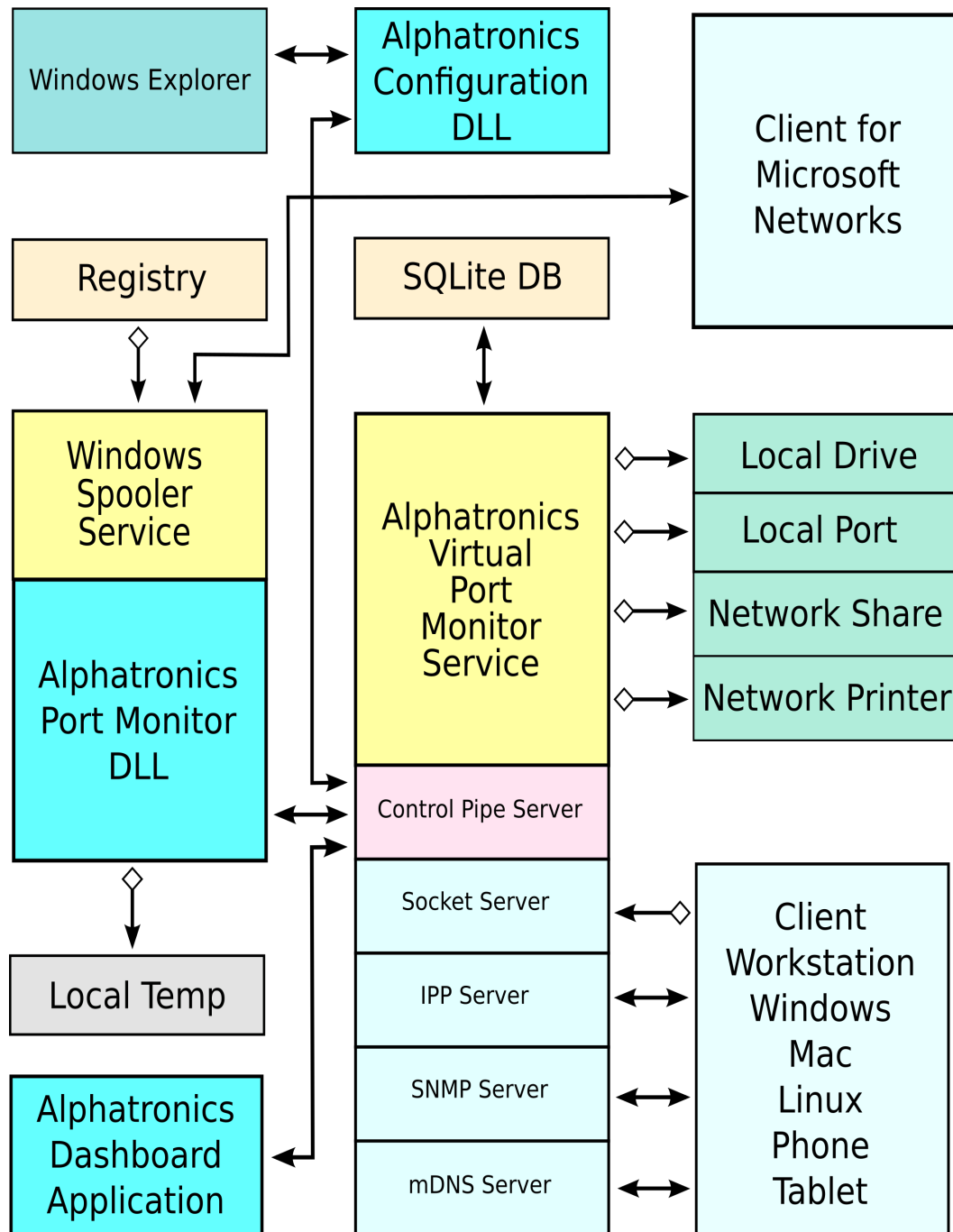


Virtual Port Monitor

Installation and Configuration

Version 6.0

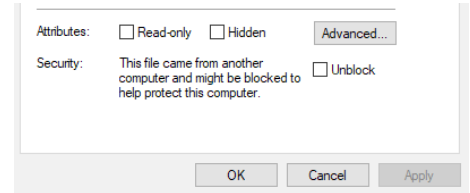


Installation

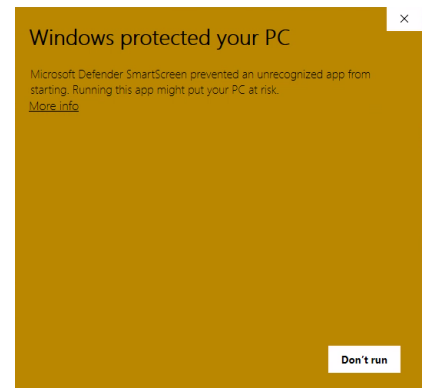
Begin by downloading the installer from <http://www.alphatronics.net/AVPMon.html>.



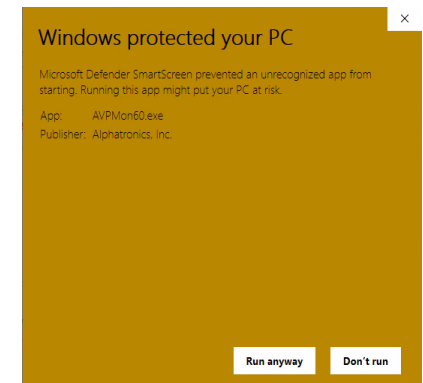
After downloading, the file may be marked as unsafe. Get properties of the downloaded installer and check “Unblock”, then click “OK”.



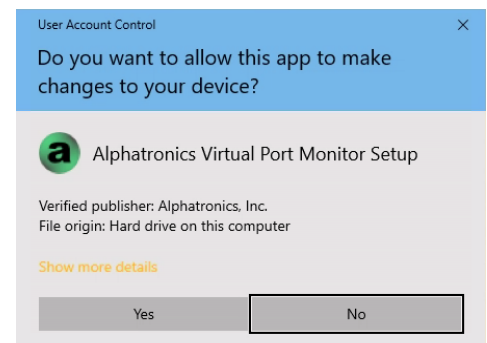
If this is not done, the following message may appear when the installer is launched.



Clicking the “More Info” link will reveal the “Run Anyway” button.

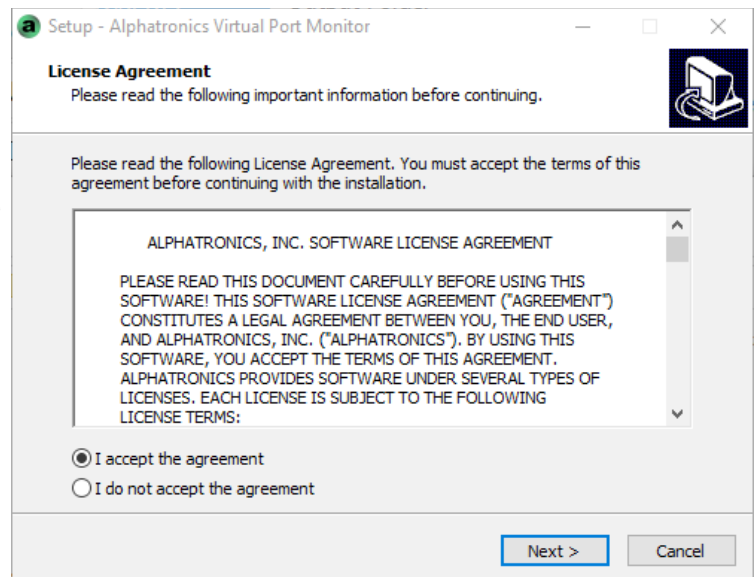


The next dialog will verify your wish to install the software. You must be a member of the administrator group.

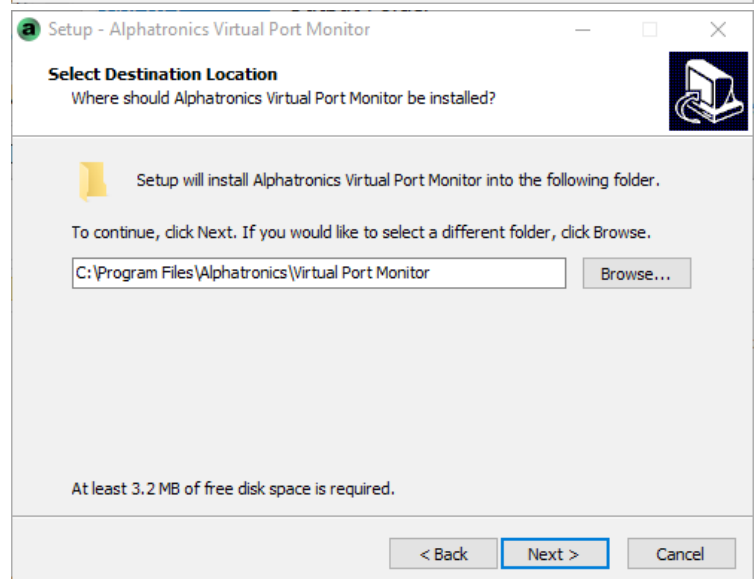


Once the User Account Control message is dismissed, the license page of the installer is displayed.

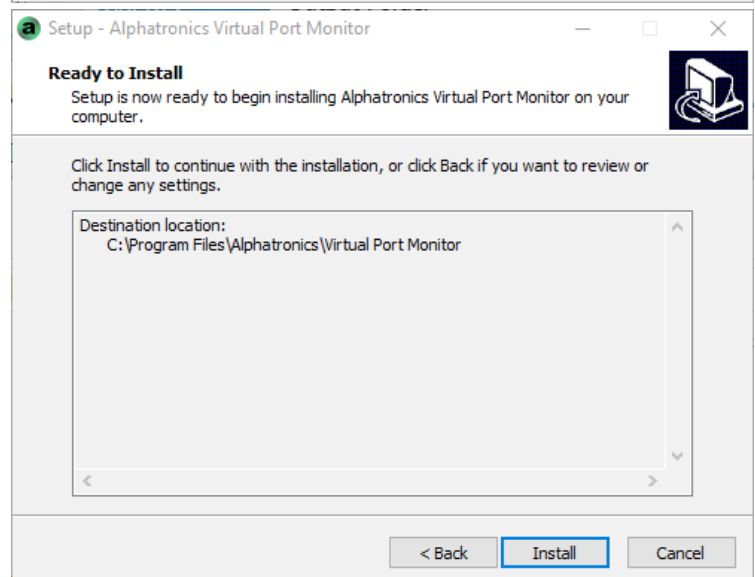
Select “I accept the agreement”, then click “Next” to continue.



The default installation folder should be used unless a legitimate reason for installing elsewhere exists. The Program Files folder is considered to be a protected place for users to run software from, according to Microsoft documentation. Other installation folders may present issues with the ability to run programs.



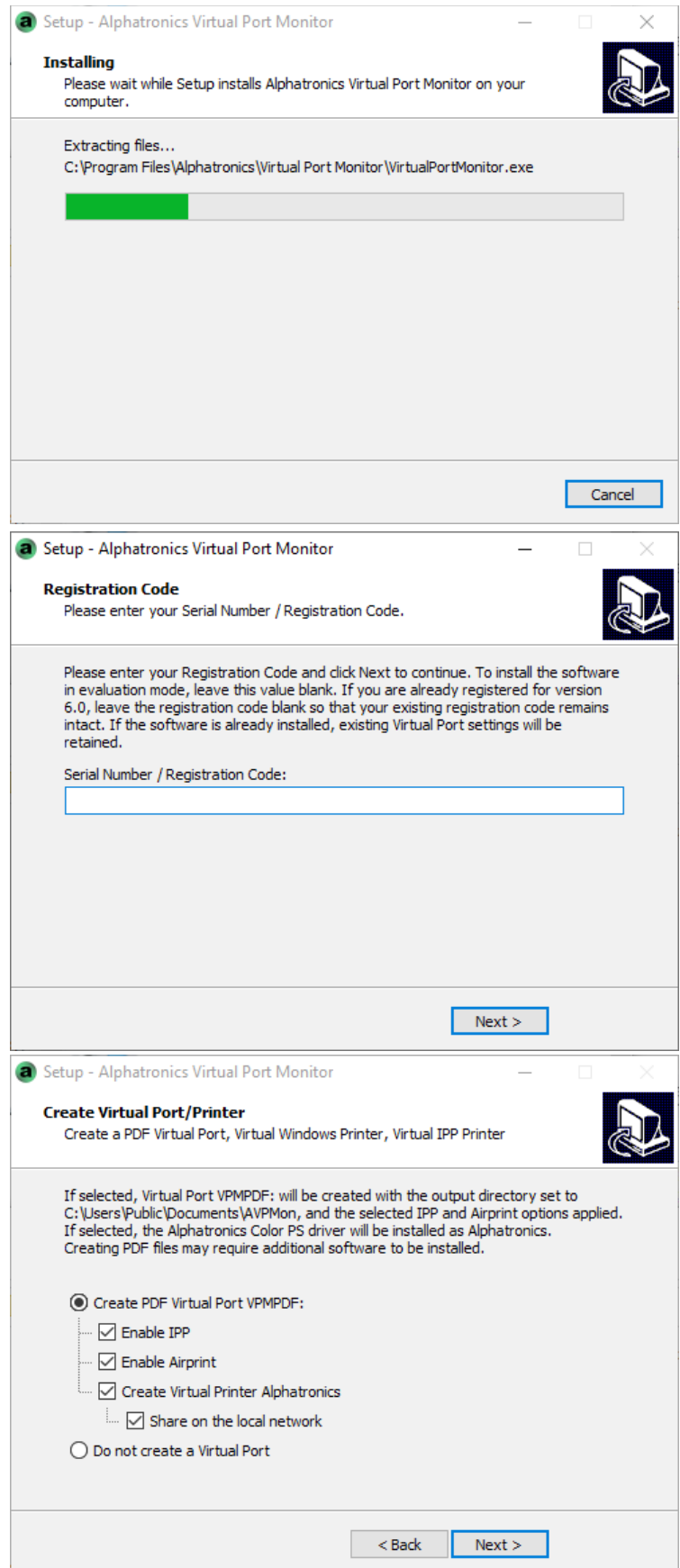
Review your selected option, which consists of only the destination folder.



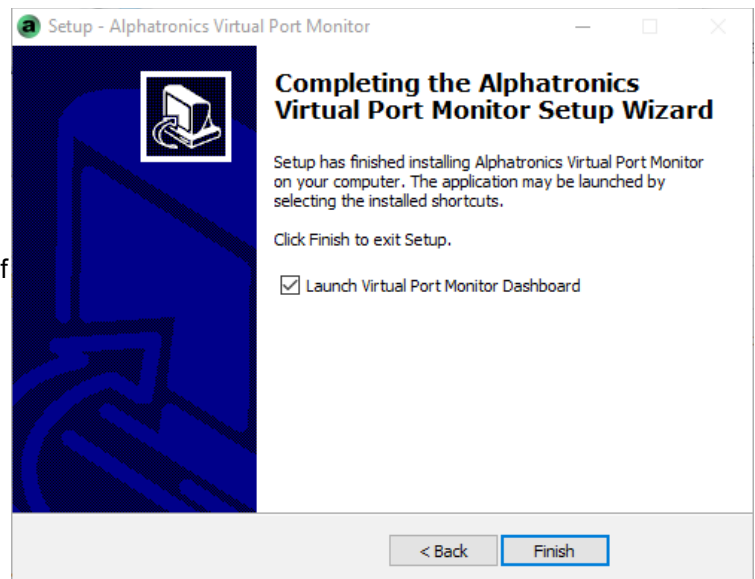
Files will be installed.

After files are copied to your computer, you will be presented with a registration code field. If you have purchased a code, and have not registered the software yet, enter it here. If you have already registered the software, you may leave this field blank. If not registered, the software will be installed in evaluation mode.

You will be prompted to create a Virtual Port and Virtual Printer. It is recommended that first-time users select this option to speed the evaluation process and provide a template to refer to.



Leave the “Launch Virtual Port Monitor Dashboard” item checked to run the Dashboard program when the installer finishes. Click Finish to continue. At this time, installation of the software is complete. After the “Finish” button is clicked, the Virtual Printer / Port will be installed, if it was selected earlier.

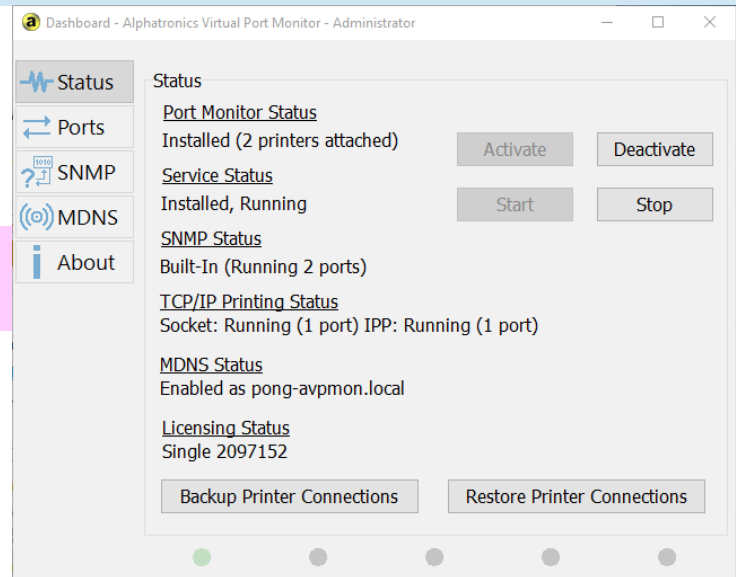


Dashboard Application

The Dashboard application provides a user interface to Virtual Port Monitor.

Status Page

This page provides basic information as to the status of Virtual Port Monitor as well as 6 functions.



Port Monitor Status

Indicates installation status and the total number of printers attached.

Service Status

Indicates the installation status and running state.

SNMP Status

Indicates the load option and which service is responding.

TCP/IP Printing Status

Indicates any ports listening for Socket or IPP connections.

MDNS Status

Indicates the status of the built-in MDNS responder and it's advertised host name.

Licensing Status

Indicates the registration status of the software.

Activate

Click to activate Virtual Port Monitor and make the operating system aware of the software.

Deactivate

Click to deactivate Virtual Port Monitor and unload it from memory.

All printers connected to a Virtual Port will be changed to the FILE: port and the system will be instructed not to load Virtual Port Monitor anymore.

The files required to run the software will remain in place.

To uninstall the software, use the "Programs and Features" item located in the Windows control panel.

Start

Click to start the Virtual Port Monitor Service (AVPMon).

Stop

Click to stop the Virtual Port Monitor Service (AVPMon).

Backup Printer Connections

Click to copy the state of all Virtual Port printer connections to the database.

You will be prompted with a confirmation dialog indicating the connections that saved.

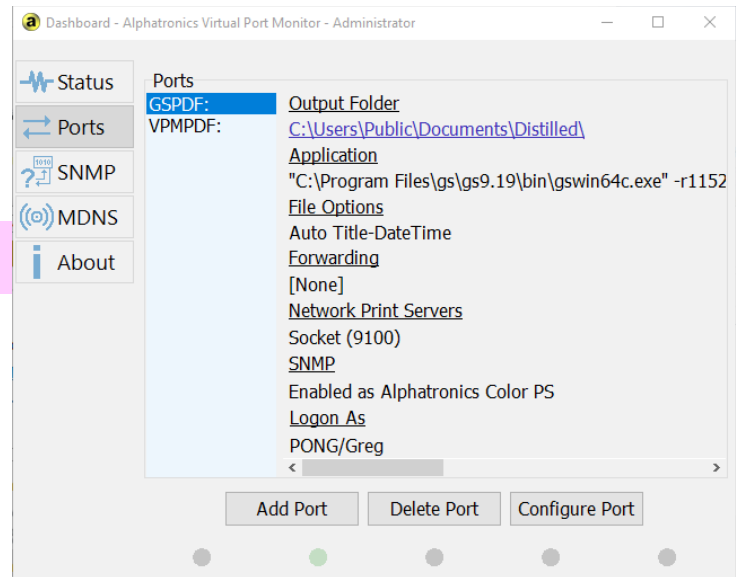
Restore Printer Connections

Click to restore all Virtual Port printer connections. This action does not create Virtual Ports.

You will be prompted with a confirmation dialog indicating the connections that will be used.

Ports Page

The Ports page provides a list of Virtual Ports.



Port selection list box

Used to select which port in which status information is displayed.

Output Folder

Indicates the folder selected as the output folder.

Application

Indicates post-print application command line for the port, if enabled.

File Options

Indicates automatic or log naming options.

Forwarding

Indicates which ports or printers will be used for job forwarding, if selected.

Network Print Servers

Indicates the status of Socket, IPP, and Airprint print services.

SNMP

Indicates the printer manufacturer and model, if selected.

Logon As

Indicates the user account used for impersonation.

Add Port

Add a Virtual Port.

Delete Port

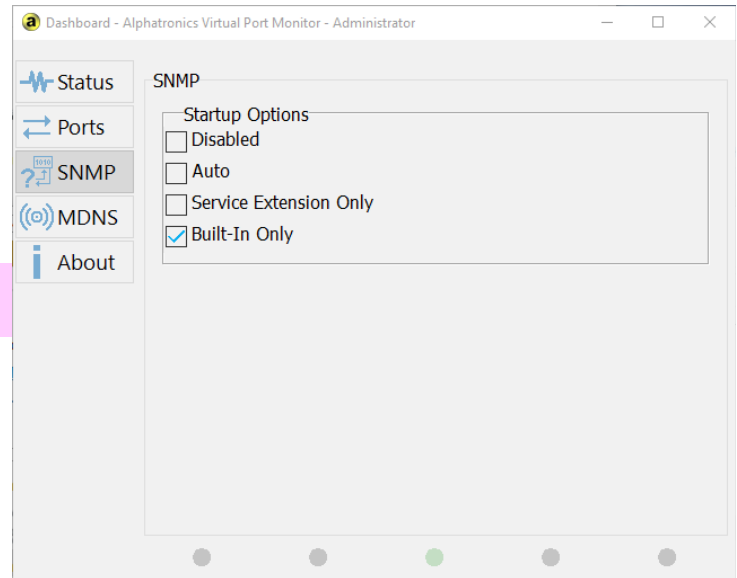
Delete the selected Virtual Port.

Configure Port

Configure the selected Virtual Port.

SNMP Page

Displays SNMP configuration options.



SNMP Startup

Use this box to configure global SNMP startup.

Disabled

SNMP Information will not be available.

Auto

If the Windows SNMP service set for automatic startup or is running when the Virtual Port Monitor service starts, then the Windows SNMP Service will be used, using the Virtual Port Monitor SNMP Extension DLL.

Otherwise, the built-in responder will be used.

Service Extension Only

Only the Windows SNMP Service and Virtual Port Monitor SNMP Extension DLL will be used.

Built-In Only

Only the internal SNMP responder will be used.

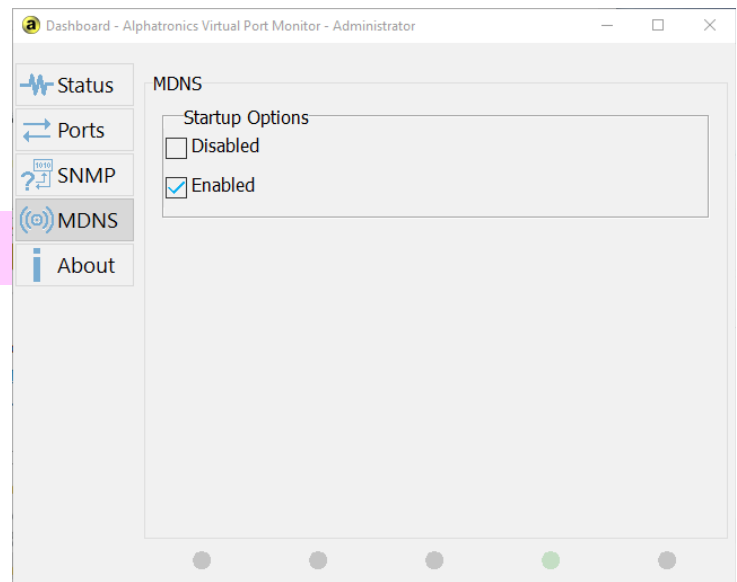
The SNMP extension DLL will be removed from the Windows SNMP service.

If the Windows SNMP Service is running when the Alphasatronics Virtual Port Monitor service starts, the internal SNMP responder will fail to start.

Likewise, if the Windows SNMP service starts after the Virtual Port Monitor service starts, the Windows SNMP service will fail to start.

MDNS Page

Displays MDNS configuration options.



MDNS Startup

Use this box to configure global MDNS startup.

Disabled

MDNS information will not be broadcast.

Enabled

MDNS information will be broadcast. This enables certain clients to discover the print services of Virtual Port Monitor.

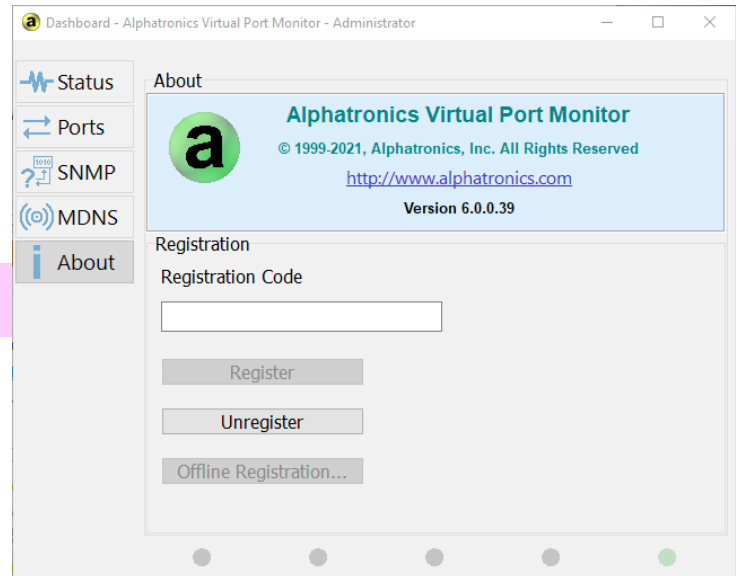
Notes:

MDNS will be effectively disabled if there are no ports using TCP/IP Printing or IPP.

Mobile clients utilizing VPN based personal firewall applications will not receive MDNS packets, since UDP broadcast is designed not to pass through routers.

About Page

About Virtual Port Monitor.



Registration Code

Use this box to enter the registration code received at the time of purchase.

Register

Click to register / activate the software.

Unregister

Click to unregister the software.

Unregistering the software will enable the use of the registration code on a different computer.

Unregistering the software will not re-enable evaluation mode.

Offline Registration...

Click to register the software when an internet connection is not available.

Offline Registration Screen

Use this screen to register the software when the internet is not available.

The screenshot shows a window titled "Virtual Port Monitor Offline Registration". It contains instructions for evaluation and licensed modes. Below the text are two large text areas: a yellow one for the request packet and a green one for the response packet. At the bottom, there is a "Registration Code" input field, a "Get Request Packet" button, a "Store Code" button, and "Copy" and "Paste" buttons for the text areas.

Virtual Port Monitor Offline Registration - For computers NOT connected to the Internet only.
Evaluation Mode: Click the "Get Request Packet" below to obtain an evaluation registration packet.
Licensed Mode: Enter your purchased code in the "Registration Code" edit box, then click "Get Request Packet".
Once the desired option has been executed, copy the text from the read only **YELLOW** box and go to alphatronics.net/support/RegisterAlpPmons.php and paste the copied text into the text box on that page. Paste the received text into the **GREEN** box below, and click "Store Code". Error messages, if any, will be displayed. Packets are valid for 24 hours only, and cannot be used to extend the evaluation period, when applicable.

Copy

Registration Code

Get Request Packet Store Code

Paste

Request Packet

Offline request packets appear here when the "Get Request Packet" button is clicked.

The text that appears here should be copied and pasted into the text area of the web page at the specified URL.

Response Packet

After performing the operation at the specified URL, the response text should be pasted here, and the "Store Code" button should be clicked.

Copy

Use this button to copy the request packet to the clipboard.

Paste

Use this button to paste the response packet from the clipboard.

Registration Code

Enter your registration code, or leave blank to request an evaluation packet.

Get Request Packet

Use this button to generate a request packet.

Store Code

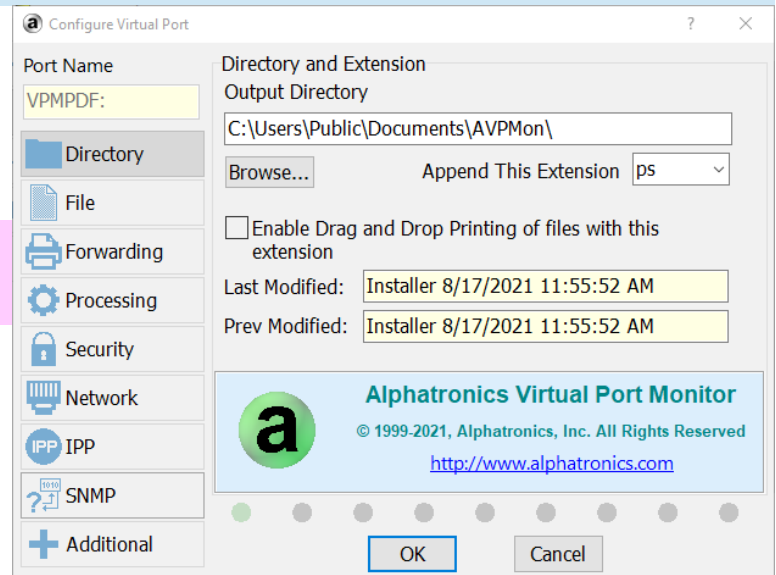
Use this button to store the generated response packet and register the software.

Configuration Dialog

The Configuration Dialog is the means of configuring individual Virtual Ports.

Directory Page

Select the output directory, extension, and configure drag and drop printing.



Port Name

Use this box to enter a name for this port.

Most ports names have 4 characters and a colon, such as "LPT1:", but Virtual Port Monitor does not require this format.

You can call the port anything you like, up to 32 characters, but avoid any punctuation except the colon at the end.

You can also call the port "LPTn:" if you need DOS support, with a few restrictions:

- The port cannot physically or logically exist in the machine. You can use device manager to verify the existence of an LPT port. If it exists in device manager, it may require disabling it in the system BIOS setup. Check your computer documentation as to how to do this.
- Additionally, Windows may reserve LPT1: and LPT2:, which will require a manual registry value deletion from HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Ports. After deleting these keys, a Print Spooler service (or computer) restart will be required.

As of Windows 10 Version 2004, the Print Spooler will redirect any ports beginning with LPT that have a printer attached, to an internal pipe, when changing the port connection of a printer (Windows API SetPrinter()). This can be detected when print jobs have the title of "No Document Name". Restarting the Alphatronics Service will reset any redirections.

To avoid Windows Spooler LPT redirection, do not connect the port to any Windows printers.

Output Directory

This displays the directory where output files will be saved.

You may also manually edit the path to include system and user environment variables, but not "AVP" [Environment Variables](http://www.alphatronics.com).

Append This Extension

Enter or select an extension to append to the base filename or leave blank for no extension.

Enable Drag and Drop Printing...

Click to enable printers folder drag and drop spooling of all files with this extension.

When this is enabled, any file on your computer with the extension specified in the edit box [Append This Extension](#) can be dropped onto a printer icon or shortcut.

The contents of the file will be copied directly to the printer represented by the icon or shortcut.

This feature uses extension mapping, so it applies to all files with this extension, even if they were not created by Virtual Port Monitor.

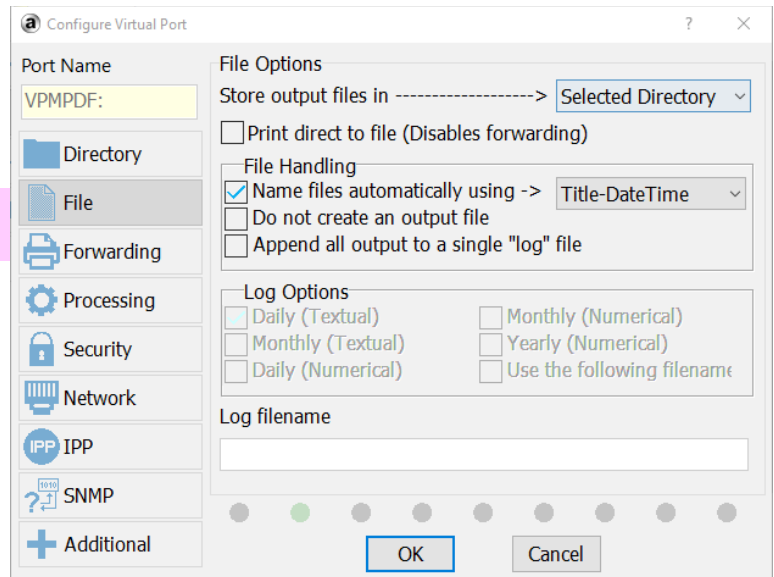
It should be noted that the Devices and Printers control panel item is not the printers folder, and does not accept dragged files.

A shortcut using the following path can be created to open the printers folder:

```
C:\Windows\System32\rundll32.exe  
shell32.dll,SHHelpShortcuts_RunDLL  
PrintersFolder
```

File Page

Select file settings.



Store output files in subdirectory

Use this box to have output files stored in a useful subdirectory. Selecting this option stores the file in a subdirectory based on:

- User Name
- Computer Name
- Printer Name
- Driver Name

These names are supplied to Virtual Port Monitor when the document begins.

A subdirectory based on this selection within the output directory will be created if it does not exist, and the resulting file will be stored within that directory.

Print direct to file

This option has no effect if the data is received via socket or IPP.

Selecting this option causes Virtual Port Monitor use use "chunking".

In previous versions, the port monitor DLL would switch impersonation tokens in order to send the output file to a remote destination.

Virtual Port monitor now sends the data to the temporary spool folder in 4 Mb chunks.

When the temporary amount of data reaches 4 Mb (or EOF), the service is instructed to append the chunk to the destination file.

This is useful when the system has limited disk space.

This option increases the time it takes to send the file.

Without this option selected, Virtual Port Monitor saves the captured data to a temporary file before sending the data to the various destinations you may have selected.

File Handling

Use this box to select the way the file will be written. The following options are available:

Name files automatically.

Files will be named automatically based on the name of the file presented to Virtual Port Monitor when a print job begins.

This name is usually the file name, but the application can set the title of the print job to just about anything.

Do not create an output file.

An output file is not created at all, and forwarding does not take place, but the post-print application will still be launched.

Append all output to a single "log" file.

All output is appended to the end a single file.

The naming convention of the log file option is discussed in [Log Options.](#)

Unique Name Options

Use this box to select the way a unique filename will be generated.

The uniqueness of a filename is required to assure that files do not get overwritten.

The number sequencing method repeatedly scans the output directory for a filename, incrementing the sequence number, until it finds one that does not have the same title and sequence number.

The date/time stamp consist of an 17 digit character string in the following format:

Year:4 Month:2 Day:2 Hours:2 Minutes:2 Seconds:2
Milliseconds:3

The time is in either UTC or local time, depending on the option selected in [Time Options](#).

This option is faster because the directory is not scanned for a unique filename every time an output file name is generated. Virtual Port Monitor can create unique filenames in the following formats:

- Title NumberSequence
- DateTime
- Title-DateTime
- DateTime-Title
- UserName-DateTime
- DateTime-UserName
- ComputerName-DateTime
- DateTime-ComputerName
- Port-DateTime
- DateTime-Port
- Title-UserName-DateTime
- Title-DateTime-UserName
- UserName-Title-DateTime
- UserName-DateTime-Title
- DateTime-UserName-Title
- DateTime-Title-UserName
- Title-ComputerName-DateTime
- Title-DateTime-ComputerName
- ComputerName-Title-DateTime
- ComputerName-DateTime-Title
- DateTime-ComputerName-Title
- DateTime-Title-ComputerName

Log Options

Use this box to select the type of log to be created.

This option is only available if the file handling box is set for "Append all output to a single log file".

The following options are available:

Daily (Textual)

The log file will take the format of "Monday, January 21, 2002".

A new file will be created every day after midnight when the next print job is created.

Monthly (Textual)

The log file will take the format of "January, 2002".

A new file will be created every month after midnight of the last day of the month when the next print job is created.

Daily (Numerical)

The log file will take the format of "20020121".

A new file will be created every day after midnight when the next print job is created.

Monthly (Numerical)

The log file will take the format of "200201".

A new file will be created every month after midnight of the last day of the month when the next print job is created.

Yearly (Numerical)

The log file will take the format of "2002".

A new file will be created every year after midnight of the last day of the year when the next print job is created.

Use the following filename

The filename is specified in the [Log Filename](#) edit box.

Log Filename

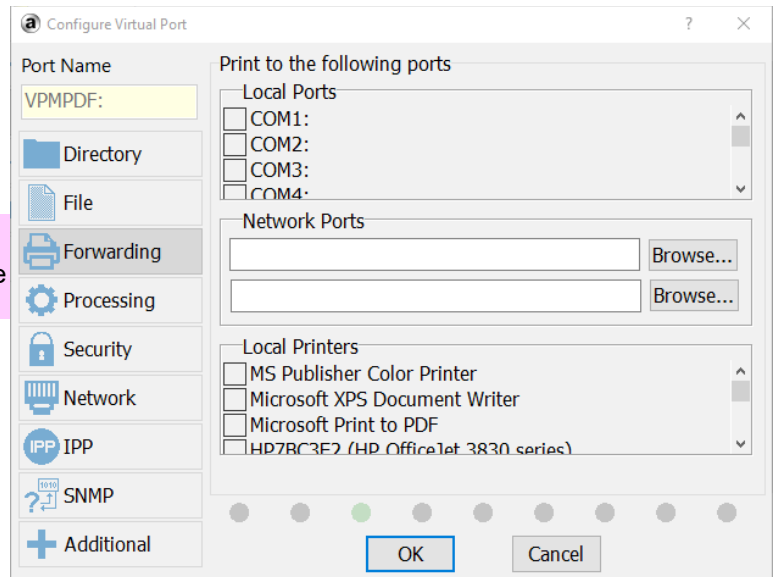
Use this box to enter the log filename.

Illegal filename characters are not allowed.

Examples of illegal characters are ">" "<" "*" "=" "|".

Forwarding Page

Provides a means of selecting other devices to replicate the captured print stream.



Local Ports

Select any additional ports to directly receive output data without spooling.

The ports you select are opened as DOS devices, therefore some of the ports in the list may not be usable.

When appropriate, [Network Ports](#) or [Local Printers](#) should be used instead.

Network Ports

Manually enter additional locations to receive output data or use the browse button.

Network Ports are opened directly using the UNC path of the printer share.

Make sure you have proper network permissions to use the printer.

[Local Printers](#) are a good alternative to network printers because when the printer port is changed on the local machine, through configuration of that printer, the change propagates to the Virtual Port.

Browse...

Click to select a network printer.

You will be presented with a "Browse for Printer" dialog.

Local Printers

Select any additional printers to receive output data with spooling.

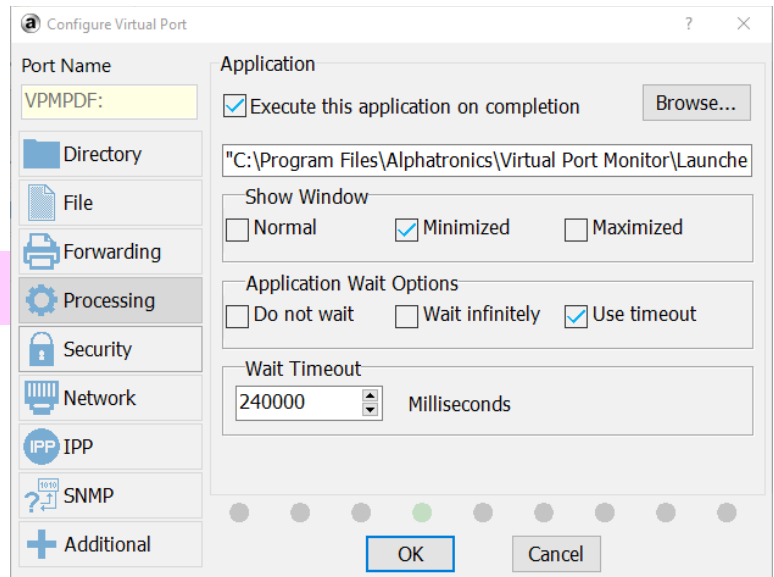
Forwarding to a local printer is the recommended method of sending printer files to another printer.

It takes advantage of the Windows spooler, so files are transferred faster than with other methods of forwarding.

Care should be taken not to change the display name of the printer as seen in the printer folder, because Virtual Port Monitor uses this name to open the printer for writing.

Processing Page

Provides a means of selecting a post-print application.



Execute this application on completion

Click to enable post print execution of an application.

Checking this box enables the other controls on this tab.

Application edit box

Use this box to manually enter the path to the application or add command line parameters.

The filename will be added to the end of this line or will be replaced at %1.

An application can be a batch file or an executable file.

Systems running Windows 10 and above may be able to select any file with an extension in the %PATHEXT% environment variable. Otherwise, the command line will need to use the application that runs the script, such as cscript.exe for vbs files.

When the Virtual Port is finished writing the file, the command line you enter into this box is executed with the name of the file automatically appended to the end of the line.

Alternately, you can insert the common expression "%1" anywhere into the line and the filename will be replaced at that position.

Be sure to leave space around the %1 marker.

You may also place [Environment Variables](#) into the command line edit box, which will be expanded to their values and made command line safe before executing the application.

Once your application is running, there are [Environment Variables](#) available for the application to use as you wish.

You may wish to view the [Samples](#).

[Debug Reporting](#) can be used if any issues occur.

Click to browse for the post print application.

A Browse for file dialog will be displayed.

Browse...

Show Window

Select the desired window state of the application.

This option is a holdover from earlier versions of Windows, where the application would run on the users desktop.

It remains an option since it may be possible for an application to detect the window state, and change it's behavior.

When your post-print application runs, you may want to have it's main window be displayed minimized, where the window is not shown at all, maximized, where the window takes up the entire screen, or normal, which displays the window as just "showing".

Some applications change the state of its main window upon launch, in which case this setting will appear to have no effect.

Application Wait Options

Do not wait

Select this option to have the application launched without the print queue waiting for termination.

When your post-print application runs, the print queue will not wait for termination of the application.

It will be up to the application to serialize execution of its own instances.

Some applications do not require serialization, such as a utility that would modify the print file in place. But if the application is working toward a common goal shared by all the print files, serialization may be required.

With this option, it may be possible to have several instances of your application running at once, if the application runs slower than the print queue.

Wait infinitely

Select this option to have the printer queue wait indefinitely for the application to terminate.

When your post-print application runs, the print queue will wait infinitely for termination of the application.

With this option, only one instance of your application will be running at once, effectively serializing execution.

If the application does not terminate, the print queue will never continue. In this case a forced quit of the application will be required to resume the print queue.

Use Wait Timeout

Select this option to have the print queue wait a specified amount of time before abandoning the wait or the application quitting normally within this time.

When your post-print application runs, the print queue will wait for the amount of time specified in the wait timeout selection control before moving on to the next job in the print queue.

With this option, only one instance of your application will be running at once, effectively serializing execution, unless the timeout expires.

If the application does not terminate within the wait timeout period, the print queue will continue to process the next job, leaving the application running.

Wait timeout value

Use this control to select the amount of time to wait for application termination. Specify the amount of time in milliseconds (1000 milliseconds = 1 second).

Including a wait timeout helps to insure that print jobs are processed in the order in which they arrive into the print queue.

Setting this value too low will fail to serialize execution, and cause excessive [debug report](#) generation, if enabled.

Security Page

Provides a means of setting the security context for the writing of files and the post-print application.

The screenshot shows the 'Configure Virtual Port' dialog box with the 'Security' tab selected. On the left, a list of configuration categories includes 'Port Name' (set to 'VPMPDF:'), 'Directory', 'File', 'Forwarding', 'Processing', 'Security' (highlighted), 'Network', 'IPP', 'SNMP', and 'Additional'. The main area is titled 'Security' and contains fields for 'Username:', 'Domain:', 'Enter password:', and 'Confirm password:'. Each field has a corresponding input box, with the password fields masked with dots. Below these fields is a 'Log On' button. At the bottom of the dialog are 'OK' and 'Cancel' buttons. The status 'Not logged on' is displayed above a row of small circular indicators.

Username

Enter the user name of the account.

Virtual Port Monitor uses this account to write files, ports, printers, and execute the post-print application.

Using an account with administrative privileges is not recommended because the post-print application will run under this account.

The selected account should have adequate privileges to write to the output folder, delete print jobs, add print jobs, write to the temp folder, and execute applications.

Generally, any user in the users or power users group will do.

To test the account, just log on to this computer with the account you want to use and see if you can perform these operations.

Enabling [Debug Reporting](#) can assist with any issues regarding permissions.

Domain

Enter the authenticating domain for the account or leave blank for a local account.

If your network is configured with domain controllers, you may need to enter this information.

Password

Enter the password for the account.

Make sure CAPS LOCK is not on.

Confirm Password

Re-Enter the password for the account.

Make sure CAPS LOCK is not on.

Log on

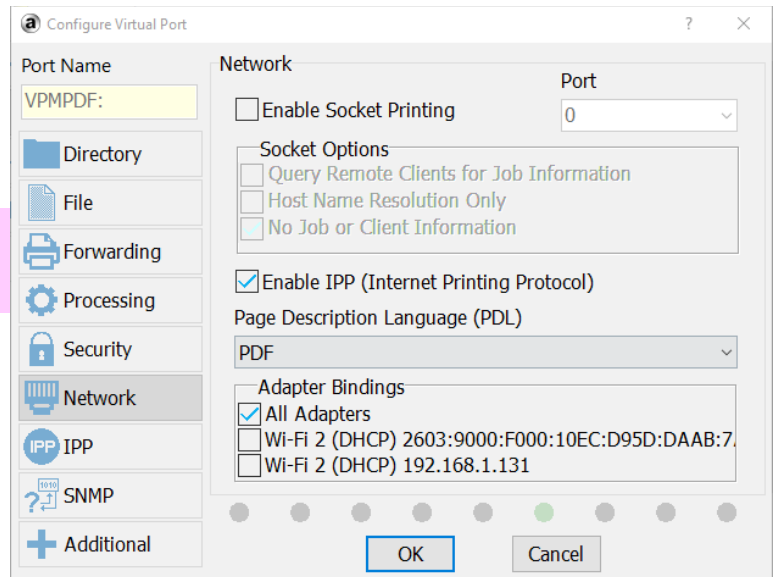
Use this button to log on using the security information entered.

You can test the logon username and password using this button.

Additionally, the logon context will be active for the various browse buttons presented on other tabs of the dialog.

Network Page

Provides a means of setting network print server options.



Enable Socket Printing

Click to enable TCP/IP Socket Printing for this Virtual Port.

Virtual Port Monitor only supports RAW print streams.

LPD style queues are not supported.

TCP/IP Port

Select a TCP/IP port from the list of suggested ports, or manually enter a port number.

The list of port suggestions is filtered to exclude ports that are already in use.

Socket Options

Use this box to select the way job information will be retrieved from a Windows submitting client.

Query Remote Clients for Job Information

This option requires that the clients printer be shared on the network.

The share name is unimportant, and can be a hidden / administrative share, which is a share name that ends with a dollar sign (\$).

This works best when the Standard TCP/IP Port is configured with a name that indicates the hostname and port of the server, for example "printserv_9100".

This option takes the most time to execute.

Host Name Resolution Only

This option does not attempt to contact the submitting client, but does convert the IP address of the client to a host name.

This option may take addition time to resolve the host name if it is not locally cached by Windows.

No Job or Client Information

This option uses the IP address of the submitting client as the submitting computer name.

This option is the fastest.

Please refer to How [TCP/IP Printing Works](#).

Enable IPP

Click to enable Internet Printing Protocol (IPP) for this Virtual Port.

Windows supports IPP, but does not use MDNS for discovery.

To add an IPP printer to Windows, refer to [Adding an IPP Printer to Windows](#).

IPP is supported natively by Macintosh and iOS devices (Using AirPrint / Bonjour for discovery).

Prior to Android Oreo 8, devices require an appropriate Print Provider Service to be installed. Otherwise the Default Print Service can be used.

Other Android print providers may filter network printers to limit the selection to supported ones only.

Page Description Language (PDL)

Select the primary Page Description Language (PDL) for this Virtual Port.

Any

The MIME type "application/octet-stream" is added to the list of accepted PDL formats. The submitting client chooses the PDL used.

Postscript

The MIME type "application/postscript" is added to the list of accepted PDL formats.

PCL

The MIME type "application/vnd.hp-PCL" is added to the list of accepted PDL formats.

PDF

The MIME type "application/pdf" is added to the list of accepted PDL formats.

If AirPrint is selected, "image/urf" is added to the list of accepted PDL formats. It will be the file format sent by an iOS device unless PDF is also selected, although there is no guarantee that an iOS application will use PDF, even if enabled. This is presumably because PCL and Postscript do not fit the concept of "Driverless Printing".

Adapter Bindings

mDNS advertising is affected by adapter selection when it comes to reporting IP addresses for IPv4 and IPv6. It is strongly recommended that all Virtual Ports use the same adapter/IP version combination when addressing the system by its mDNS name.

Select the adapters that will listen for print jobs.

The list of adapters is limited to active Ethernet and WiFi only.

The IP address indicates the IP version of the binding.

Addresses separated by periods are IPV4, and addresses separated by colons are IPV6.

IP addresses listed are used for reference only. The configuration is saved based on the internal hardware name of the adapter and the IP version selected.

Selecting "All Adapters" is usually the best option, because a list of adapters will not be stored in the configuration.

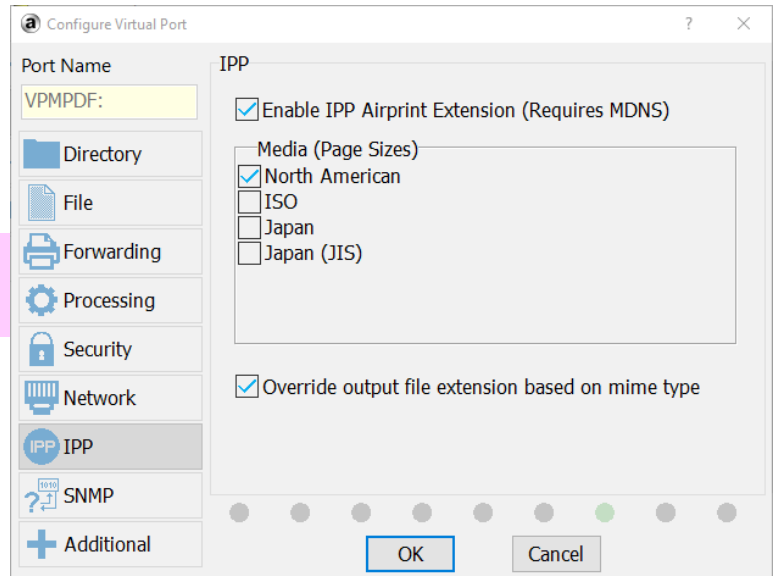
If an adapter is specified, and later removed from the system, Network Printing will not load for that adapter, since it is not present.

The built-in [SNMP functionality](#) uses the list of bindings of all Virtual Ports as the list of bindings for SNMP functionality.

Loopback functionality (localhost, 127.0.0.1, ::1) is always bound for selected adapters / IP versions.

IPP Page

Provides the means of selecting IPP (Internet Printing Protocol) settings.



Enable AirPrint Extension

Click to enable AirPrint for this Virtual Port.

Airprint is used by Macintosh and iOS devices for printer discovery.

Devices that use AirPrint send documents in either URF or PDF (If PDF is selected as the [Page Description Language](#)) file formats for "Driverless Printing".

URF (Universal Raster Format) is a multi-page bitmapped format that will be used by iOS devices unless PDF is also selected as the PDL.

Selecting this adds the "image/urf" MIME type to the list of accepted PDL formats.

Select the media groups representing page sizes that will be used for this Virtual Port.

North American

Use the PWG media group type "na". Example page sizes are "Letter" and "Legal".

ISO

Use the PWG media group type "iso". Example page sizes are "A4" and "A5".

Japan

Use the PWG media group type "jpn". Example page sizes are "Chau3" and "Kaku4".

Japan (JIS)

Use the PWG media group type "jis". Example page sizes are "B1" and "B2".

Custom page sizes are always advertised via MDNS and/or SNMP to be permitted.

If no media groups are selected, iOS devices may not present page size options to the user.

The more media groups selected, the larger the list sent to the client becomes, which will affect the speed in which a client media query will take.

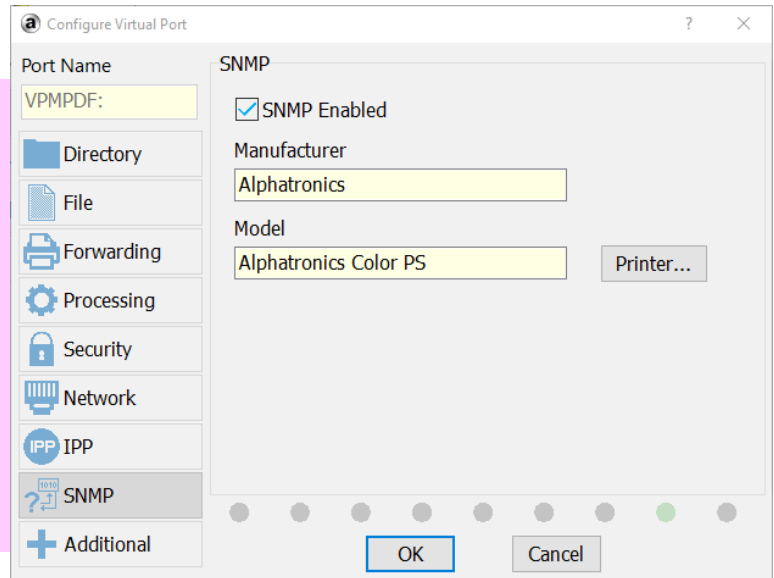
Media (Page Sizes)

SNMP Page

SNMP (Simple Network Management Protocol) is a standard means of reporting information back to a client making requests. For Windows, this is generally only done when installing a printer, and is used to determine printer capabilities. For Macintosh, it is used for Socket Printing to get printer status.

When setting up a Windows client in a DHCP environment, it is best to use the computer name, rather than the IP address. This is because the IP address is subject to change at any time due to DHCP lease renewal.

When enabled, SNMP functionality is bound to all Virtual Ports that have Socket Printing or IPP selected. Adapters are selected using Adapter Bindings.



Enable SNMP

SNMP Manufacturer

SNMP Model

Printer...

Click to enable SNMP reporting for this Virtual Port.

Displays the selected printer manufacturer for SNMP reporting.

Displays the selected printer model for SNMP reporting.

Click to select the printer manufacturer and model that will be advertised via SNMP.

Currently, only type 3 drivers are supported

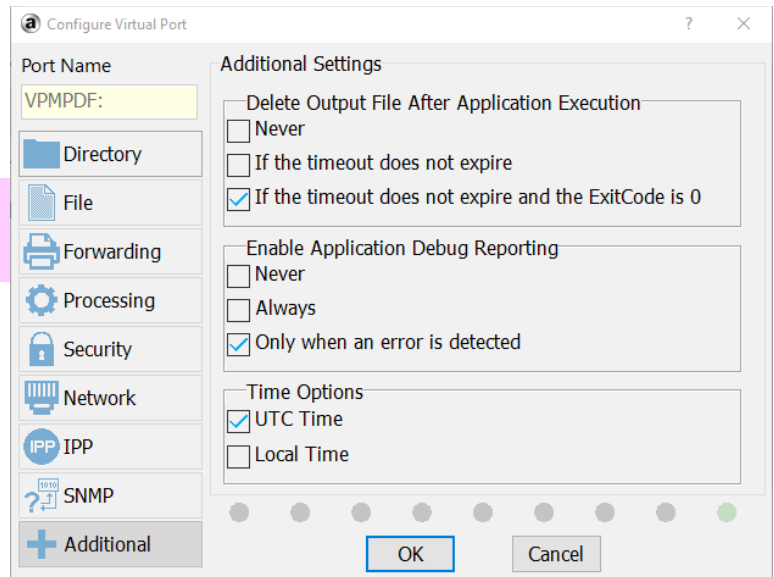
If the desired printer does not appear in the list, install the printer driver.

A printer driver can be installed without creating a printer by using the "Print Server Properties" link located at the top of the Devices and Printers control panel screen.

Additional Page

Provides a means of setting additional settings for the Virtual Port.

Delete Output File After Application Execution



Provides options for deleting the output file when running a post-print application.

This control is only enabled if a [post-print application](#) is configured.

Never

The output file is not deleted.

If the timeout does not expire

Deletes the output file if the post-print application terminates before the [application wait timeout](#).

If the timeout does not expire and the exit code is 0.

Deletes the output file if the post-print application terminates within the specified timeout and the application returns a 0 exit code, which generally means the application did not encounter any errors.

Enable Application Debug Reporting

Debug Reporting cannot generate a report in the output directory if Virtual Port Monitor cannot write to the output directory. In this case, please check the Windows Event Viewer for errors.

Provides options for enabling the [Process Monitor utility](#). Debug reporting provides a means of detecting issues with the post-print application, which runs in session 0. Session 0 is the session reserved for Windows services and is hidden from view, making it difficult to troubleshoot any errors that may occur.

The debug reporting engine includes details of the general parameters, group membership of the login used, and security attributes of the output folder, output file, desktop, and windowstation objects.

The debug report engine generates a PDF file in the output folder with the title of the output file, and either the "sdebug.pdf" extension, or "pdebug.pdf" extension.

In the case of the "sdebug.pdf" extension, the Alphasatronics Virtual Port Monitor service has generated the report because the issue stems from the attempt to initially launch the post-print application.

In the case of the "pdebug.pdf" extension, the AVPPProcMon.exe proxy application has generated the report. This report may also include screen shots of the application to help with troubleshooting.

Never

A debug report is never generated.

Always

A debug report is always generated. Keeping a "good" debug report on file may help with future troubleshooting if an error does occur.

This option uses CPU cycles that may slow down processing.

Only when an error is detected

A debug report is only generated when an error is detected using the same parameters as the [Delete Output File Options](#) and [Wait Timeout Option](#).

This option uses CPU cycles that may slow down processing.

Time Options

Provides an option for file naming options that include a date/time stamp.

UTC Time

Use UTC (Coordinated Universal Time). UTC is generally the same as GMT time.

It is a way of representing the same time regardless of locale. It does not include variables such as time zone or daylight savings.

This option is the safest, avoiding filename collisions when the system automatically adjusts the time.

Local Time

Use Local Time

This option is more user friendly, since the date and time can be read by a human without performing mental locale and DST calculations.

Issues may occur with filename collisions when the system automatically updates the time clock.

The chance of filename collisions increase when printer, port, user, or computer file naming options are used, since they remain constant.

The same holds true when the naming option includes the title, and the title of the document remains constant, for example "Invoice".

Filename collisions are not an issue if printing never occurs on the day the clock is adjusted, which is usually Sunday.

Advanced Topics

Environment Variables

When Virtual Port Monitor launches the post-print application, it populates the user environment with the following environment variables:

AVPBaseFileName	The file name without extension.
AVPComputer	The submitting computer.
AVPColor	monochrome = 1; color = 2
AVPCopies	The number of copies in the job.
AVPDebug	Used by the process monitor application for debug options.
AVPDriver	The friendly printer name. In the case of IPP or AirPrint, this is the MIME type of the document.
AVPDuplex	simplex = 1; vertical = 2; horizontal = 3
AVPExt	The resulting file extension.
AVPFormID	The built-in form ID.
AVPNotify	The user to notify.
AVPOrientation	portrait = 1; landscape = 2
AVPPages	The number of pages.
AVPPaperLength	The length of the paper in .10 mm. Divide by 254.0 for inches.
AVPPaperWidth	The length of the paper in .10 mm. Divide by 254.0 for inches.
AVPPath	The path to the print file.
AVPPort	The name of the Virtual Port.
AVPPrinter	The printer driver name.
AVPResolution	draft = -1; low = -2; medium = -3; high = -4; positive numbers reflect the X resolution of the job.
AVPTitle	The original title of the document.
AVPUser	The submitting user.

Environment Variables are always populated best when printing through Windows when the client prints through the Port Monitor.

When printing via Socket Printing or IPP, the amount of information available is limited, and depends on the query options selected.

IPP Printing does not perform a full query at all, since Windows IPP client printers are not the same as other local printers. If [Socket Printing Options](#) are not set to Query Remote Clients for Job Info, The following rules apply:

- In the case of Socket Printing, **AVPPrinter** will be in the format of computername-avpmon-pdl-PortName*
- In the case of IPP, **AVPPrinter** will always be in the format of computername-avpmon-ipp-PortName, regardless of the option selected.*

Application Samples

The following samples can be used as the post-print application for processing.
Ghostscript is available from <http://www.ghostscript.com>. Please refer to their current licensing policies.

Convert to PDF using Ghostscript:

```
"C:\Program Files\gs\gs9.23\bin\gswin64c.exe" -sDEVICE=pdfwrite -r1152 -dBATCH -dNOPAUSE  
-sOutputFile="%AVPPath%%AVPBaseFileName%.pdf" %1
```

Convert to a 96 DPI Tiff image using Ghostscript:

```
"C:\Program Files\gs\gs9.23\bin\gswin64c.exe" -sDEVICE=tiff24nc -r96 -dBATCH -dNOPAUSE  
-sOutputFile=%1-%%02d.tif %1
```

Executing a batch file:

You can save it as appendit.bat, then select it as the post-print application.

```
rem append data to another file and delete the original  
rem make sure everything happens in the proper order  
rem because the copy command could take longer for one  
rem job than the other. The busy.txt acts as a wait flag.  
rem Version 4 and above has serialization features  
rem built-in, making the loop and busy file unnecessary.  
rem The environment variables are echoed to the console.  
rem Refer to Environment Variables  
:loop  
echo Waiting to copy %AVPTitle%, printed by %AVPUser%  
if exist c:\busy.txt goto loop  
echo > c:\busy.txt  
rem note the /b switch which sets the copy command to binary mode  
copy /b c:\bigfile.txt + %1  
del %1 /y  
del c:\busy.txt  
rem end of file
```

Simple Windows scripting host file which will e-mail the file to anyone@nowhere.com.

This script must be run on a server which has the SMTP service running.
To run, enter wscript.exe [path]\thisscript.vbs into the post-print application edit box.

```
recipStr = "anyone@nowhere.com"  
senderStr = "chuck.finley@nowhere.com"  
newMailObj.To = recipStr  
newMailObj.From = senderStr  
newMailObj.Subject = "Output from Alphasatronics Virtual Port Monitor"  
newMailObj.TextBody = "Please find attached printer output"  
set Args = WScript.Arguments  
If Args.Count > 0 Then  
    call newMailObj.AttachFile(args.item(0))  
End If  
newMailObj.Send  
Set newMailObj = Nothing
```



```
Set Args = Nothing
```

Convert to PDF using Ghostscript, then email the PDF to the submitting user:

```
Dim AVPHeight, AVPWidth, AVPFileName, AVPUser
Dim AVPComputer, AVPNotify, Shell, SysEnv
Dim AVPDateTime, AVPCopies, AVPFileSize, AVPPages, AVPExt
Dim AVPBaseFileName, AVPPath, BodyText, oExec, GS, GSParams
Dim GSOutput, BodyHTML, PageNumber, PageNumberString
Dim recipStr, senderStr

Set shell = CreateObject( "WScript.Shell" )
Set SysEnv = shell.Environment( "PROCESS" )

Function SizeOfFile(filespec)
    Dim fso, f, s
    Set fso = CreateObject("Scripting.FileSystemObject")
    Set f = fso.GetFile(filespec)
    SizeOfFile = f.Size
    Set f = Nothing
    Set fso = Nothing
End Function

Function FileExists(filespec)
    Dim fso
    Set fso = CreateObject("Scripting.FileSystemObject")
    If (fso.FileExists(filespec)) Then
        FileExists = true
    Else
        FileExists = false
    End If
    Set fso = Nothing
End Function

Sub DeleteFile(filespec)
    Dim fso
    Set fso = CreateObject("Scripting.FileSystemObject")
    fso.DeleteFile(filespec)
    Set fso = Nothing
End Sub

Function PadNumber(num)
    Dim s
    s = FormatNumber(num,0,-1)
    If Len(s) = 1 Then s = "0" & s
    PadNumber = s
End Function

AVPTitle = shell.ExpandEnvironmentStrings("%AVPTitle%")
AVPPrinter = shell.ExpandEnvironmentStrings("%AVPPrinter%")
AVPPort = shell.ExpandEnvironmentStrings("%AVPPort%")
AVPPaperID = shell.ExpandEnvironmentStrings("%AVPFormID%")
AVPHeight = shell.ExpandEnvironmentStrings("%AVPPaperLength%")
AVPWidth = shell.ExpandEnvironmentStrings("%AVPPaperWidth%")
AVPUser = shell.ExpandEnvironmentStrings("%AVPUser%")
AVPComputer = shell.ExpandEnvironmentStrings("%AVPComputer%")
AVPNotify = shell.ExpandEnvironmentStrings("%AVPNotify%")
AVPDateTime = Now
AVPCopies = shell.ExpandEnvironmentStrings("%AVPCopies%")
AVPPages = shell.ExpandEnvironmentStrings("%AVPPages%")
AVPBaseFileName = shell.ExpandEnvironmentStrings("%AVPBaseFileName%")
AVPPath = shell.ExpandEnvironmentStrings("%AVPPath%")
```

```

AVPExt = shell.ExpandEnvironmentStrings("%AVPExt%")
AVPFileName = AVPPath & AVPBaseFileName & "." & AVPExt
AVPFileSize = SizeOfFile(AVPFileName)

recipStr = null

Select Case AVPUser
    Case "Sue" recipStr="sue@nowhere.com"
    Case "John" recipStr="john@nowhere.com"
End Select

' If using Active Directory, then this can be un-commented and used instead...
' Set objUser = GetObject ("LDAP://CN=" & AVPUser & ",DC=DOMAIN_NAME,DC=com")
' objUser.GetInfo
' recipStr = objUser.Get("mail")

senderStr = recipStr
GS = "C:\Program Files\gs\gs9.23\bin\gswin64c.exe " ' space included
GSParams = "-sDEVICE=pdfwrite -r1152 -dBATCH -dNOPAUSE " & _
"-sOutputFile=""" & AVPPath & AVPBaseFileName & "-%02d.pdf""" " & """" & AVPFileName & """"
-c"
Shell.Run GS & GSParams,7,True
PageNumber = 1

If (IsNull(recipStr) = False) Then
Do
    GSOutput = AVPPath & AVPBaseFileName & "-" & PadNumber(PageNumber) & ".pdf"
    If FileExists(GSOutput) Then
        BodyText = "Your Print Job has been completed." & vbCRLF & _
        "Details:" & vbCRLF & _
        " Title: " & AVPTitle & vbCRLF & _
        " Printer: " & AVPPrinter & " on " & AVPPort & vbCRLF & _
        " Dimensions: " & AVPWidth/254 & " X " & AVPHeight/254 & " inches" & vbCRLF & _
        " User: " & AVPUser & vbCRLF & _
        " Computer: " & AVPComputer & vbCRLF & _
        " Notify: " & AVPNotify & vbCRLF & _
        " Date and Time: " & AVPDateTime & vbCRLF & _
        " Copies: " & AVPCopies & vbCRLF & _
        " Pages: " & AVPPages & vbCRLF & _
        " File Size: " & AVPFileSize & vbCRLF
        BodyHTML = "<html><head><title>" & AVPTitle & "</title></head><body>" & vbCRLF & _
        "<font Size="""+1"">Your Print Job has been completed.</font><br>" & vbCRLF & _
        "<b>Details:</b><br>" & vbCRLF & _
        "&nbsp;&nbsp;&nbsp;<b>Title:</b>&nbsp;&nbsp;&nbsp;" & AVPTitle & "<br>" & _
        "&nbsp;&nbsp;&nbsp;<b>Printer:</b>&nbsp;&nbsp;&nbsp;" & AVPPrinter & " on " & AVPPort & "<br>" & vbCRLF
        & _
        "&nbsp;&nbsp;&nbsp;<b>Dimensions:</b>&nbsp;&nbsp;&nbsp;" & AVPWidth / 254 & " X " & AVPHeight / 254 & " inches" & "<br>" & vbCRLF & _
        "&nbsp;&nbsp;&nbsp;<b>User:</b>&nbsp;&nbsp;&nbsp;" & AVPUser & "<br>" & vbCRLF & _
        "&nbsp;&nbsp;&nbsp;<b>Computer:</b>&nbsp;&nbsp;&nbsp;" & AVPComputer & "<br>" & vbCRLF & _
        "&nbsp;&nbsp;&nbsp;<b>Notify:</b>&nbsp;&nbsp;&nbsp;" & AVPNotify & "<br>" & vbCRLF & _
        "&nbsp;&nbsp;&nbsp;<b>Date and Time:</b>&nbsp;&nbsp;&nbsp;" & AVPDateTime & "<br>" & vbCRLF & _
        "&nbsp;&nbsp;&nbsp;<b>Copies:</b>&nbsp;&nbsp;&nbsp;" & AVPCopies & "<br>" & vbCRLF & _
        "&nbsp;&nbsp;&nbsp;<b>Pages:</b>&nbsp;&nbsp;&nbsp;" & AVPPages & "<br>" & vbCRLF & _
        "&nbsp;&nbsp;&nbsp;<b>File Size:</b>&nbsp;&nbsp;&nbsp;" & AVPFileSize & "<br>" & vbCRLF & _
        "</body></html>" & vbCRLF
        Set newMailObj = CreateObject("CDO.Message")
        ' Configure for external SNMP server. Consult with your SNMP mail provider for port and authentication details.
        Set newConfigObj = newMailObj.Configuration
        newConfigObj.Fields("http://schemas.microsoft.com/cdo/configuration/sendusing") = cdoSendUsingPort
        newConfigObj.Fields("http://schemas.microsoft.com/cdo/configuration/smtpserver") =

```

```

"snmp.nowhere.com"

newConfigObj.Fields("http://schemas.microsoft.com/cdo/configuration/smtpauthenticate") =
cdoBasic
    newConfigObj.Fields("http://schemas.microsoft.com/cdo/configuration/sendusername") =
"noone@nowhere.com"
    newConfigObj.Fields("http://schemas.microsoft.com/cdo/configuration/sendpassword") =
"password"
    newConfigObj.Fields("http://schemas.microsoft.com/cdo/configuration/smtpserverport")
= 25
    newConfigObj.Fields("http://schemas.microsoft.com/cdo/configuration/smtpusessl") =
False

newConfigObj.Fields("http://schemas.microsoft.com/cdo/configuration/smtpconnectiontimeout
") = 60
    newConfigObj.Fields.Update
    newMailObj.To = recipStr
    newMailObj.From = senderStr
    newMailObj.Subject = "Print Job: " & AVPTitle
    newMailObj.TextBody = BodyText
    newMailObj.HTMLBody = BodyHTML
    call newMailObj.AddAttachment(GSOutput)
    newMailObj.Send
    PageNumber = PageNumber + 1
Else ' If FileExists
    If (PageNumber = 1) Then
        BodyText = "Your Print Job encountered an error." & vbCRLF
        BodyHTML = "<html><head><title>" & AVPTitle & "</title></head><body>" & vbCRLF &
        "<font size=""+1"">Your Print Job encountered an error.</font><br>" & vbCRLF &
        "</body></html>" & vbCRLF
        Set newMailObj = CreateObject("CDO.Message")
        newMailObj.To = recipStr
        newMailObj.From = senderStr
        newMailObj.Subject = "Print Job: " & AVPTitle & " ERROR"
        newMailObj.TextBody = BodyText
        newMailObj.HTMLBody = BodyHTML
        newMailObj.Send
        PageNumber = 0
    Else
        PageNumber = 0
    End If ' If PageNumber
End If ' If FileExists Else
Loop Until PageNumber = 0
End If ' If RecipStr
If FileExists(AVPFileName) Then
    DeleteFile(AVPFileName)
End If
If FileExists(GSOutput) Then
    DeleteFile(GSOutput)
End If
Set shell = Nothing
Set SysEnv = Nothing
Set newMailObj = Nothing

```

How TCP/IP Printing works

Requirements for submitting clients

If the option of "Query Remote Clients for Job Information" has been selected, then the submitting computer should have the following setup:

The printer should be shared on the network. The share name can be hidden from browsing by using a question mark (?) at the end of the share name.

The Standard TCP/IP Port should use a name that indicates the server computer name (The Virtual Port Monitor computer), followed by an underscore(_), followed by the port number. For example, "printserv_4100".

Sequence of events

When a Virtual Port is configured to enable TCP/IP Printing, The Virtual Port Monitor service opens the selected TCP port and waits for a connection.

When a connection occurs, the listener socket indicates the IP address of the peer.

If the option of Host Name Resolution or Client Job Information is selected, the IP address is then converted to a host name using the Winsock api call gethostbyaddr.

When the port is configured to query the client for job information, the service enumerates the printers on the remote client. The ones of interest are currently in the "Printing" state.

The "Printing" printers are then queried for the port name. If the port name has a name in the format of "printserv_4100", the port is immediately identified as the port sending the job. If not, WMI (Windows Management Instrumentation) is used to map the port name to the TCP/IP Port.

If the port cannot be identified using either of these methods, the printer is selected based on it being the only one spooling a print job, if this is the case.

The jobs for that printer are then enumerated and the first one in the state of "Printing" is selected to obtain job information.

The print job is then spooled to the temporary spool folder, and when spooling is completed, the job is processed as if it came from the Virtual Port it is associated with.

Adding an IPP Printer to Windows

Windows provides alternate ways of connecting to a Virtual Port Monitor shared printer. This method should only be used for testing, or when other means do not provide the desired results, such as capturing version 4 printer driver data.

The Computer in which Virtual Port Monitor is installed is addressable using its MDNS domain name: <Computer Name>-avpmon.local, or by its DNS/NETBIOS computer name.

Client computers running Windows 8 and lower do not have MDNS name resolution services, and the use of MDNS domains require the Apple Bonjour client to be installed. Virtual Port Monitor does not provide clients the means in which to resolve MDNS names to IP Addresses.

The DNS/NETBIOS computer name is listed as the Host Name using the command line utility ipconfig /all.

The use of IP address is acceptable only if the IP address of the Virtual Port Monitor Computer is static. This can be tested by pinging the computer using one of these names.

The Port Name can be determined using the Ports page of the Virtual Port Dashboard application, selecting the desired port, and verifying that TCP/IP Printing includes IPP.

Windows does not natively have an IPP protocol handler (The default port for url's starting with "ipp://" is not defined), therefore HTTP protocol with the port designation of 631 must be used.

Using The Add Printer wizard, located at the top of the Devices and Printers Control Panel item, select "The printer that I want isn't listed".

Click "Select a shared printer by name".

For MDNS:

Enter http://<Computer Name>-avpmon.local:631/ipp/<PortName>

For NETBIOS/DNS:

Enter http://<Computer Name>:631/ipp/<PortName>

For IP Address:

Enter http://<IP Address>:631/ipp/<PortName>

Finish the Add Printer Wizard as usual.

Utilities

Raster Utility

RasterUtil can be used as the post-print application to convert print raster files received from iOS devices into images files, pdf documents, or send to a printer.

Alphatronics Raster Utility - Copyright © 2021 - Alphatronics, Inc.

Description:

Raster Utility (RasterUtil.exe) is a program for viewing, converting, or printing Apple and PWG raster file formats. Apple raster is sent from iOS devices such as iPad and iPhone to an IPP printer that advertises that it accepts this format.

A printer or print server must advertise that it supports raster data in order to show on the network as a printer to these devices on the network.

Raster data depicts each page of a print stream as bitmap data, eliminating the need for printers and print servers to perform any interpretation of the data regarding fonts and layout, at the expense of print stream size.

Raster Utility is only available for use on systems with a valid Virtual Port Monitor license.

Usage:

```
RasterUtil [Options] FileName
```

Available Options:

Help

Show this screen.

Settings

All settings are loaded from the file specified, ignoring any settings on the command line except for FileName.

OutputFormat

The file format of resulting files. Available options are none, bmp, png, jpg, tiff, pdf, and print. None, which is the default, uses the built-in bitmap viewer. Pdf and Tiff files contain all pages of the input file, so PageSpec is not used. All other file formats create separate files for each page. Print sends to the default printer or the printer indicated by the Printer parameter.

TiffCompression

Compression type applied to Tiff files. Available options are none, ccitt3, ccitt4, lzw, rle, and zip. Default is lzw.

PngCompression

Compression amount applied to Png files. Available options are 0-9. Default is 7.

JpgQuality

A value between 1 and 100 representing the compression level of jpg images. A lower number creates a smaller image size on disk at the cost of image quality. Other image types are not affected. Default is 90.

Transparent

If this switch is included, the background color, detected by the lower-left pixel of the image, will become the transparent color of generated images. This switch is supported by the viewer and png formats only.

OutputPath

Indicates the output path for resulting files. Default is the input FileName path.

OutputName

Overrides the filename for output files. Default is the input FileName file name.

PageSpec

Sets the format specifier for resulting files, appended to the OutputName. This parameter must contain "%u", otherwise the default is used. If this parameter contains spaces, it should be wrapped in double-quotes (""). Default is "-%u".

Printer

The Printer Name as found in the printers folder. If this parameter contains spaces, it should be wrapped in double-quotes (""). If no printer is specified, the system default printer will be used.

Rotate

This option applies to the print option only. Valid values are 0, 90, 180, and 270. Image data is rotated clockwise by the desired angle, and values of 90 and 270 will change the page orientation to landscape. The default value is 0.

FileName

Not a switch, but the input filename. This must be the last parameter.

Notes

Options:

All options are case insensitive. Switches are prepended with - (Dash) or / (Slash). If any options are present on the command line, the user interface will not be shown, with the exception of outputformat=none.

Examples:

```
RasterUtil -outputformat=tiff -tiffcompression=lzw -pagespec="-page_%u"  
"C:\InputPath\InputName.urf"
```

```
RasterUtil -outputformat=jpg -jpgquality=50 -pagespec="-page_%u"  
"C:\InputPath\InputName.urf"
```

```
RasterUtil -outputformat=pdf -outputname="NewFile" -outputpath="C:\NewPath"  
"C:\InputPath\InputName.urf"
```

```
RasterUtil -outputformat=png -pngcompression=9 -transparent "C:\InputPath\InputName.urf"

RasterUtil -settings="C:\ProgramData\Alphatronics\RasterUtil\MySettings.ini"
"C:\InputPath\InputName.urf"
```

Memory:

Memory Usage is optimized for single page image formats, but for multiple page formats like viewer, pdf, and tiff, all pages are held in memory. Therefore it is advised to limit the number of pages, when using these formats, to a value relative to the maximum amount of memory consumption desired.

Color Spaces:

Raster data is converted directly from it's pixels to the desired format without performing any color space transformations, with the exception of CMYK, in which case colors are transformed to RGB using a simple conversion algorithm.

Color spaces that are not directly compatible with monochrome, grayscale, RGB, or CMYK will produce unexpected results. 2 bit grayscale images are re-sampled up to 4 bits for compatibility.

Drag and Drop Operation:

Drag and drop operation is supported for viewer mode. Simply drag and drop a file onto the screen of the program. Dropping multiple files at once will result in only the first file being processed.

Viewer Hot Keys:

1	: Zoom fit screen
2	: Zoom 25%
3	: Zoom 50%
4	: Zoom 100% (pixel zoom)
F1	: Help
Esc	: Exit Help
Home	: First page
End	: Last page
Page Up	: First page
Page Down	: Last page
Ctrl-P	: Print
Ctrl-O	: Open

Exit Codes:

0	: NoError
1	: InputFileNotFound

2 : OutputPathNotFound
3 : SettingsFileNotFound
4 : InvalidRasterFormat
5 : InvalidOutputFormat
6 : InvalidPageSpecification
7 : InvalidOutputName
8 : InvalidPngCompression
9 : InvalidTiffCompression
10 : InvalidJpgQuality
11 : InvalidRotation
12 : InvalidPrinter
13 : IOError
14 : AccessDenied

Printing:

Printing will override any page size setting with the page size present in the raster input file. Printing from the viewer, and selecting landscape mode, will rotate the image data and page orientation by 90 degrees clockwise.

Line Printer Utility

LinePrinterUtil can be used as the post-print application to convert 9 pin line printer output streams into images files, pdf documents, or send to a printer.

Line Printer Utility - Copyright © 2021 - Alphasatronics, Inc.

Description:

Line Printer Utility (LinePrinterUtil.exe) is a program for viewing, converting, or printing 9 pin line printer output streams. Printer drivers such as the Epson FX and LX series, as well as many others emit this format.

This utility interprets ESC/P and text print streams. ESC/P2 is a slightly different language that is not supported by this utility.

Also supported is features such as graphics and false bolding, where an impact printer will print text twice in the same place to produce bold print. Supported driver resolutions are 240x144, 120x144, and 120x72 DPI. Internally, a resolution of 240x216 DPI is actually used, since this more closely represents the mechanical ability of a 9 pin line printer.

When converted to the print and PDF output formats, the output size is normalized by stretching the images to the page size, due to the differing resolution.

Resulting images have a color depth of 8 bit indexed.

The initial state of the printer is determined by the Initialization parameters of the interpreter, and can be configured using the "Initialization..." menu item in the setup dialog. Paper size, margins, initial font and attributes, character set and default tab width are configured in this dialog, eliminating the need for DIP switches.

The following built-in fonts are supported: Draft 10, Draft 12, Roman 10, Roman 12, Roman 17, Roman 20, Roman 5, Roman 6, Roman PS, Roman PX, Sans Serif 10, Sans Serif 12, Sans Serif 17, Sans Serif 20, Sans Serif 5, Sans Serif 6, Sans Serif PS, and Sans Serif PX.

The following international character sets are supported: USA, France, Germany, United Kingdom, Denmark I, Sweden, Italy, Spain I, Japan English, Norway, Denmark II, Spain II, and Latin America.

LinePrinterUtil is only available for use on systems with a valid Virtual Port Monitor license.

Usage:

```
LinePrinterUtil [Options] FileName
```

Available options:

Help

Show this screen.

OutputFormat

The file format of resulting files. Available options are none, bmp, png, jpg, tiff, pdf, and print. None, which is the default, uses the built-in bitmap viewer. Pdf files contain all pages of the input file, so PageSpec is not used. All other file formats create separate files for each page. Print sends to the printer indicated by the Printer

parameter.

TiffCompression

Compression type applied to Tiff files. Available options are none, ccitt3, ccitt4, lzw, rle, and zip. Default is none.

PngCompression

Compression amount applied to Png files. Available options are 0-9. Default is 0.

JpgQuality

A value between 1 and 100 representing the compression level of jpg images. A lower number creates a smaller image size on disk at the cost of image quality. Other image types are not affected. Default is 100.

Transparent

If this switch is included, the background color, detected by the lower-left pixel of the image, will become the transparent color of generated images. This switch is supported by the viewer and png formats only.

OutputPath

Indicates the output path for resulting files. Default is the input FileName path.

OutputName

Overrides the filename for output files. Default is the input FileName file name.

PageSpec

Sets the format specifier for resulting files, appended to the OutputName. This parameter must contain "%u", otherwise the default is used. If this parameter contains spaces, it should be wrapped in double-quotes (""). Default is "-%u".

Printer

The Printer Name as found in the printers folder. If this parameter contains spaces, it should be wrapped in double-quotes ("").

Rotate

This option applies to the print option only. Valid values are 0, 90, 180, and 270. Image data is rotated clockwise by the desired angle, and values of 90 and 27 will change the page orientation to landscape. The default value is 0.

Underlay

The filename of an optional underlay file, representing a pre-printed form. bmp, png, jpg, and gif formats are supported. The image will be stretched, if required, to fit the page.

FileName

Not a switch, but the input filename. This must be the last parameter.

Notes

Options:

All options are case insensitive. Switches are prepended with - (Dash) or / (Slash). If any options are present on the command line, the user interface will not be shown, with the exception of outputformat=none.

Examples:

```
LinePrinterUtil -outputformat=tiff -tiffcompression=lzw -pagespec="-page_%u"  
"C:\OutputPath\OutputName.lp"
```

```
LinePrinterUtil -outputformat=jpg -jpgquality=50 -pagespec="-page_%u"  
"C:\OutputPath\OutputName.lp"
```

```
LinePrinterUtil -outputformat=pdf -outputname="NewFile" -outputpath="C:\NewPath"  
"C:\OutputPath\OutputName.lp"
```

```
LinePrinterUtil -outputformat=png -pngcompression=9 -transparent  
"C:\OutputPath\OutputName.lp"
```

Memory:

Memory Usage is optimized for single page image formats, but for multiple page formats like viewer and pdf, all pages are held in memory. Therefore it is advised to limit the number of pages, when using these formats, to a value relative to the maximum amount of memory consumption desired.

Drag and Drop Operation:

Drag and drop operation is supported for viewer mode. Simply drag and drop a file onto the screen of the program. Dropping multiple files at once will result in only the first file being processed.

Viewer Hot Keys:

1	: Zoom fit screen
2	: Zoom 25%
3	: Zoom 50%
4	: Zoom 100% (pixel zoom)
F1	: Help
Esc	: Exit Help
Home	: First page
End	: Last page
Page Up	: First page
Page Down	: Last page
Ctrl-P	: Print
Ctrl-O	: Open

Exit Codes:

0	: NoError
1	: InputFileNotFound

2 : OutputPathNotFound
3 : SettingsFileNotFound
4 : InvalidRasterFormat
5 : InvalidOutputFormat
6 : InvalidPageSpecification
7 : InvalidOutputName
8 : InvalidPngCompression
9 : InvalidTiffCompression
10 : InvalidJpgQuality
11 : InvalidRotation
12 : InvalidPrinter
13 : IOError
14 : AccessDenied
15 : UnderlayNotFound

Printing:

Page Size is determined by the initialization of the interpreter. Printing from the viewer, and selecting landscape mode, will rotate the image data and page orientation by 90 degrees clockwise.

Process Monitor (Debug Reporting)

Debug reporting can only be enabled when a post-print application has been configured.

Process Monitor (AVPProcMon.exe) is a utility used as a proxy for executing the post-print application. It's purpose is to monitor the post-print application in the same environment, desktop, and windowstation.

A proxy is required due to the way process isolation occurs in session 0, where a separate desktop/windowstation is created for each service and process.

When the post-print application runs, Process Monitor captures the environment, security, screen, and standard output and error pipes.

After the post-print application runs, a PDF report is optionally generated in the output directory, detailing the items captured.

Sections

General

Some items in the General section of the report are derived from the "AVP" environment variables, and are captured before the application runs.

Output File	The file emitted by Virtual Port Monitor.
Command Line	The post-print application.
Command Line Parameters	Parameters appended to the command line for the post-print application.
Output Directory	The output directory.
Start Time	The time in which the post-print application was started.
End Time	The time in which the post-print application terminated.
Elapsed Time	The amount of time the post-print application ran.
Exit Code	The exit code of the post-print application. Values other than 0 usually indicate an error.
Screen Capture Interval	The amount of time between screen captures.
User Account	The domain/user account in which the post-print application ran.
Port Name	The name of the Virtual Port.

Errors (Only present when an error is detected)

This section contains errors that occurred when attempting to launch the post-print application.

Group Membership for domain/user

This section lists the groups in which the user account belongs.

Output Directory Permissions

This section shows the owner and ACL of the output directory.

Output File Permissions

This section shows the owner and ACL of the output file.

WindowStation Permissions

This section shows the owner and ACL of the window station object.

Desktop Permissions

This section shows the owner and ACL of the desktop object.

Initial Environment Variables

This section lists all the environment variables for the post-print application.

Screen Captures (Max. 10)

This section displays screen capture images.

Blank black screens indicate console applications that have their standard output and standard error pipes redirected.

If Process Monitor has captured these pipes, the text output can be viewed in the standard output and standard error sections of this report.

Standard Output

This section shows the text received from the standard output pipe of the post-print application.

Standard Error

This section shows the text received from the standard error pipe of the post-print application.

Interpreting the report

Application Errors

Sometimes errors are obvious by reviewing the Error section (if present), exit code, screen captures, or standard error/output information, but this kind of information is entirely dependent on whether the post-print application reports all of its errors.

Errors that were not foreseen by the programmer of the application are often not reported, especially when subjected to an environment such as "invisible" session 0.

It should also be considered that the application may be trying to access resources other than the ones Virtual Port Monitor is aware of. For example, directories, fonts, pipes, and devices that the application uses in the course of running.

Environment variables should be reviewed to see if any required ones are missing or incorrect, when compared to running the application in a successful environment. Variables such as TEMP, TMP, or PATH can affect the application adversely if they are missing or incorrect.

Application Hangs

Process Monitor captures the image of the main windows of applications only, therefore, any pop-up dialogs are not visible.

The event viewer can be used to determine if a Windows common dialog box was used to display an error message, but application defined error windows are not logged.

If Virtual Port Monitor is configured to wait infinitely, a report will never be generated unless the application is terminated using Windows task manager, or some other means.

Security Issues

Much of the report provides the access control list (ACL) of the objects involved, namely the output file, output directory, window station, and desktop.

These ACLs can be compared to the account group membership to determine if adequate permissions are granted to the user account.

Missing Reports

When debug reporting is set to always be generated, a missing report is almost always attributed to security issues with the output directory. In this case, logging in as the configured user and verifying create/write permissions for the output directory is the best means of troubleshooting.

When debug reporting is set to only be generated if an error occurs, either the application did not terminate, or the exit code was 0. The exit code is the only method that Virtual Port Monitor uses to detect an application error.

Proxy Versus Service Reports

The report generated has an extension of either pdebug.pdf for the proxy generated report, or sdebug.pdf, for a service generated report.

Service generated reports are not generated by Process Monitor.

Service generated reports represent an error launching the application, waiting for termination, or deleting the output file.

Sections such as screen captures and standard output/error are excluded if the application fails to run.

Launcher

Launcher provides a way to correlate input file extensions and output targets to actions that will execute programs with pre-defined parameters.

It works similar to the way Windows Explore will "Open" a file with a given application when double-clicked.

For example, if the input file is called "output.ps", and the target is "pdf", the list of possibly installed applications is enumerated, and the first application that supports the extension "ps", the target "pdf", and is installed, is selected. Detecting that an application is installed, is performed by using configured registry locations to detect the path, and checking if the file exists in that location.

Once the application is selected, a command line is constructed to perform the operation, and the program is executed.

The primary advantage to using Launcher is simplifying the Virtual Port Monitor command line to "C:\Program Files\Alphatronics\Virtual Port Monitor\Launcher.exe", while supporting many different input file formats.

The Launcher configuration file is located at "%ALLUSERSPROFILE%\Alphatronics\Virtual Port Monitor\Launcher.ini". Comments in the configuration file should be useful to anyone wishing to add to the configuration.

Executing Launcher without parameters from a command prompt will provide additional help.

Launcher is installed with Virtual Port Monitor, and is configured for the following predefined applications:

Raster Utility

Raster Utility is an Alphatronics product that ships with Virtual Port Monitor.

Launcher is configured to support the following input sources:

- urf - Raster data sent by iOS devices, such as iPhone and iPad.
- pwg - Raster data sent by other applications.

Launcher is configured to support the following output formats:

- pdf
- png
- jpg

Line Printer Utility

Line Printer Utility is an Alphatronics product that ships with Virtual Port Monitor.

Launcher is configured to support the following input sources:

- lp - Line printer print stream.
- escp - Line printer print stream.
- txt - Text file.

Launcher is configured to support the following output formats:

- pdf
- png
- jpg

Ghostscript

Ghostscript is an open source product that converts Postscript to many different file formats.

Ghostscript can be downloaded from <http://www.ghostscript.com>

Launcher is configured to support the following input sources:

- ps - Postscript

Launcher is configured to support the following output formats:

- pdf
- png
- jpg

GhostPCL

GhostPCL is an open source product that converts PCL and PXL to many different file formats.

GhostPCL can be downloaded from <http://www.ghostscript.com>

Launcher is configured to support the following input sources:

- pcl - Print Command Language
- pxl - Print Command Language XL

Launcher is configured to support the following output formats:

- pdf
- png
- jpg

Table of Contents

Installation.....	2
Dashboard Application.....	6
Status Page.....	6
Port Monitor Status.....	6
Service Status.....	6
SNMP Status.....	6
TCP/IP Printing Status.....	6
MDNS Status.....	6
Licensing Status.....	6
Activate.....	6
Deactivate.....	6
Start.....	6
Stop.....	6
Backup Printer Connections.....	6
Restore Printer Connections.....	6
Ports Page.....	7
Port selection list box.....	7
Output Folder.....	7
Application.....	7
File Options.....	7
Forwarding.....	7
Network Print Servers.....	7
SNMP.....	7
Logon As.....	7
Add Port.....	7
Delete Port.....	7
Configure Port.....	7
SNMP Page.....	8
SNMP Startup.....	8
Disabled.....	8
Auto.....	8
Service Extension Only.....	8
Built-In Only.....	8
MDNS Page.....	9
MDNS Startup.....	9
Disabled.....	9
Enabled.....	9
Notes.....	9
About Page.....	10
Registration Code.....	10
Register.....	10
Unregister.....	10
Offline Registration.....	10
Offline Registration Screen.....	11
Request Packet.....	11
Response Packet.....	11
Copy.....	11
Paste.....	11
Registration Code.....	11
Get Request Packet.....	11
Store Code.....	11
Configuration Dialog.....	12
Directory Page.....	12
Port Name.....	12
Output Directory.....	12
Append This Extension.....	13
Enable Drag and Drop Printing.....	13
File Page.....	14

Store output files in subdirectory.....	14
Print direct to file	14
File Handling.....	15
Name files automatically.....	15
Do not create an output file.....	15
Append all output to a single "log" file.....	15
Unique Name Options.....	16
Log Options.....	17
Daily (Textual).....	17
Monthly (Textual).....	17
Daily (Numerical).....	17
Monthly (Numerical).....	17
Yearly (Numerical).....	17
Use the following filename.....	17
Log Filename.....	17
Forwarding Page.....	18
Local Ports.....	18
Network Ports.....	18
Browse.....	18
Local Printers.....	18
Processing Page.....	19
Execute this application on completion.....	19
Application edit box.....	19
Browse.....	19
Show Window.....	20
Application Wait Options.....	20
Do not wait.....	20
Wait infinitely.....	20
Use Wait Timeout.....	20
Wait timeout value.....	21
Security Page.....	22
Username.....	22
Domain.....	22
Password.....	22
Confirm Password.....	22
Log on.....	22
Network Page.....	23
Enable Socket Printing.....	23
TCP/IP Port.....	23
Socket Options.....	23
Query Remote Clients for Job Information.....	23
Host Name Resolution Only.....	23
No Job or Client Information.....	23
Enable IPP.....	24
Page Description Language (PDL).....	24
Any.....	24
Postscript.....	24
PCL.....	24
PDF.....	24
Adapter Bindings.....	25
IPP Page.....	26
Enable AirPrint Extension.....	26
Media (Page Sizes).....	26
North American.....	26
ISO.....	26
Japan.....	26
Japan (JIS).....	26
SNMP Page.....	27
Enable SNMP.....	27
SNMP Manufacturer.....	27
SNMP Model.....	27
Printer.....	27

Additional Page.....	28
Delete Output File After Application Execution.....	28
Never.....	28
If the timeout does not expire.....	28
If the timeout does not expire and the exit code is 0.....	28
Enable Application Debug Reporting.....	29
Never.....	29
Always.....	29
Only when an error is detected.....	29
Time Options.....	30
UTC Time.....	30
Local Time.....	30
Advanced Topics.....	31
Environment Variables.....	31
AVPBaseFileName.....	31
AVPComputer.....	31
AVPColor.....	31
AVPCopies.....	31
AVPDebug.....	31
AVPDriver.....	31
AVPDuplex.....	31
AVPExt.....	31
AVPFormID.....	31
AVPNotify.....	31
AVPOrientation.....	31
AVPPages.....	31
AVPPaperLength.....	31
AVPPaperWidth.....	31
AVPPath.....	31
AVPPort.....	31
AVPPrinter.....	31
AVPResolution.....	31
AVPTitle.....	31
AVPUser.....	31
Application Samples.....	32
Convert to PDF using Ghostscript.....	32
Convert to a 96 DPI Tiff image using Ghostscript.....	32
Executing a batch file.....	32
Simple Windows scripting host file which will e-mail the file to anyone@nowhere.com.....	32
Convert to PDF using Ghostscript, then email the PDF to the submitting user.....	33
How TCP/IP Printing works.....	36
Requirements for submitting clients.....	36
Sequence of events.....	36
Adding an IPP Printer to Windows.....	37
For MDNS.....	37
For NETBIOS/DNS.....	37
For IP Address.....	37
Utilities.....	38
Raster Utility.....	38
Line Printer Utility.....	42
Process Monitor (Debug Reporting).....	46
Sections.....	46
General.....	46
Errors (Only present when an error is detected).....	46
Group Membership for domain/user.....	46
Output Directory Permissions.....	46
Output File Permissions.....	46
WindowStation Permissions.....	46
Desktop Permissions.....	46
Initial Environment Variables.....	46
Screen Captures (Max. 10).....	47
Standard Output.....	47

Standard Error.....	47
Interpreting the report.....	47
Application Errors.....	47
Application Hangs.....	47
Security Issues.....	47
Missing Reports.....	47
Proxy Versus Service Reports.....	47
Launcher.....	48
Raster Utility.....	48
Line Printer Utility.....	48
Ghostscript.....	48
GhostPCL.....	49