# Helpdesk Functions
in HP Web Jetadmin

**whitepaper**

hp

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## Overview

HP Web Jetadmin contains many tools for troubleshooting printers.  As a result, it is increasingly being used as a Helpdesk troubleshooting tool    HP Web Jetadmin includes several features whereby Helpdesk personnel can remotely troubleshoot printers without having to physically visit the location where the printer resides, significantly reducing the time spent resolving issues.

Proactive measures, such as regularly querying for status or enabling e-mail alerts, can be enforced so that printer problems can be resolved before the end user call ever comes in to the Helpdesk.

## Helpdesk Example

A Helpdesk individual could potentially perform the following steps remotely from within HP Web Jetadmin to troubleshoot a printer issue:

- Quickly locate the printer by using Quick Device Find
- View the status of the printer to indicate whether the printer is in an error condition.
- Generate a test page, acting as a ping test to determine network connectivity.
- Set the printer online/ offline
- Power cycle the printer
- Perform a cold reset to factory defaults
- View critical diagnostic information such as firmware revision.
- Upgrade firmware for either HP Jetdirect or printer
- Configure network or printer parameters

This paper will examine techniques for quickly locating and troubleshooting devices, both reactively and proactively.

## Viewing Devices

Printer users typically call the Helpdesk when there is a problem with a printer, and may provide a variety of information in order for the Helpdesk personnel to remotely locate the printer. Once located, the Helpdesk personnel can view the *Status Page* of the printer which can indicate the current state of the printer, the front panel message (see Figure 1),

## Quick Search

*Quick Search* can be used in HP Web Jetadmin to find the device on the network if the user provides any of the following network searchable parameters about the printer:
IP address
IP hostname
IPX address
LAN Hardware address (MAC address)

*Quick Search* will initially look in the HP Web Jetadmin cache to see if the device has already been discovered. If not, *Quick Search* can use the information provided to locate the device on the network and add it to the HP Web Jetadmin cache of discovered devices. Once found, Quick Search will display the Status Page of the device (see Figure 1).

## Filters

If a network searchable parameter is not provided by the user, filters may be used to locate the device.

Filters are located by selecting an icon at the top of the HP Web Jetadmin *Toolbox*,





Figure 1 – Device Status Page

and can be used to quickly search for devices that have already been discovered in HP Web Jetadmin based upon criteria (see Figure 2). For example, a company may use unique printer numbers assigned to each printer in the *Description* field. The user may only refer to the printer by the printer number when calling the Helpdesk. The Helpdesk individual could quickly find the particular printer by selecting *Description* and entering the printer number as the *Criteria* under *Filters.*
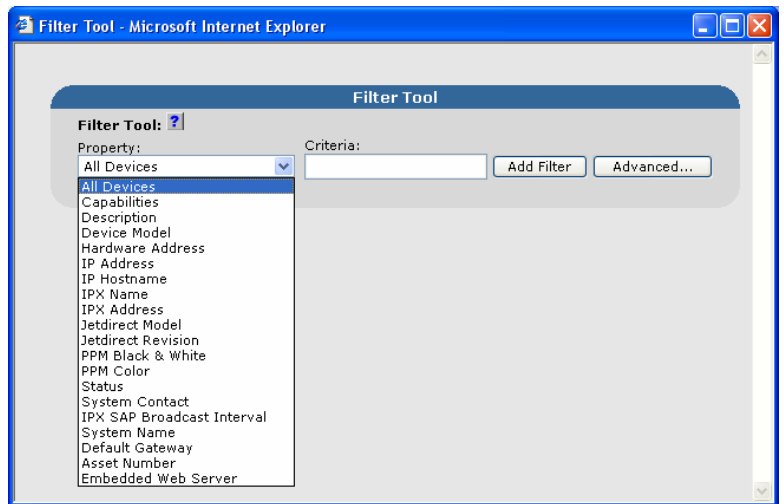


Figure 2 - Filters

Advanced filters can be created with boolean operators used for matching criteria. For example, a query could be made on all IP addresses *greater than* 15.2.1.1.

Nested filters can also be created, allowing for a list to be pared down quickly based upon multiple criteria. For example, a query could be made on all IP addresses *greater than* 15.2.1.1, but *less than* 15.2.1.50, and of those devices, all that have color capabilities, etc. Both the AND and OR operators can be applied between nested filters.

Filters can only be used to find devices that have already been discovered in HP Web Jetadmin. Filters cannot be used to discover new devices on the network, typically because the criteria is not network searchable.

## Columns / Views

Devices or attributes can also be found quickly by viewing the information contained within columns in HP Web Jetadmin. Columns can be sorted by clicking on the heading at the top of the column. Columns can also be resized by dragging the side of the column heading.
Selecting the icon between *View* and *Filters*
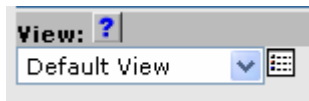


supplies a window whereby columns can be added, removed, reordered, etc. (see Figure 3). A complete list of available columns can be found in Appendix A.

Custom views can be saved for later use. Any custom created views appear in the drop-down list of available views (see Figure 4). The drop-down list also provides a variety of pre-defined views from which to select to define the fields of information that will be exported:

- *Default View* - displays general information such as model name, hardware address, IP
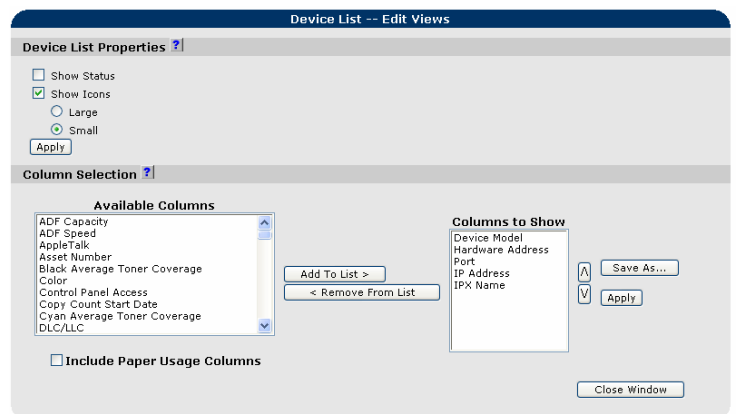


Figure 3 – Creating Views

address, IP hostname, and IPX name.

- *Status View* - polls devices and displays the current status of those devices.
- *Detailed View* - displays description and system contact information
- *Asset View* - displays asset number and serial number.
- *Jetdirect View* - displays HP Jetdirect model and firmware revision information.
- *Page Count View* - displays page count information. *Interim Page Count* is a value that is calculated within HP Web Jetadmin and allows administrators to set a time interval where the page count will be calculated. For example, an administrator may enable Interim Page Counts for the following situations:
  - Calculate how many pages are being printed before the toner cartridge is changed.
  - Calculate the number of pages printed per month for a particular printer.
- *Export View* - displays all columns that pertain to the list of discovered devices. This is the most exhaustive pre-defined view available, containing most of the columns that are available in HP Web Jetadmin
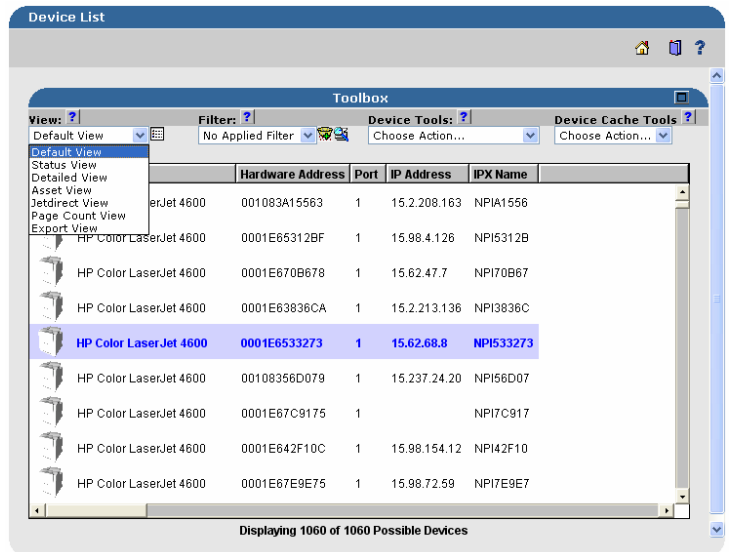
Figure 4 – Selecting Defined Views

## Device Groups

When the list of printers in HP Web Jetadmin becomes too large to quickly locate or manage devices, it can be broken into subsets, or "groups", in order to manage the devices easier. For example, printers can be organized into groups representing different buildings, and subgroups could be created to represent different floors of each building. Now the Helpdesk personnel could quickly locate printers based upon the location of the user who is calling into the Helpdesk.

Device groups can be displayed in a more graphical format called "maps" in order to obtain a more visual representation of where devices are physically located (see Figure 5). Maps are actually .gif files that a user would create and upload into HP Web Jetadmin. Maps can be assigned as the default view for a particular profile when browsing into HP Web Jetadmin.

When status is enabled for a group, the group and or map will indicate colors for the various status states of devices (see Figure 6). For example, if a printer is in a critical state, it will be encased in a red box, while printers in a warning state will be encased in a yellow box.
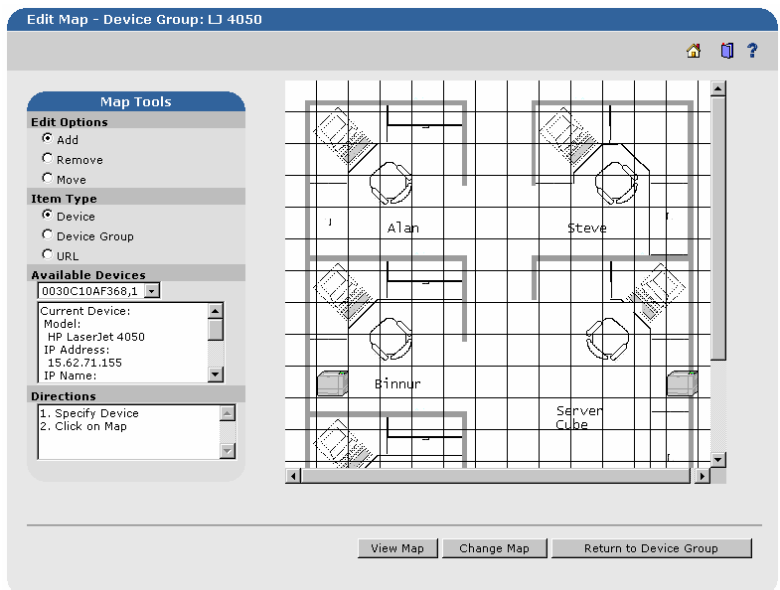
## Troubleshooting Printers

Figure 5 – Group Map

Once a printer has been located by Helpdesk personnel, a variety of troubleshooting options are made available by HP Web Jetadmin to enable solving the problem remotely. A significant amount of time can be saved if a problem can be solved remotely without having to physically travel to the printer.

## Test Page

Selecting *Test Page* from the drop-down menu while viewing the *Status Page* of a device directs the printer to print an internal self test page (see Figure 7). This feature can be used for



Figure 6 – Group Status

troubleshooting purposes to prove communication is possible to the printer on the network. It is somewhat of a ping test to indicate the problem may be with the print queue versus the printer itself.

When selecting *Print* next to the *SNMP Test Page* heading, HP Web Jetadmin will send an SNMP object to instruct the printer to print a test page. In addition, in order to further narrow down possibilities of why a printer is not printing, a file can be uploaded and sent to the printer via a port 9100 TCP connection to the printer. Merely browse to the file and select *Upload and Print* to send it to the printer. The file can contain any desired printable data, perhaps troubleshooting steps for a user to perform in case of future printing issues. By sending a file through a port 9100 connection, it simulates the creation of a printer on the desktop using the Standard Port Monitor, and can be used to narrow down the possibilities that an issue exists with the queue through which the user is printing vs. the printer itself.

## Diagnostics

Selecting *Diagnostics* while viewing the *Status Page* of a device displays a plethora of information pertaining to the printer and HP Jetdirect device, including firmware revisions, serial number, error log, toner gauges, etc.

Helpdesk personnel may use this information to determine if the firmware requires updating. The error log can indicate if the printer is having a repetitive problem. All pertinent HP Jetdirect information can be viewed such as how it obtained its current configuration, etc.

## Remote Control Panel

The embedded web server on newer HP printers provides an interface by which a user can remotely control the printer as if that user were standing in front of the printer itself. Older HP printers that do not have the embedded web server feature do not have this luxury.
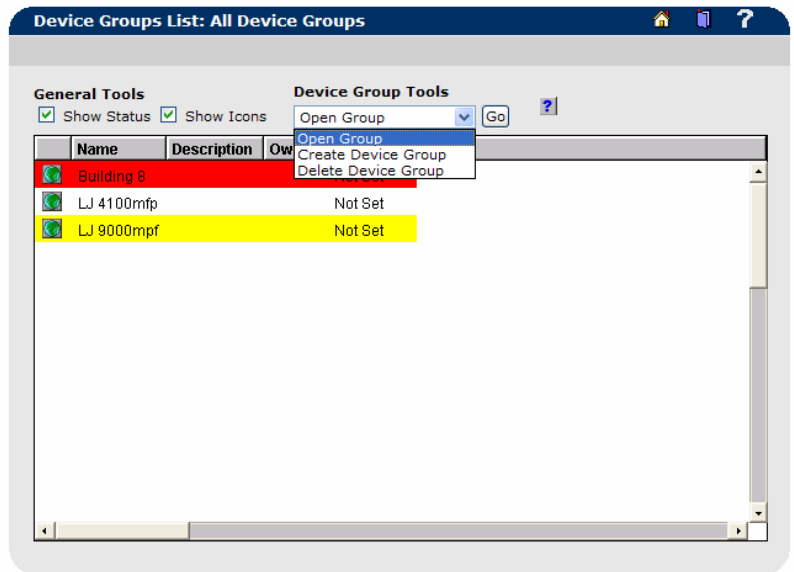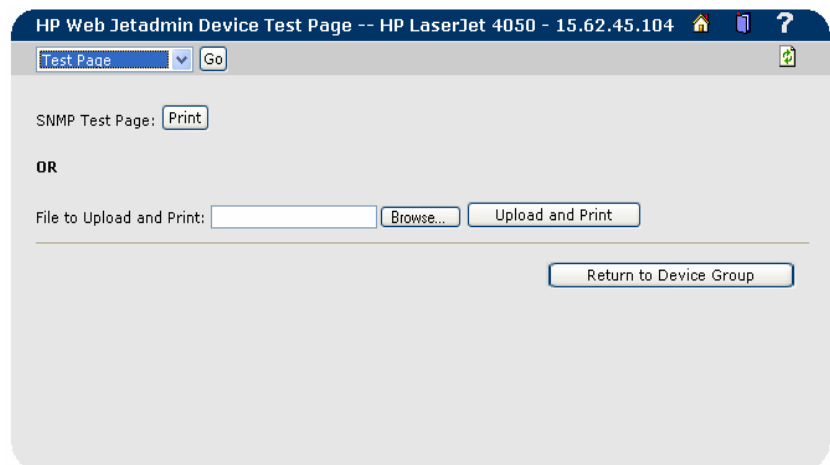


Figure 7 – Test Page

5

Fortunately, HP Web Jetadmin provides an interactive remote control panel, found by selecting *Configuration* from the drop-down menu when viewing the *Status Page* of a printer, that provides an interactive version of the printer's control panel for older printers without EWS capabilities (see Figure 8). Settings can be remotely changed on the printer as if they were being changed from the front panel of the printer itself. Current interaction with the printer, such as when the printer is printing a print job, is displayed on the control panel as well.
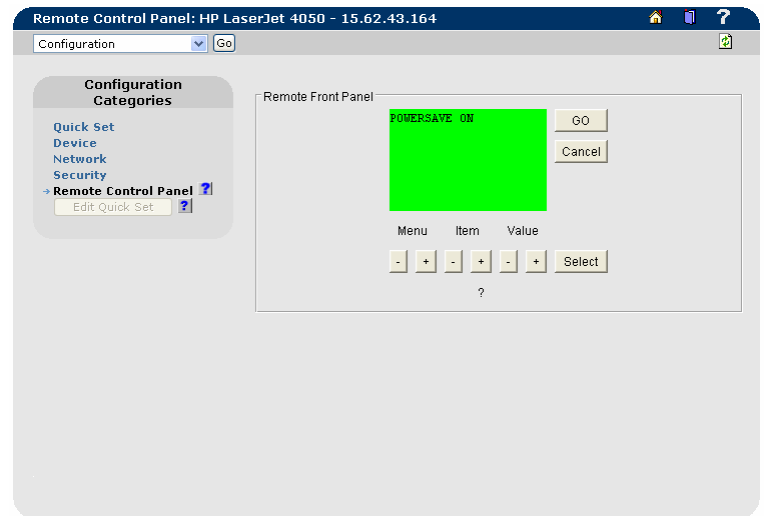


Figure 8 – Remote Control Panel

Helpdesk personnel can now make physical changes on the default behavior of the printer without having to stand in front of the printer to manually make the changes.This feature is only available on older printers without embedded web server capabilities. A complete list of printers supporting this feature can be found by viewing the technical brief titled "Supported Printer Features in HP Web Jetadmin".

## Reset Options

Selecting *Reset Options* from the drop-down list when viewing the *Status Page* of a printer provides additional troubleshooting techniques to solve printer issues (see Figure 9).

*Reset Options* can provide the following functionality:

- Power Cycle Printer  -  restarts the printer and reinitializes all printer settings.
- Reset Printer To Factory Defaults  -  restores the printer settings to the factory defaults.
- Restart NetWare Connections  -  restarts the Novell NetWare connections on the HP Jetdirect print server.  If a print job is currently being processed, HP Web Jetadmin lets the print job finish before restarting the connections.
- Restart IPX/SPX Stack  -  causes the IPX/SPX stack to go through its startup process.
- Reset IPX/SPX Stack to Factory Defaults  -  resets the IPX/SPX stack to the factory default settings, including removing the Rprinter Mode configuration and deleting any queues.  It does not reset the IP information.

## Firmware Upgrades

HP Web Jetadmin has the ability to upgrade the firmware of HP Jetdirect devices over the network

(see Figure 10).  In addition, HP Web Jetadmin can also update the firmware of some newer models of printers (see Figure 11).  Upgrades to firmware can correct problems with devices and/or add new features to devices without replacing hardware. The ability to upgrade HP Jetdirect firmware on multiple devices simultaneously saves time for administrators.  This "batch" process is available by highlighting the desired devices and selecting *Jetdirect Firmware Update* from the *Device Tools*
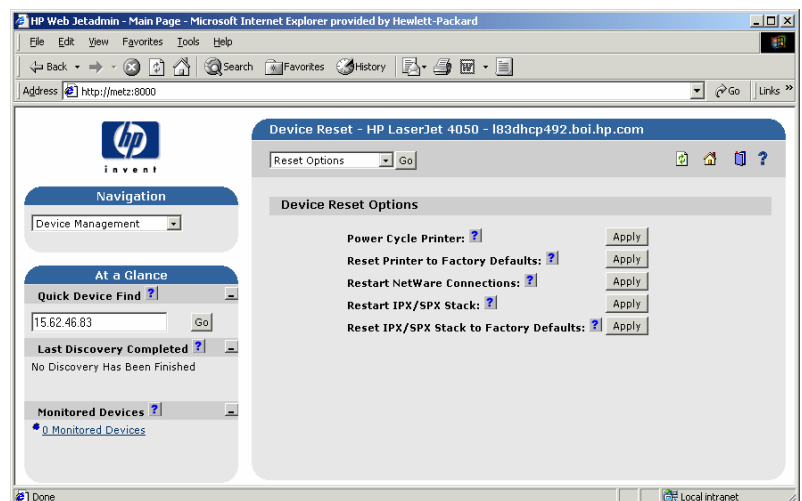


Figure 9 – Reset Options

drop down menu when viewing the list of all devices or a group.

## Configuration

HP Web Jetadmin provides the ability to configure printers and/or HP Jetdirect devices individually or in batches to assist in solving issues.  For example, if timing issues are occurring while printing to a printer, the *TCP-IP Idle Timeout* could be increased on the HP Jetdirect device remotely using HP Web Jetadmin.  Other useful networking parameters that may require configuration during the troubleshooting process include enabling/disabling protocols, frame types, etc. Printer configurations such as tray and media administration can also assist in assuring the printer is properly configured to receive the desired print jobs.

## Proactive Troubleshooting

While all previously discussed troubleshooting techniques involved reactively responding to user call at the Helpdesk, HP Web Jetadmin also includes various proactive techniques whereby issues can be solved before ever being reported by users.

## Status

Status can be viewed for individual printers or groups of printers to determine the current state of each device.  Many of the printers in a warning or error state can be remotely solved before they are detected by end users.

Status can be enabled on a list of printers, along with a column that describes the condition, by selecting *Status View* from the list of pre-defined views or by adding the Status column to a custom view (see Figure 12).  The status of each printer is displayed with either a yellow line to indicate a caution state or a red line to indicate a critical state.  The *Device Status* column displays the worst state condition of the printer.  Status can also be displayed for a list of printers (without the *Device Status* column) by clicking *Show Status* on the view creation screen.

Enabling status will cause HP Web Jetadmin to query each device in the list for status information (approx. 20 packets per device total network traffic).  Caution should be exercised when enabling status
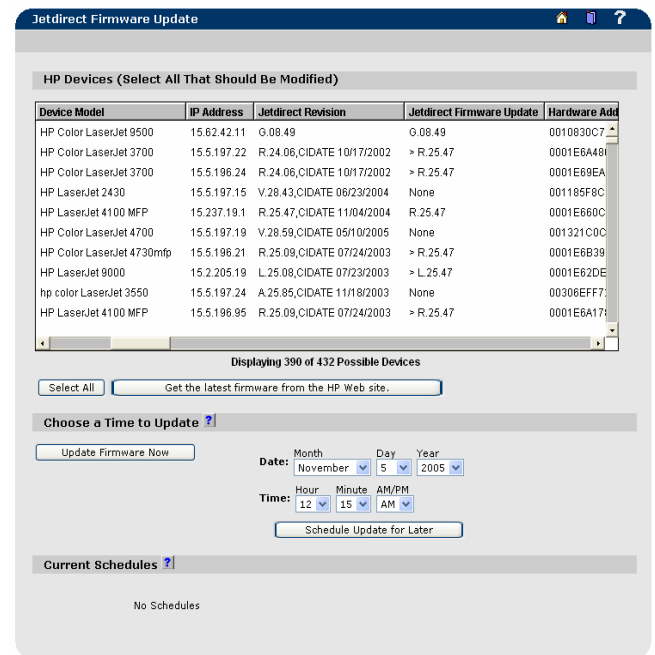


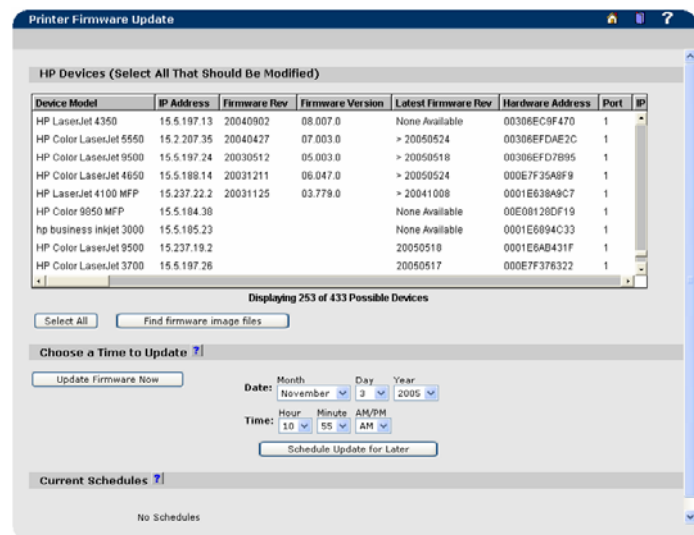Figure 10 – HP Jetdirect Firmware Upgrade
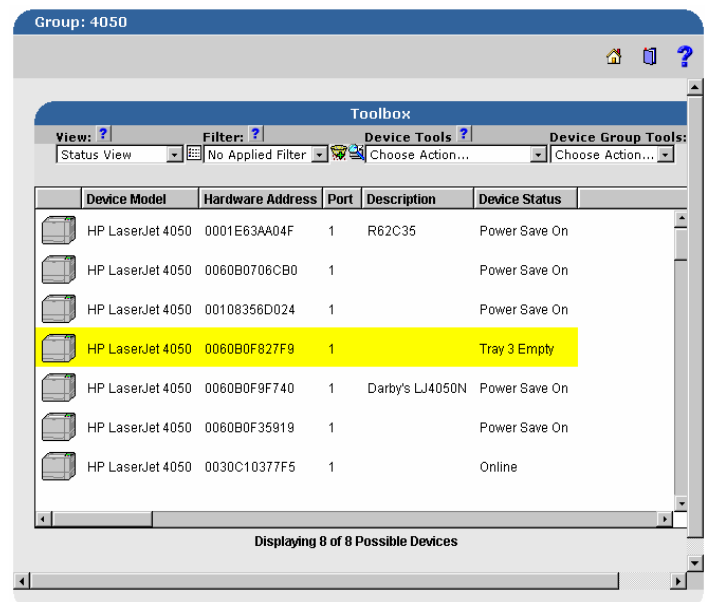


Figure 11 – Printer Firmware Upgrade



Figure 12 - Status

on a large list of printers as HP Web Jetadmin must communicate with each printer (approx. 20 packets) in order to represent current status.  This query could potentially generate an undesirable amount of network traffic and potentially take a substantial amount of time to complete if the list of printers is quite large.

Status can be very beneficial to Helpdesk personnel because it can prevent incoming calls.  It is a proactive attempt to find printers in an error state before the end user discovers the state and calls the Helpdesk.

## Alerts

HP Web Jetadmin has the ability to send e-mail messages, or alerts, whenever events occur on printers.  For example, error or warning conditions on printers, such as paper out or toner low, can trigger e-mail messages to be sent by HP Web Jetadmin that contain detailed information pertaining to the condition, allowing the recipient to act upon that condition immediately.  The advantage of alerts is that administrators can receive proactive, real-time warnings via e-mail for events that occur on networked printers.  Receiving early notification of printer events allows administrators to correct the problems before they impact end user productivity.  This saves time for both the administrator and the end user.  Helpdesks might use alerts to proactively troubleshoot issues

- Alerts allow for proactive e-mail messages to be sent when printer errors occur



Figure 13 - Alerts

with printers before end users detect them.  Individuals responsible for ordering consumables, such as toner cartridges, might enable toner low alerts so they can be warned of toner low conditions in order to proactively order toner before it runs out.

Once a printer is enabled to send alerts in HP Web Jetadmin, there are three different mechanisms in which HP Web Jetadmin can be informed that a condition exists on the device:

- Traps - HP Web Jetadmin can listen for device traps that warn of a condition.
- Embedded Web Server (EWS) - newer HP printers that support EWS can send alerts to HP Web Jetadmin warning of an event in the printer.
- Polling - HP Web Jetadmin can periodically poll a device for status if the device does not support traps or EWS.

When HP Web Jetadmin receives a trap or EWS message from a device, it uses those traps or EWS messages as an indication that something is wrong on the printer and sends additional SNMP status queries to the device to gather more information (see Figure 13).  If the status condition of the printer matches any of the configured alerts for the printer, a detailed email message is composed and delivered to designated recipients.  If a printer only supports polling, SNMP status queries will be sent to the printer at user-defined intervals.  If the status condition of the printer matches any of the configured alerts for the printer, a detailed email message is composed and delivered to designated recipients.

## Summary

Printer issues do contribute to the total volume of calls a Helpdesk receives.  Fortunately, HP Web Jetadmin provides many tools that allow for troubleshooting printers remotely without having to physically visit the printer, significantly reducing the time spent solving issues.  HP Web Jetadmin also provides proactive measures for troubleshooting printer issues before end users experience them, increasing customer satisfaction.
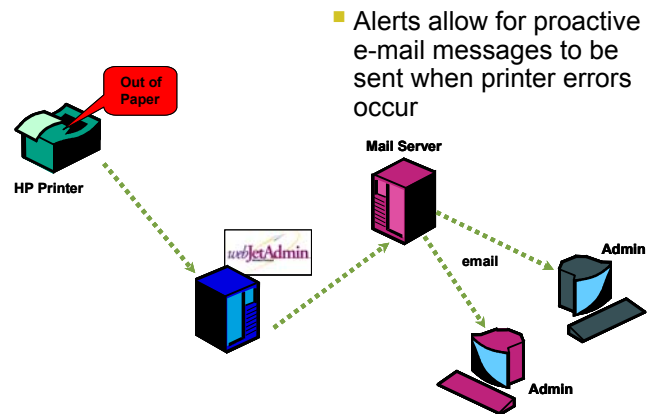
## Appendix A

The following charts depict the columns available for display in a view in HP Web Jetadmin. The charts have been categorized into those columns that represent device capabilities, device configuration items, device attributes, and HP Web Jetadmin attributes. In addition, columns are also depicted for the various paper sizes that can be displayed and the types of page counts that can be viewed for each size. Definitions are provided for the items that are not self explanatory.

### Device Capabilities

| | |
|---|---|
| 11x17/A3 Media | |
| ADF Capacity | Automatic document feeder capacity |
| ADF Speed | Automatic document feeder speed |
| Black DPI | |
| Color | |
| Color DPI | |
| DPI | |
| Duplexer | |
| Embedded Web Server | |
| Envelope Feeder | |
| Fax | |
| Flash Disk | |
| Hard Disk | |
| HCO | High capacity output device |
| HP Multifunction Finisher | |
| Input Tray 1 | |
| Input Tray 2 | |
| Input Tray 3 | |
| Input Tray 4 | |
| Input Tray 5 | |
| Input Tray 6 | |
| Installed RAM | |
| n-up Printing | |
| Optical Resolution | |
| PCL | |
| PCL/XL | |
| PJL | |
| Post Insertion Device | |
| Poster | |
| Postscript | |
| Powersave | Yes or N/A, indicates if powersave can be enabled |
| PPM Black & White | |
| PPM Color | |
| Punch Unit | |
| Serial Infra-Red | |
| sRGB | |
| Stacker | |
| Stapler/Stacker | |
| USB | |

### Device Attributes

| | |
|---|---|
| Black Average Toner Coverage | Average percentage of black toner used per page |
| Black Toner Serial Number | |

| | |
|---|---|
| Control Panel | Printer front panel display.  Multiple lines are separated by a semi-colon |
| Cyan Average Toner Coverage | Average percentage of cyan toner used per page |
| Cyan Toner Serial Number | |
| Device Model | |
| Device Status | |
| Estimated % Black OPC Levels | |
| Estimated % Black Supply Levels | |
| Estimated % Cyan OPC Levels | |
| Estimated % Cyan Supply Levels | |
| Estimated % Fuser Levels | |
| Estimated % Image OPC Levels | |
| Estimated % Light Cyan Supply Levels | |
| Estimated % Light Magenta Supply Levels | |
| Estimated % Magenta OPC Levels | |
| Estimated % Magenta Supply Levels | |
| Estimated % Transfer Unit Levels | |
| Estimated % Yellow OPC Levels | |
| Estimated % Yellow Supply Levels | |
| Firmware Rev | Printer firmware datecode (e.g. 20040708) |
| Firmware Version | Printer firmware version (e.g. 03.783.1) |
| Free Disk Space (MB) | |
| Hardware Address | |
| Jetdirect Model | |
| Jetdirect Revision | Jetdirect firmware version currently on the device |
| Jetdirect Firmware Update | Jetdirect firmware version that has been previously downloaded to Web Jetadmin (will be preceded by a carat (>) if version is newer than what is currently on device) |
| Latest Firmware Rev | printer firmware datecode that has been previously downloaded to Web Jetadmin (will be preceded by a carat (>) if version is newer than what is currently on printer) |
| Magenta Average Toner Coverage | Average percentage of magenta toner used per page |
| Magenta Toner Serial Number | |
| Maintenance Kit Interval | Page count interval upon which the printer will recommend a maintenance kit replacement |
| Maintenance Kit Percent Remaining | Pages remaining (represented as a percentage of the total maintenance kit page count interval) before the printer will recommend a maintenance kit replacement |
| Model Number | |
| Pages Remaining Until Maintenance Kit | The number of pages to be printed before the printer will recommend a maintenance kit replacement |
| Port | |
| Print Engine Revision | Also known as DC Controller revision (e.g. P777 14) |
| Serial Number | |
| Status Level | Red, green, or yellow, depending upon the status of the printer.  Red indicates an error condition where the printer cannot print.  Yellow indicates a warning condition where the printer can still print. |
| Toner Coverage | Average percentage of all toner used per page |
| Total Color Page Count | A value stored on the printer that represents a cumulative total of color pages printed for the life |

| | of the printer |
|---|---|
| Total Digital Copy Usage | |
| Total Disk Space (MB) | |
| Total Memory | |
| Total Page Count | |
| Total Printer Usage | |
| Tray 1 Media Level in % | % of paper remaining in tray.  Some printers can only report Empty or Not Empty. |
| Tray 2 Media Level in % | % of paper remaining in tray.  Some printers can only report Empty or Not Empty. |
| Tray 3 Media Level in % | % of paper remaining in tray.  Some printers can only report Empty or Not Empty. |
| Tray 4 Media Level in % | % of paper remaining in tray.  Some printers can only report Empty or Not Empty. |
| Tray 5 Media Level in % | % of paper remaining in tray.  Some printers can only report Empty or Not Empty. |
| Used Disk Space (MB) | |
| Yellow Average Toner Coverage | Average percentage of yellow toner used per page |
| Yellow Toner Serial Number | |

## Device Configuration Items

| 9100 Printing | Ability to print via port 9100 is enabled/disabled |
|---|---|
| Appletalk | |
| Asset Number | |
| Auto Continue | If set to On, a non-critical error message willappear for 10 seconds before the device resumes operation. If set to Off, the user must acknowledge non-critical error messages by pressing Continue on the device before the device resumes operation. |
| Check ACL for HTTP | |
| Control Panel Access | unlock, minimum, moderate, maximum |
| Copy Count Start Date | The date upon which an interim copy counter was started in HP Web Jetadmin, which calculates the number of pages copied over a period of time. |
| Default Gateway | |
| Description | |
| DLC/LLC | |
| DSS Server | The DSS server servicing the printer (if configured).  0.0.0.0 indicates no DSS server. |
| Ethernet Frame Type | |
| EWS Config | Ability to configure via EWS is enabled/disabled |
| EWS Password Enabled | Indicates whether an EWS (embedded web server) password is enabled or disabled.  EWS password can deter unwanted changes to the printer via EWS. |
| File System Password | Indicates whether file system password is enabled or disabled on the printer.  This password is required to perform secure storage and file system access functions. |
| FTP Printing | Ability print via FTP is enabled/disabled |
| Input Auto Continue | Specifies the default action that the printer takes when the specified media size or type is not available. |
| Input Auto Continue Timeout | Specifies how long the printer waits before performing the default action when the specified media size or type is not available. |
| Install Date | Identifies the date that the device was installed.  A time |

| | |
|---|---|
| | services server can set the date and time the first time the printer is put on the network. |
| Interim Copy Count | A calculation of the number of pages copied over a period of time. |
| Interim Page Count | A calculation of the number of pages printed over a period of time. |
| IP Address | |
| IP Hostname | |
| IPP Printing | Ability to print via IPP (Web) is enabled/disabled |
| IPv6 Enabled | |
| IPX Address | |
| IPX Name | |
| IPX SAP Broadcast Interval | How frequently the HP Jetdirect devices sends SAP (IPX broadcast) packets |
| IPX/SPX | |
| Jam Recovery | |
| Jetdirect Firmware Update | |
| Job Hold Timeout | Specifies how long the printer holds a print job that has not printed before automatically deleting the print job. |
| Job Retention | Indicates whether the job retention feature is enabled or disabled, which allows users to store print jobs in the flash memory on a printer. |
| Last Configured by | How the HP Jetdirect device was configured for TCP/IP, either manual, BOOTP, or DHCP. |
| LDAP Server | The LDAP server used by the printer for authentication. |
| LPD Printing | Ability to print via LPD is enabled/disabled |
| NFS Access | Ability to communicate via NFS is enabled/disabled |
| PJL Access | Ability to communicate via PJL is enabled/disabled |
| PML Access | Ability to communicate via PML is enabled/disabled |
| Power Save Timeout | Indicates how many minutes/hours of idle time before device goes into powersave mode |
| Printer Firmware Update | Inidicates whether printer firmware update has been enabled or disabled |
| PS Access | Ability to configure via Postscript is enabled/disabled |
| Quick Copy Jobs | |
| RAM Disk | |
| Secure File Erase Mode | Modes determining the file erase behavior of the device. Three modes are supported: 1. Non-Secure Fast Erase: Simple file table erase. Data is retained on disk until overwritten due to freed up status. 2. Secure Fast Erase: File information is overwritten with identical character pattern. 3. Secure Sanitizing Erase: Secure, repetitive algorithm used to overwrite all file information and remove any residual data persistence |
| Set Community Name | Indicates whether a Set Community Name is enabled or disabled. Setb Community Names can deter unwanted configurations of the device via SNMP. |
| SLP Config | Service Location Protocol (SLP) is enabled/disabled |
| SMTP Server | Mail server used to send e-mail. |
| Start Date | Date upon which an interim page counter was started in HP Web Jetadmin, which calculates the number of pages printed over a period of time. |
| Subnet Mask | |
| System Contact | |
| System Log Server | |
| System Name | |

| TCP/IP | TCP/IP is enabled/disabled |
|---|---|
| TCP/IP Idle Timeout | |
| Telnet Config | Ability to communicate via telnet is enabled/disabled |
| Toner Low Action | specifies how the printer responds when a toner-low condition exists. Set the printer to continue normal operations or set it to stop printing. |

## HP Web Jetadmin Attributes

| Custom Field 1 | Custom data can be imported or entered into HP Web Jetadmin and displayed as a column.  These custom columns can be renamed to any desired string. |
|---|---|
| Custom Field 2 | Custom data can be imported or entered into HP Web Jetadmin and displayed as a column.  These custom columns can be renamed to any desired string. |
| Custom Field 3 | Custom data can be imported or entered into HP Web Jetadmin and displayed as a column.  These custom columns can be renamed to any desired string. |
| Custom Field 4 | Custom data can be imported or entered into HP Web Jetadmin and displayed as a column.  These custom columns can be renamed to any desired string. |
| Custom Field 5 | Custom data can be imported or entered into HP Web Jetadmin and displayed as a column.  These custom columns can be renamed to any desired string. |
| Discovery Date/Time | Date and time the device was last discovered in HP Web Jetadmin |

## Paper Sizes

| |
|---|
| 16K |
| 8K |
| A3 |
| A4 |
| A4-R |
| A5 |
| A5-R |
| A6 |
| A6 Postcard |
| Any |
| Any Custom |
| B5 |
| Commercial 10 |
| Custom |
| Custom Roll |
| Executive |
| Executive-R |
| Foolscap |
| Index Card 3x5 |
| Index Card 4x6 |
| Index Card 5x8 |
| International B5 |
| International C5 |
| International C6 |
| International DL |
| Japanese Envelope #2 |
| Japanese Long Envelope #3 |
| Japanese Long Envelope #4 |
| Japanese Postcard Double |

| |
|---|
| Japanese Postcard Single |
| Japanese Postcard with Tab |
| JIS B4 |
| JIS B5 |
| JIS B5-R |
| JIS B6 |
| JIS Executive |
| Ledger |
| Legal |
| Letter |
| Letter-R |
| Monarch |
| Photo 4x6 |
| Standard US Invitation |
| Unknown |

## Page Counts per Page Size

| |
|---|
| Duplex 1 Image Count |
| Duplex Count |
| Duplex Count Color |
| Duplex Count Mono |
| Simplex Count |
| Simplex Count Color |
| Simplex Count Mono |
| Total Count |
| Total Count Color |
| Total Count Mono |