the event logs reside.
//EventsEnabled: Enable recording and showing of events.  1=yes,0=no.
//Below are the types of events and if they should be logged or not.  1=log, 0=do not log
[SystemLog]
EventsShown=30
Tofile=0
Path=c:\uAutomateFiles\SystemEventsLog\
EventsEnabled=1
APP_ENABLED=1
TCP_ENABLED=1
ERR_ENABLED=1
DBG_ENABLED=1
ERROR_ENABLED=1

//*********************************************
//Section for Login Setup and configuration.
//LocalAccessGranted: if set to 1 will allow local access without the need for a user id and password
//Filename: File where passwords are stored.
//FileType: Password file version.  Internal use only.
[Login]
LocalAccessGranted=1
Filename=c:\uAutomateFiles\Users\uAutomate.pwd
FileType=0
```

14. Virtual Web Folders

Virtual Web Folders are actual folders on the computer that are mapped out to be shared by the web server as a virtual folder. uAutomate Server can have many mapped virtual web folders and are defined by the VirtualPaths section in the Settings.ini file.

An example of a virtual path would be…

```
Projects=c:\uAutomateFiles\Projects
```

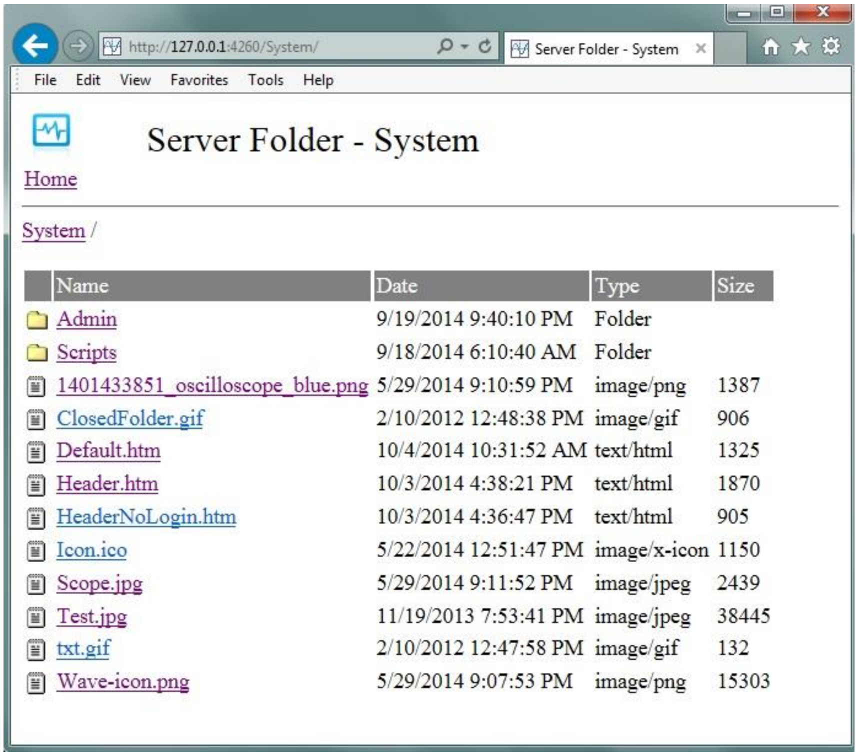
This would map out to…

//http://127.0.0.1:4260/Projects/

15. File Browser

Built into the server is a file browser that allows the user to navigate and view the files and folders at the defined virtual folders. You can pass your web browser a URL that specifies a virtual folder path and the web server will return a directory listing of all of the folders and files from within that directory. Folders and files will appear as hyperlinks that you can link to navigate to that file or next folder.

Below is an example of what the System folder could look like located at the URL http://127.0.0.1:4260/System/.



Server Folder - System

Home

System /

Name	Date	Type	Size
Admin	9/19/2014 9:40:10 PM	Folder	
Scripts	9/18/2014 6:10:40 AM	Folder	
1401433851_oscilloscope_blue.png	5/29/2014 9:10:59 PM	image/png	1387
ClosedFolder.gif	2/10/2012 12:48:38 PM	image/gif	906
Default.htm	10/4/2014 10:31:52 AM	text/html	1325
Header.htm	10/3/2014 4:38:21 PM	text/html	1870
HeaderNoLogin.htm	10/3/2014 4:36:47 PM	text/html	905
Icon.ico	5/22/2014 12:51:47 PM	image/x-icon	1150
Scope.jpg	5/29/2014 9:11:52 PM	image/jpeg	2439
Test.jpg	11/19/2013 7:53:41 PM	image/jpeg	38445
txt.gif	2/10/2012 12:47:58 PM	image/gif	132
Wave-icon.png	5/29/2014 9:07:53 PM	image/png	15303

Figure 14 Server File Browser

16. Additional Documentation

18. Table Of Figures

19. Revision History

Date	Version	Description	Function
9/1/2014	1.0.0.0	Initial Release	NA