USING PROACTIVE ALERTS

with HP Web Jetadmin

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OVERVIEW

HP Web Jetadmin has the ability to send email messages, or alerts, whenever events occur on printing devices. For example, error or warning conditions on devices—such as paper out or toner low—can trigger HP Web Jetadmin to send email messages that contain detailed information pertaining to the condition, allowing the recipient to act on that condition immediately.

The advantage of alerts is that administrators can receive proactive, real-time warnings via email for events that occur on networked devices. Receiving early notification of events allows administrators to correct the problems before they impact end-user productivity, saving time for both the administrator and the end user.

Helpdesks might use alerts to proactively troubleshoot issues with devices before end users detect them. Individuals who are 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.

TRAPS, POLLING, AND EVENTS

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

- **Traps**—HP Web Jetadmin listens for real-time device traps that warn of conditions.
- **Polling**—HP Web Jetadmin periodically polls a device for status or remaining supplies levels.
- **Eventing** – HP Web Jetadmin listens for real-time web services tickets that warn of conditions.

Traps

Traps are UDP packets that devices send when a warning or error condition occurs on the printer. One advantage of traps is that they provide real-time alert messages, meaning an alert message is sent instantly after an event occurs on a printer. They also minimize network traffic because they only create network traffic as events occur on the printer.

When subscribing to events that support traps, alerts are configured on a device by adding the IP address of the machine running HP Web Jetadmin to the device's SNMP Trap Destination List in addition to a unique port number. The default port number is 27892 (rather than using the HP Jetdirect default of 162). When an event occurs on the device, it now knows exactly where to send the trap. HP Web Jetadmin checks devices that have active subscriptions every day to ensure the trap table is still populated with the HP Web Jetadmin IP address. If the IP address has been removed, HP Web Jetadmin replaces it to ensure the alerts can still trigger.

When HP Web Jetadmin receives a trap, it takes the information received in the trap and sends additional SNMP status queries to the device to gather more information. If the status condition of the printer matches any of the configured alerts for the printer, the alert is delivered to the desired notification type.

Polling

In the case of polling, SNMP status queries or remaining supplies level queries are sent to the printer at user-defined intervals. If the status condition of the printer matches any of the configured alerts for the printer or the remaining supply levels drop below the defined threshold, the alert is delivered to the desired notification type.

Events

Alerts/events from newer devices are processed using Web Services (WS) Eventing. Unlike traps that send UDP packets for every single event that occurs on the device, subscriptions to WS events on the device occur per event, minimizing network traffic. Event payloads from the device have all the necessary information for the event in the form of an XML document over HTTPS. There is no need to go back and poll the device, again saving network traffic. Subscriptions on the device never expire. Heartbeat events are periodically sent from the device to HP Web Jetadmin during periods of event inactivity to inform HP Web Jetadmin that the subscriptions are still active. Events from the device have a retry mechanism in case HP Web Jetadmin is down to provide guaranteed delivery.

ALERT SUBSCRIPTION TYPES

HP Web Jetadmin divides alerts into three subscription types: **General**, **Supplies**, and **Critical** (Figure 1). The **Supplies** type contains only alerts related to consumables that are replenished. The **General** and **Critical** alerts types contain a much wider variety of alerts, including some supplies-related events. Reasons for subscribing to alerts in one category versus another are described below.

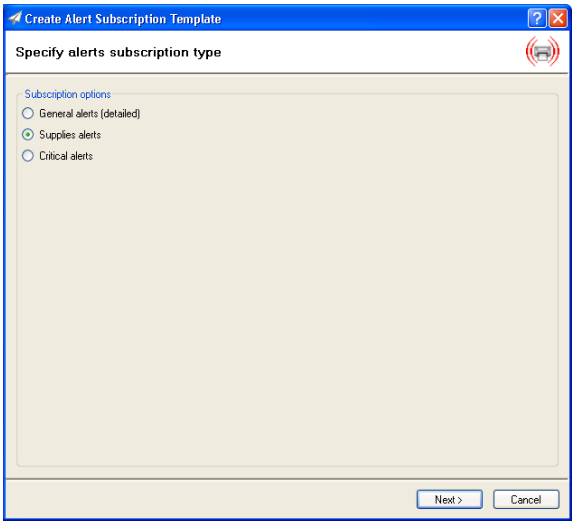


Figure 1—Alert categories

General subscription type

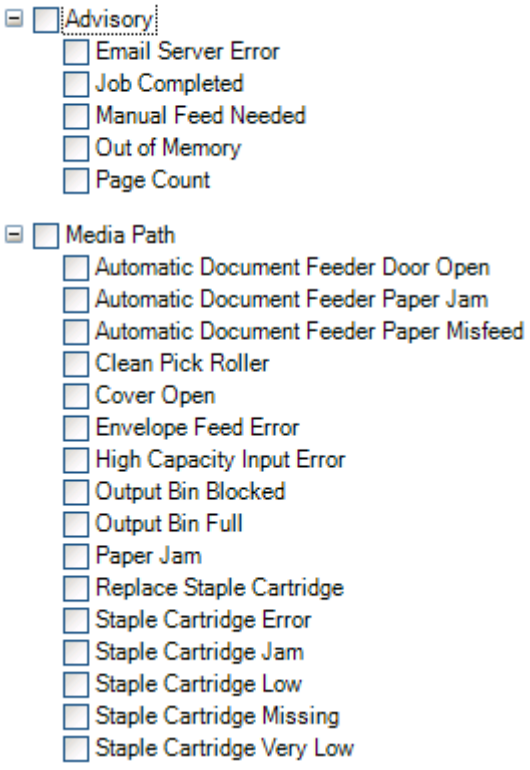
The **General** alerts type includes a wide variety of alert categories from service errors to supplies alerts. Most non-supply device events rely on traps. Polling is established when trap destinations cannot be configured, the event requires a status query because it does not generate a trap, or a supply level must be gathered to determine whether the event has occurred.

Advisory

The **Advisory** category contains events that are warnings of existing conditions that do not affect the ability of the device to print jobs. Many of the events are triggered in real time by eventing or traps. The **Page Count** event sends an alert when a user-defined page count threshold is crossed. HP Web Jetadmin polls the engine cycle count object and sends the alert when the threshold is crossed.

Media Path

The **Media Path** category contains events relating to the path the paper takes through the device. All of these events are triggered by traps or eventing when available on the device.



Service

The **Service** category contains events that have placed the device into a state where it cannot print due to a service-related incident**.** **Intervention Needed** and **Printer Error** alerts are triggered by a variety of service-related events, including most of the events found under the **Status Codes** categories. The **Printer Error** alert is triggered if the response to a status query indicates **Service Requested**. If more granularity is desired instead of all service-related events, subscribe to the **.3** alerts below.

The **Device Disconnected** event is triggered by polling the device for status because a device cannot send a trap when disconnected. If the device does not respond to the request, an alert is sent.

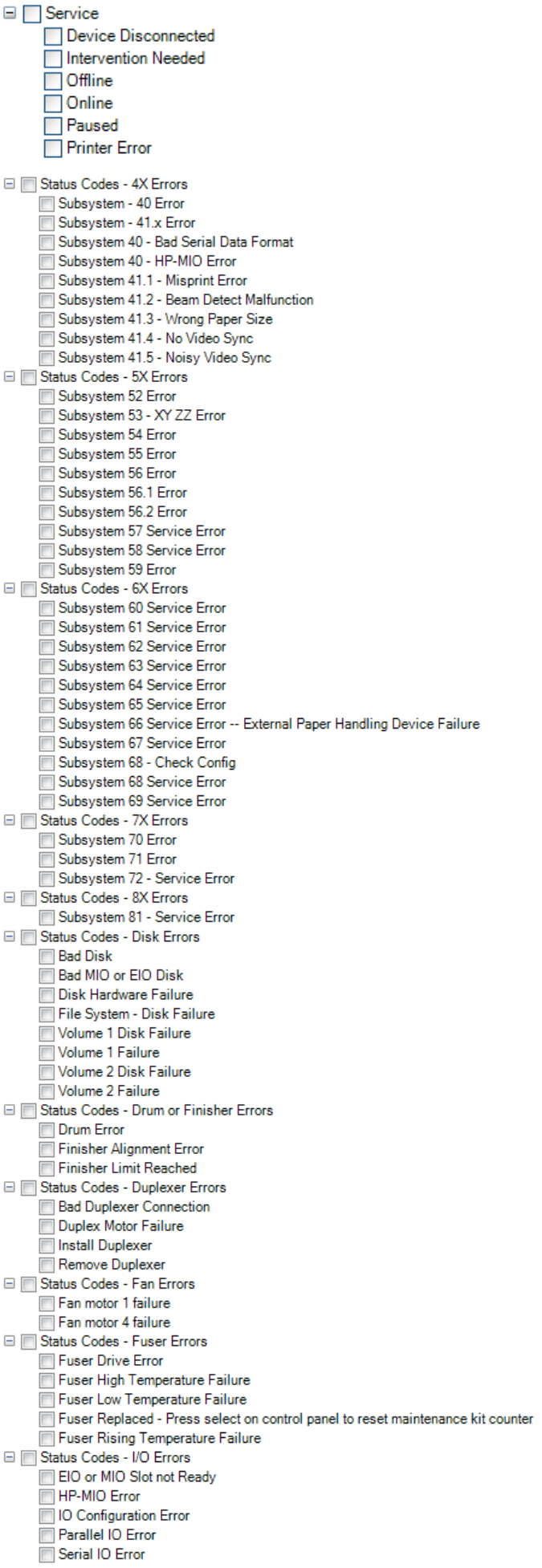
Status Codes

The following service-related alerts are available under the **Status Codes** categories and rely on traps to process. The 5-digit trap code generated for each event is matched to a trap MIB to determine the event. These events can be used instead of **Printer Error** or **Intervention Needed** if more control or granularity is needed to subscribe to specific service-related events. More information pertaining to these errors can be found in the printer User or Service manual. Categories of **Status Code** alerts include:

- Status Codes—I/O Errors
- Status Codes—Disk Errors
- Status Codes—Duplexer Errors
- Status Codes—Fuser Errors
- Status Codes—Drum Errors, Finisher Errors
- Service
- Media Path
- Status Codes—4x Errors
- Status Codes—5x Errors
- Status Codes—6x Errors
- Status Codes—7x Errors
- Status Codes—8x Errors
- Advisory
- Supplies Errors

Supplies

The **Supplies** category sends alerts when supplies run low or are out at a level defined either by the



device or by HP Web Jetadmin, not by the user. These levels cannot be changed. If different levels are desired, use alerts under the **Supplies** subscription type.

Many of the supplies alerts offer a set of three types**: Low, Very Low**, and **Replace**. One of the following techniques is used to process these three alerts, depending on the device, in order of preference:

1. If the device supports a dedicated status OID for low/very low/replace, such as consumable-current-state, it is used.
2. If no status OID is supported, HP Web Jetadmin queries the remaining level % using objects such as prtMarkerSupplies. Hardcoded threshold vales are used to send alerts for low (20%), Replace (3%), and Very Low (1%).
3. If neither technique above can be used, HP Web Jetadmin inspects the prtAlerts table for events.

Cartridge Error is a generic, non-specific supply error alert that covers errors on a multitude of supplies.

Some supplies are named differently on various devices although the functionality of the supply is similar. For example, the **Cleaning Kit** alert can represent either a cleaning kit on devices such as the HP Color LaserJet 9500/9500mfp or a toner collection unit (TCU) on devices such as the HP Color LaserJet CM3530 and CP3525. HP Web Jetadmin queries the remaining levels to obtain the percent remaining for cleaning kit, but it uses supplies status objects for the TCU. For HP FutureSmart devices that use eventing, such as the HP Color LaserJet CM4540 MFP, HP Web Jetadmin represents the TCU on the device as an alert named **Waste Collector**. Web Services eventing is used to process these alerts.

Supplies subscription type

The **Supplies** subscription type allows the user to define when a supply becomes low or out by setting a user-defined threshold. This differs from the supplies alerts under the **General** subscription type in that the user defines the level, rather than the device or HP Web Jetadmin defining the level.

Users have the flexibility to subscribe only to the desired supply events. Also, one supply can be set to one threshold value while another supply can be set to a different threshold value.

Alerts for one supply can be sent to one individual while alerts for another supply can be sent to a different individual.

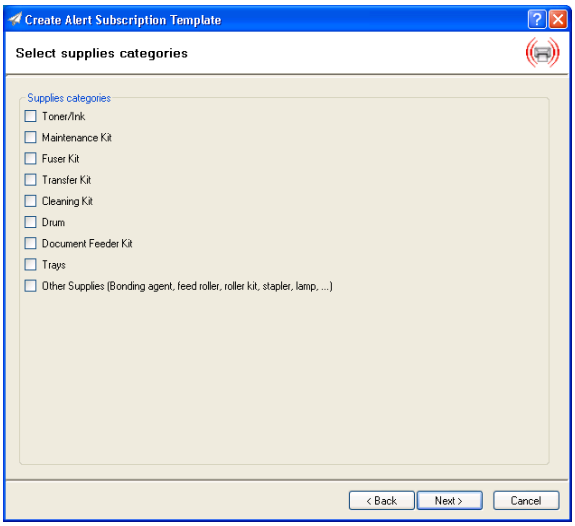


Figure 2—Supplies categories

You can set the alert threshold based on the type of supply and then set it to send an email to the person who is responsible for that type of supply. There might be different people in the organization who are responsible for replenishing supplies, and the ability to send alerts at different thresholds for those different people based on the type of supply is important.

In addition to email, the supplies threshold alerts can be forwarded to other locations, such as **SNMP Trap Generator** or **Alert History**.

Supplies categories include (Figure 2):

- **Toner/Ink**—Estimated supply levels for ink or toner
- **Maintenance Kit**—Estimated remaining life for maintenance kit supplies

- **Fuser Kit**—Estimated remaining life for fuser kit supplies
- **Transfer Kit**—Estimated remaining life for transfer kit supplies
- **Cleaning Kit**—Estimated levels for cleaning kits and toner collection units
- **Drum**—Estimated remaining life for drum or OPC supplies
- **Document Feeder Kit**—Estimated remaining life for document feeder kits
- **Trays**—Estimated paper levels in trays excluding manual feed
- **Other Supplies**—Estimated level for supplies not included in other categories (such as bonding agent, feed roller, roller kit, and stapler)

All events in the **Supplies** category are monitored by querying remaining levels through polling. The polling mechanism uses a combination of slow-polling and sliding-time intervals depending on the level of the supply being monitored.

Critical subscription type

Although the **General** and **Critical** alert types contain the same events, the **Critical** alert type polls much more frequently (every 5 minutes) to ensure accuracy for events that require polling. Caution should be exercised when subscribing to **Critical** alerts due to the volume of network traffic it generates. The polling rate can be adjusted with the maximum frequency being 5 minutes (default).

ADJUSTING POLLING RATES

The polling rates differ between the various subscription types. Because **General** and **Critical** alerts do not offer threshold alerts for remaining levels, a standard repetitive interval poller is used for events where traps are not used. **Supplies** alerts use a sliding-time interval poller (adaptive) that increases the polling the closer the device comes to the desired threshold.

General/critical alert poller

When you subscribe to alerts under the **General** or **Critical** subscription types that rely on polling instead of traps, HP Web Jetadmin performs a baseline poll (if the alert requires polling) at subscription time. From that point forward, HP Web Jetadmin polls only at the default polling rate (different for **General** and **Critical** alerts) from when the server started. The time is not indicative of when the device subscribed to the alert; rather, it is relative to the time when the server started. This is why alerts can be sent by HP Web Jetadmin for different devices at the same time, even though subscriptions were not made at the same time.

The default interval for all alerts under the **General** subscription type is 24 hours, while the default interval for all alerts under the **Critical** subscription type is 5 minutes. The user can change these values by going to **Tools** > **Options** > **Device Management** > **Device Polling** > **Alerts** (Figure 3). Rates can be configured anywhere between 1 and 168 hours for General alerts and between 5 and 360 minutes for Critical alerts.

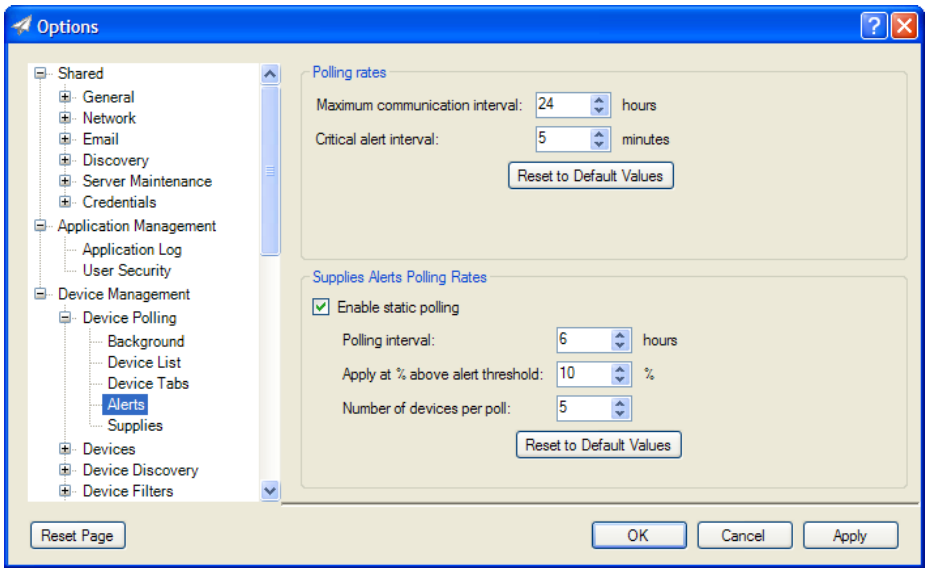


Figure 3—Configuring polling rates for alerts

Supplies alerts adaptive poller

For user-defined supplies alerts under the **Supplies** subscription type, an alert is generated when a device crosses the user-defined supply level threshold. With these alerts, an adaptive polling rate mechanism assists in optimizing the amount of traffic that is generated in gathering the data required to calculate the remaining levels for supplies. When subscribing to **Supplies** alerts, HP Web Jetadmin performs a baseline poll at subscription time, launches a second poll after 24 hours, continues to calculate the rate of use from that point forward to predict when the supply will cross the selected threshold, and adjusts the polling rate accordingly based on the calculated usage rate over time. Devices are placed into a polling rate (such as 1, 2, 6, 12, 24, 72, or 168 hour poll rates) that is continually adjusted depending on the supply's calculated usage rate. Because each supply on each device can be consumed at a different rate, they can all be polled at different times as well. This means that the same device can be in multiple pollers. The supplies pollers are unaffected by the polling queue times used for general/critical alerts. They are also unaffected by the background poller that HP Web Jetadmin uses to populate device columns for remaining levels.

To determine the remaining supply levels, HP Web Jetadmin must examine the entire prtMarkerSupplies table to determine the percent remaining for all supplies. Therefore, HP Web Jetadmin uses 1 hour as the fastest polling interval for scalability concerns. The reason for allowing a user to select a threshold on which an alert is triggered is to provide a mechanism whereby the user can select a percent remaining such that HP Web Jetadmin can detect when the device needs replenishment *before* the supply runs out. Selecting a proper threshold to allow for sufficient time to replace the supply is critical.

The adaptive poller calculates an average rate of use for each subscription, compares it to how far away the current remaining level is to the subscribed threshold, and places the subscription into one of the adaptive polling schedules. Problems can arise when a device is slowly consuming toner and suddenly drops a large percentage in a day. While a drastic drop in toner level is rare, it is quite possible that HP Web Jetadmin would have the subscription in the maximum poller set to once a week because it had no reason to believe the subscribed threshold would be met any time soon, and the sudden drop could cross the subscribed threshold while HP Web Jetadmin is not due to poll for several days. In that scenario, the alert would be missed or not sent for several days. If this particular condition happens in a customer environment, a configuration file can be edited to more or less convert the adaptive poller into a static poller to ensure that events are not missed.

Cases might arise where a consumable drops a drastic percentage in a very short time period. If HP Web Jetadmin placed the consumable in the weekly poller believing the supply will not reach the desired threshold for quite some time, it is possible that the alert might be missed completely before the consumable runs out. To minimize the possibility of such cases, supplies threshold alerts can be instructed to abort the adaptive poller and use a user-defined static poller at some percentage above the desired frequency (Figure 3).

NAVIGATING ALERTS FEATURES

A variety of controls exist to configure alerts and to view alerts information.

Alerts in the navigation tree

The **Alerts Management** summary page contains a few task modules used to interact with alerts features (Figure 4).

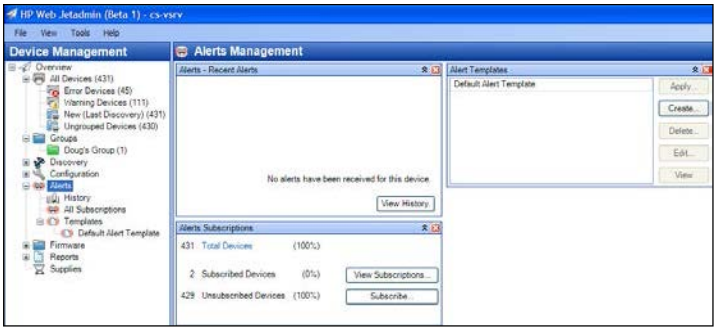


Figure 4—Alerts workspace

- **Recent Alerts** provides a view of the last X alerts.
- **Alerts Subscriptions** shows the number of devices configured for alerts as well as a total number of devices. This also provides controls to launch the **View Alert Subscriptions** and **Create Alert Subscription** wizards.
- **Alerts Templates** shows existing templates as well as **Apply**, **Create**, **Delete**, **Edit**, and **View** controls.

Note Task modules are mini-control windows within the application that help users quickly gather information about and act on device features.

Alerts tab

All Devices, filtered lists, and groups contain the **Alerts** tab (Figure 5). This tab can be invoked with any single device or multiple device list selection. Within the tabbed area, an alerts-specific listing can be grouped in one of the following ways:

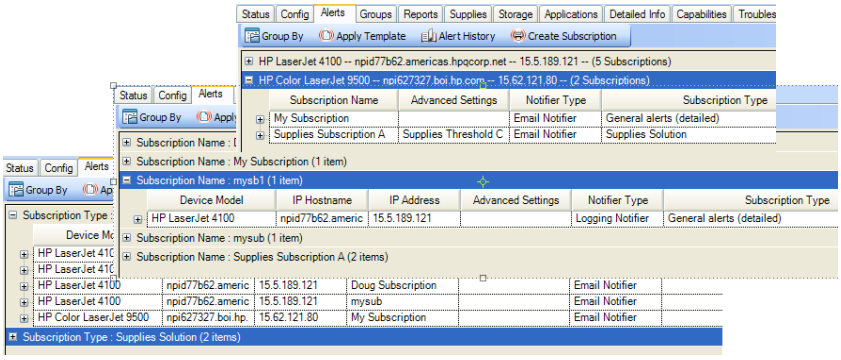


Figure 5—Alerts tab area (Group by)

- **Device**: Displays devices that can be individually expanded to show each applied subscription and corresponding alerts detail.
- **Subscription**: Displays subscriptions by name that can be individually expanded to show devices to which the subscription has been applied.

- **Solution Type**: Displays one or any of the three types of alerts that have been configured. These can be expanded to show individual subscriptions and devices to which the subscription has been applied.

The **Alerts** tab also contains toolbar items (such as **Apply Template**, **Alert History**, and **Create Subscription**) that can be activated on any device list selection.

SUBSCRIPTIONS

Users can subscribe to HP Web Jetadmin alerts to receive event information as events occur on devices. A device can have more than one subscription applied to it. Subscriptions can also be applied to **Alerts templates**.

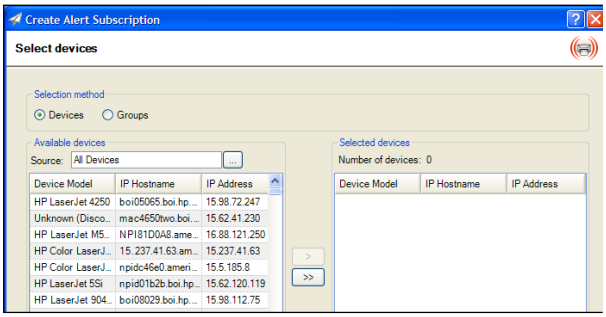


Figure 6—Select devices pane

Subscribe to alerts

The **Create Alert Subscription** wizard can be activated for list selections of one or more devices or it can be activated without list selection (Figure 6). In the latter case, it displays the **All Devices** list or device groups (when selected).

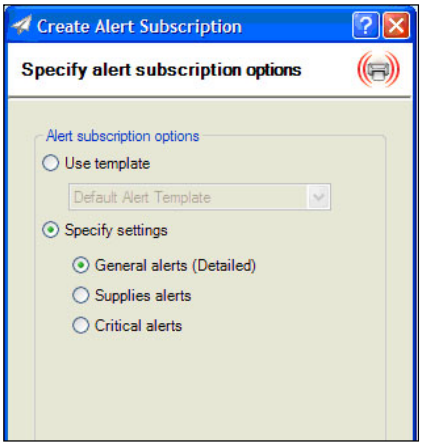


Figure 7—Alerts subscription options

Specify alert subscription options allows users to choose either an existing template or one of the subscription types: **General**, **Supplies**, or **Critical** (Figure 7). After the user specifies either a template or an alerts type, the user is asked to specify the notification type (not shown) where **Email notification** or **Logging-only** can be chosen. In all cases, alerts are logged and can be viewed through **Alerts History**.

If the user specifies **Email notification**, the **Specify notification settings** window appears (Figure 8). Users can specify email recipients as well as the format of the email notification. The formats include **Custom**, **Verbose**, and **Concise**, which can also be previewed in this portion of the wizard.

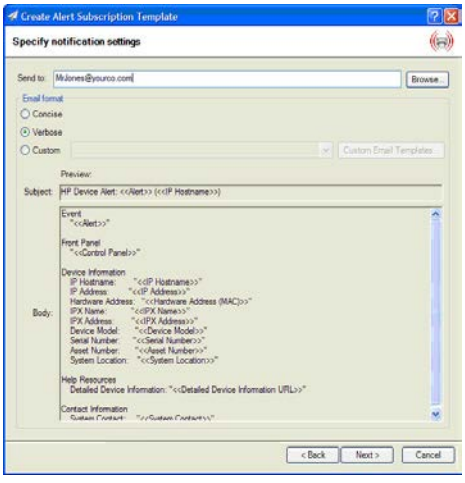


Figure 8—Specify notification settings

Select alerts appears when one of the three alerts types was chosen rather than a preconfigured template on the **Specify alert subscription options** (Figure 7). This displays alerts specific to the alerts type chosen (such as supplies alerts). The user can select any combination of available alert events. In the case of supplies alerts, supply threshold settings are made available. For more information, see “Supplies alerts adaptive poller” on page 8.

Select alert threshold appears when using **Supplies alerts** (Figure 9). Supplies alerts trigger when a supply reaches the specified threshold. These alert trigger only once and begin to monitor again only when a replenish event is detected. A replenish event is triggered when the supply changes positively by more than 30 percent.

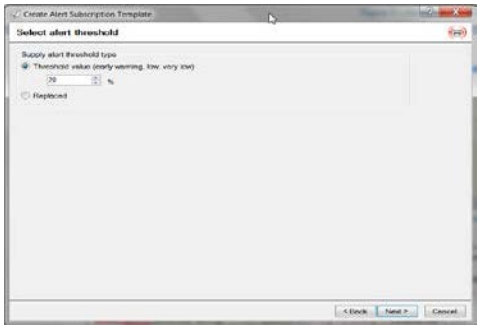


Figure 9—Select alert threshold

Specify advanced settings always appears following the setting of **General Alerts** (Figure 10). This window contains settings that might apply to any one of the subscription alert events chosen thus far. **Count threshold** appears when the **Page Count (Advisory)** alert is selected during **Select alerts**. This polling alert is triggered when the device passes the threshold the user specified. The alert provides a way to notify a recipient when a device's page count has reached or exceeded a specified value.

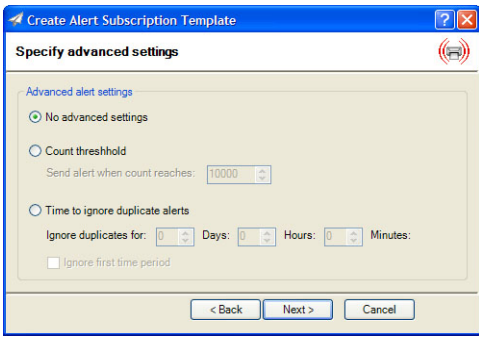


Figure 10—Advanced settings

Time to ignore duplicate alerts keeps HP Web Jetadmin from processing duplicate alerts within a specified time and after the first alert has occurred. This setting is specific to the subscription being edited or created. Multiple subscriptions should be set in order to accommodate multiple times to ignore duplicates. For example, users might want to see printer error alerts as they occur and only see toner low or paper out alerts once per day.

With **Ignore first time period**, HP Web Jetadmin does not process alerts the first time they occur during the time specified under **Time to ignore duplicate alerts**. If the condition persists, an alert for the event is processed during the second time period.

Finally, a confirmation screen appears allowing the user to review all alerts settings. After the user clicks **Next**, HP Web Jetadmin finalizes the alert subscription, which might include device trap table configuration.

Note HP Web Jetadmin configures the alerts using different techniques, such as SNMPv1\v2c trap tables, SNMPv3 trap tables, Web Services, or polling. HP Web Jetadmin automatically selects the appropriate technique based on the selected feature and the current communication with the device, such as SNMPv1\v2c or SNMPv3.

Note For alerts that use traps, it might be either via SNMPv1\v2c trap tables or SNMPv3 trap tables. This is decided on the basis of the current SNMP communication with the device.

If an HP FutureSmart device has SNMPv3 communication enabled, precedence would be given to support trap via SNMPv3 traps rather than SNMPv1\v2c traps. In such a case, SNMPv1\v2c trap tables would be removed if they exist. This is done to avoid multiple alerts, such as SNMPv1\v2c trap alerts and SNMPv3 trap alerts being processed for the same root cause.

If a non-HP FutureSmart device has SNMPv3 communication enabled, HP Web Jetadmin make the setting in the SNMPv1 trap destination table of the device instead of SNMPv3 even if SNMPv1 is disabled.

When the device sends out the SNMPv1 alert, HP Web Jetadmin processes the SNMPv1 alert.

SNMPv1/v2c Trap table full condition

If you choose alerts that are normally triggered by device traps, HP Web Jetadmin configures a trap table entry on the device. When HP Web Jetadmin is using SNMPv2, the trap table entry includes the IP address of the HP Web Jetadmin installation host and the port where the application listens for traps. In some cases, a trap table full condition might be encountered. When this occurs, the **Edit Trap Table Settings** tool appears (Figure 11). This tool enables the user to resolve the trap table full condition through one of the following measures:

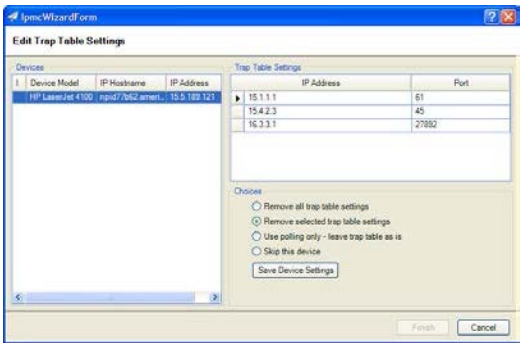


Figure 11—Edit Trap Table Settings

- Remove all trap table entries (configures the current entry for alerts processing)
- Remove the entry selected and replace with a new one (configures the current entry for alerts processing)
- Use polling only (uses list polling)
- Skip this device (device is not configured for alerts)

SNMPv3 trap table is already registered with another client

If you choose alerts that are normally triggered by device traps and if HP Web Jetadmin uses SNMPv3 to communicate with the device, HP Web Jetadmin tries to register the HP Web Jetadmin server on the device. When another client with the same SNMPv3 username has already been registered, the registration fails (Figure 12).

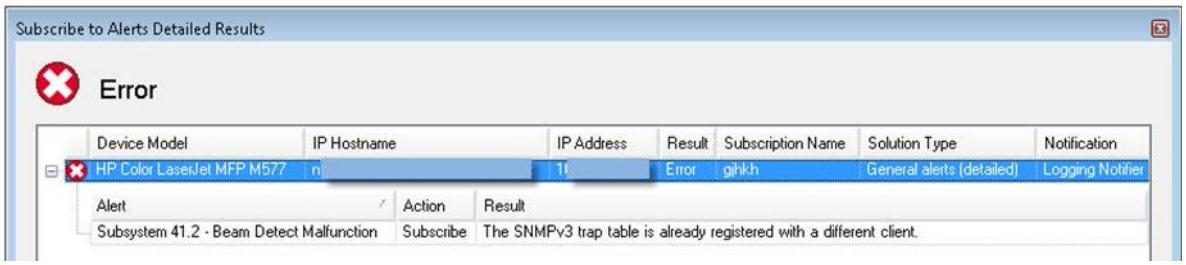


Figure 12—All Subscriptions

If another HP Web Jetadmin server created the existing registration, log on to the other HP Web Jetadmin instance, and then remove the configured alert.

Find the registered client with an SNMPv3 browser

You can use SNMPv3 tools to investigate which client has been registered.

1. First load the SNMP-TARGET-MIB (RFC3413) in the SNMPv3 MIB tool. For an example, go to http://www.net-snmp.org/docs/mibs.
2. Configure the SNMPv3 tool with the remaining SNMPv3 settings (username, password, context, authentication protocol, and privacy protocol).

3. Perform an snmpwalk on snmpTargetAddrTable 1.3.6.1.6.3.12.1.2 (Figure 13).

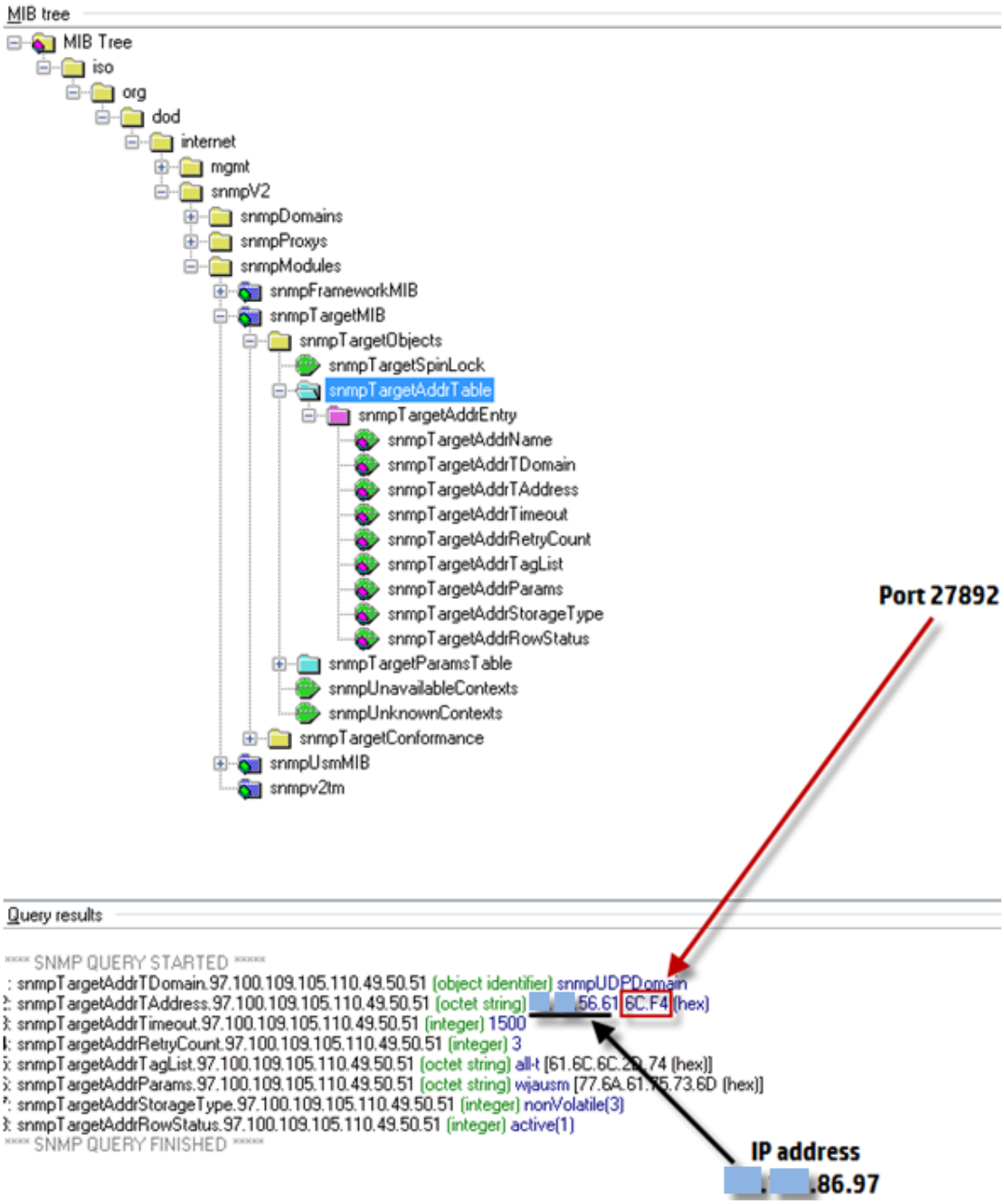


Figure 13—SNMP walk on snmpTargetAddrTable

This provides the IP address and port number of the registered client in hex.

4. Remove the registration by using the SNMPv3 tool or the client software that created the initial registration.

Single vs. multiple device subscriptions

Alerts can be configured for one device or for many devices, and applied with **Alerts Templates** or through **Groups Policies**. The alerts that are configurable on each device vary by model, features, and accessories. Depending on the device selection method, the **Select Alerts** list is populated based on the device model and installed accessories.

Edit and view alerts subscriptions

After alerts subscriptions are established, they can be viewed or changed. View existing subscriptions either in the **Alerts** tab tool in any device list or by navigating to **Alerts** > **All Subscriptions** (Figure 14).

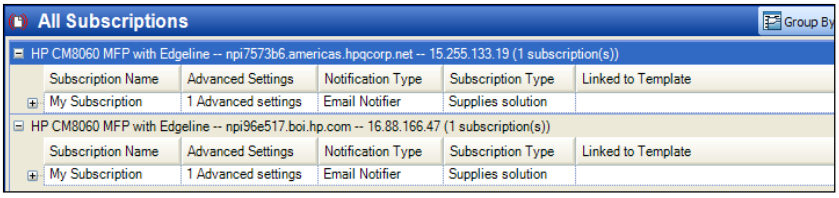


Figure 14—All Subscriptions

Right-click to start one of the following wizards:

- **Edit Subscription** wizard: Similar to the **Create Subscription** wizard, the **Edit Subscription** wizard allows changes to existing **Notification Settings**, **Email recipients** and formats, **Available Alerts** selections, **Advanced Settings**, and the **Subscription Name**. This wizard only modifies the subscription because it pertains to the device selection and requires that the **Subscription Name** be changed.
- **Unsubscribe** wizard: Launches a **Delete Alerts Subscription** > **Confirmation** dialogue. After **Next** is clicked, subscriptions are deleted based on either the subscription or device selection.

ALERTS TEMPLATES

Alerts Templates, like other HP Web Jetadmin templates, store settings to be reused. A default **Alerts Template** is preconfigured when HP Web Jetadmin is installed and contains a combination of the **Supplies**, **Service**, and **Media Path** categorizes of **General Alert** events.

Create and edit alerts templates

The **Create Alerts Template** tool is very similar to **Create Alerts Subscription**. When creating an alert template, the user configures the following:

- Subscription type: **General**, **Supplies**, or **Critical**
- Available alerts: Shows all available alerts based on the subscription type
- Advanced Settings (when selected): **Ignore duplicates for** and **Ignore first time period**, settings as they apply to selected Alerts
- Notification type: **Logging-only** or **Email**
- Email notification settings (when selected): **Send to** recipients and **Email format**
- Template name

You can change template settings for any subscription linked to a template from the **Edit Subscription Template**. **Apply**, **View**, and **Delete** controls help manage **Alerts Templates**, and are available from **Alerts** > **Templates** in the **Device Management** navigation tree (Figure 15).

Figure 15—Alerts Templates

Apply alerts templates

You can start the **Apply Alerts Templates** wizard in a variety of ways from any device list, including right-click and drag-and-drop. The apply-template action applies the stored alerts settings to selected devices. The **Apply Subscription Template** wizard requires linking the subscription to the template.

Linked vs. unlinked subscriptions

Alerts templates can be applied in the following ways (Figure 16):

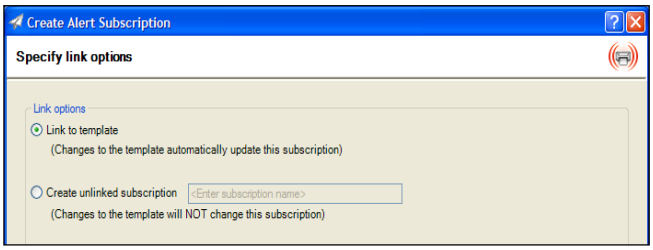


Figure 16—Linked/unlinked settings

- **Link to template**: Causes the subscription settings to change any time the template settings are changed. You can edit device subscription by editing templates.
- **Create unlinked subscription**: Applies the template settings as a new subscription without linking that subscription to the original template.

Alerts templates in groups policies

Groups Policy is a powerful automation tool that saves users a great deal of time configuring device and HP Web Jetadmin settings. Both **Automatic** and **Manual** group types can have the **Group Policy** property. One policy that can be added to any device group's properties is **Alerts**. Both **Subscribe** and **Unsubscribe** using **Alerts Templates** can be applied to devices in the group either as they are populated into group membership or as they are removed from group membership. In this way, devices can have specific alerts applied or removed without impacting other alerts settings.

USE ALERTS HISTORY

Alerts history can be viewed in a few different ways. Device-specific alerts history can be viewed through **Alerts History** on the **Alerts** tab in any device list and for any device list selection. The global alerts history can be viewed through **Alerts** > **History** in the **Device Management** navigation tree. Both of these listings can be grouped by device or by alert using the **Group by** tool. Figure 17 shows the alert history for two devices.

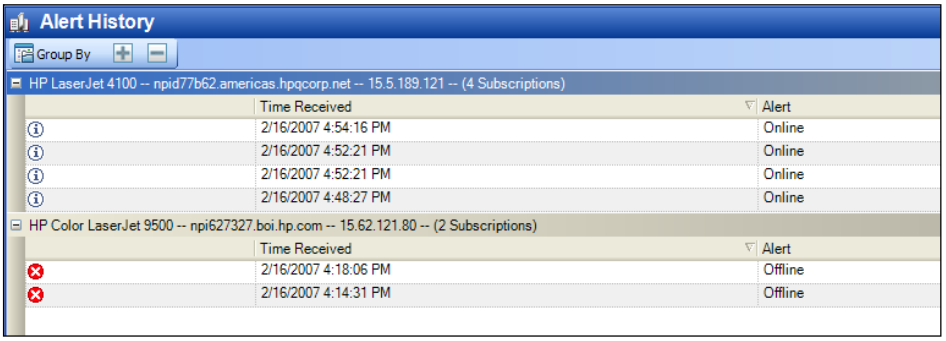


Figure 17—Alert History

Alerts History retention settings can be adjusted through **Tools** > **Options** > **Shared** > **Server Maintenance** > **Alerts**. The retention time has a default setting of 30 days and can be set as high as 365 days. Alerts history can be cleared by clicking the **Clear History** button.

ALERTS EMAIL NOTIFICATION

A primary method for sending alerts details is through email. You must first apply SMTP settings to HP Web Jetadmin before email can be processed.

Global email settings

To assign SMTP settings, navigate to **Tools** > **Options** > **Shared** > **Email** > **SMTP**. You can select settings for the following options:

- SMTP server settings, hostname, or IP address and port of mail server gateway.
- SMTP user settings, optional user credentials used when SMTP authentication exists.
- Default from address, exists in each email message sent by the application (the default is wja@hp.com).

Also available in **Tools** > **Options** > **Shared** > **Email** is a global email address management feature (Figure 18). This allows user detail to be added or removed. Any user email address used in **Alerts** or other features is stored here.

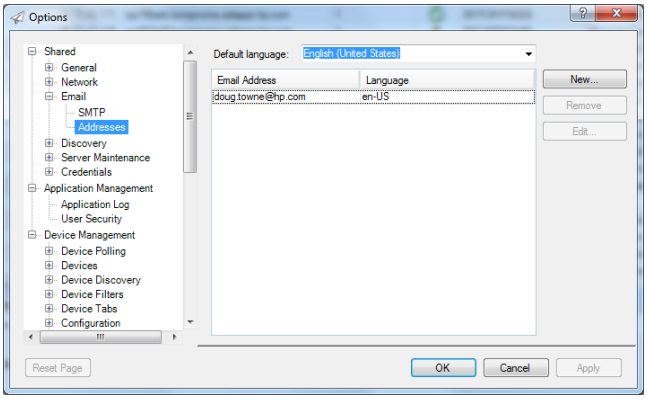


Figure 18—Email address management

Alerts message format

HP Web Jetadmin alerts can be sent in one of the following formats: **Verbose** (Figure 19), **Concise** (Figure 20), and **Custom**.

```
Event
      "Offline"

Front Panel
      "READY"

Device Information
      IP Hostname:              "npid77b62.americas.hpqcorp.net"
      IP Address:               "15.5.189.121"
      Hardware Address:               "0030C1D77B62"
      IPX Name:                 "NPID77B62"
      IPX Address:              "IpxAddress"
      Device Model:             "HP LaserJet 410.00"
      Serial Number:        "USBDC00600"
      Asset Number:         ""
      Location:                       ""

Help Resources
      Detailed Device Information "http://cs-
vsrv:8000/device/HP.Imaging.Wjp.Moabdevice.Client.DeviceID,355a5206-4ed8-43e5-b0bd-
88b340474e86;0cca69d3-163b-45c8-b10.08-2252c95a5ba5"
```

Figure 19—Verbose email format

```
Event
      "Offline"

Front Panel
      "OFFLINE"

Device Name
      "npid77b62.americas.hpqcorp.net"

Help Resources
      Detailed Device Information "http://cs-
vsrv:8000/device/HP.Imaging.Wjp.Moabdevice.Client.DeviceID,355a5206-4ed8-43e5-b0bd-
88b340474e86;0cca69d3-163b-45c8-b10.08-2252c95a5ba5"
```

Figure 20—Concise email format

Custom email template

During any **Create Alerts Subscription** or **Create Alerts Template** wizard, **Edit Custom Email Template** can be invoked (Figure 21). Custom email templates can also be managed in **Tools** > **Options** > **Device Management** > **Alerts** > **Email Templates**. Any column item can be inserted with any customer characters. **Alert** is one of the HP Web Jetadmin fields that can be inserted.

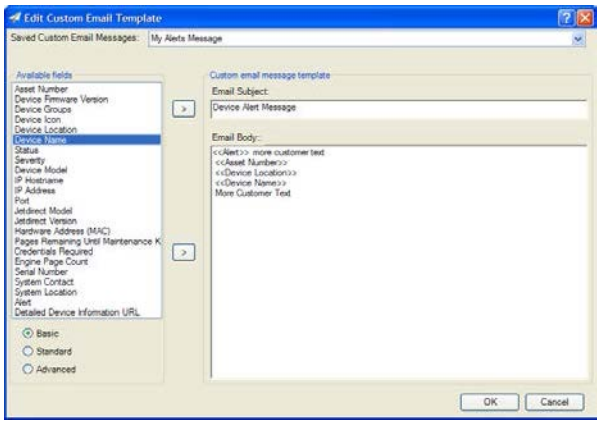


Figure 21—Custom email formatting

SNMP TRAP GENERATOR

In addition to email, alerts can also be sent in the form of Simple Network Management Protocol (SNMP) traps through the HP SNMP Trap Generator. This alert-forwarding module provides device-event conveyance through a fully customizable SNMP trap.

An SNMP trap is typically defined as an industry-standard notification event issued from a device to the network management station when a significant event (but not necessarily an outage, fault, or security violation) occurs. The trap produces one-way SNMP communication, which can significantly reduce the need for random status polling of the device and conserve network bandwidth.

A printer-produced SNMP trap is a simple event notification mechanism, and does not always provide the information needed to determine the most appropriate or efficient course of action. When HP Web Jetadmin receives a trap from a printer, it launches an SNMP information request process that is designed to gather additional device information and serve as the content for a more comprehensive HP Web Jetadmin generated alert. With the HP Web Jetadmin SNMP Trap Generator, this alert can be forwarded as an SNMPv1\v2c trap or as an SNMPv3 inform when using HP Web Jetadmin 10.4 or later.

Note SNMPv3 supports two types of notifications—traps and informs. Traps are identical to SNMPv2 traps and are unacknowledged notifications that agents send to managers. Informs are acknowledged notifications. An agent sends an inform notification and waits for an acknowledgment. If the agent does not receive an acknowledgment within the configured SNMPv3 timeout, it re-sends the inform notification until a reply is received or the maximum retry value is reached. The SNMPv3 timeout can be changed in the HP.Imaging.Wjp.Communication.Protocol.Snmp.ISnmp.config.xml file. This file is available in the following directory:

C:\Windows\ServiceProfiles\NetworkService\AppData\Local\HP Inc\HPWebJetadmin\WjaService\config

After changing the value in the file, the HP Web Jetadmin service must be restarted.

This solution provides integration with Enterprise System Management (ESM) applications such as HP OpenView Operations, HP OpenView Network Node Manager, HP System Insight Manager, CA Unicenter, IBM Tivoli, Cisco Information Center, or any SNMP-management station capable of receiving SNMPv1\v2 traps and SNMPv3 informs for purposes of notification and processing.

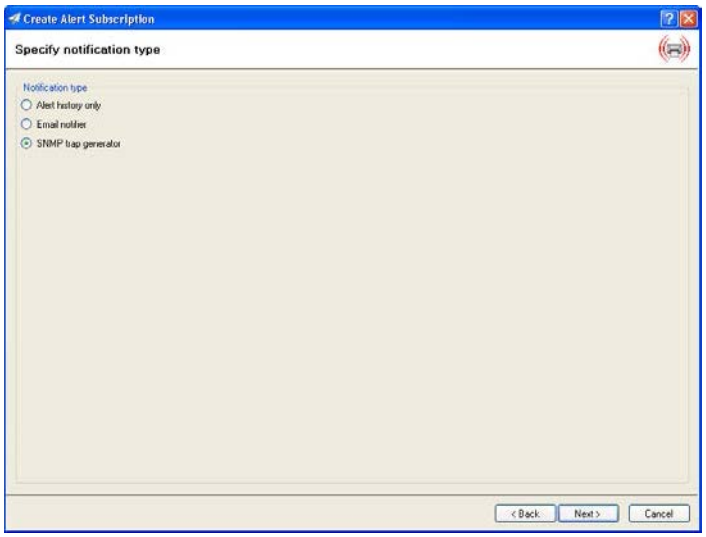


Figure 22—Selecting SNMP Trap Generator

Helpdesk ticketing systems, such as Remedy and Peregrine, might also benefit from directly receiving printer alert content in the form of SNMPv1\v2 trap or SNMPv3 inform to generate helpdesk tickets. The content of the traps that HP Web Jetadmin sends can be customized to include only the desired components to be fed to the appropriate destination.

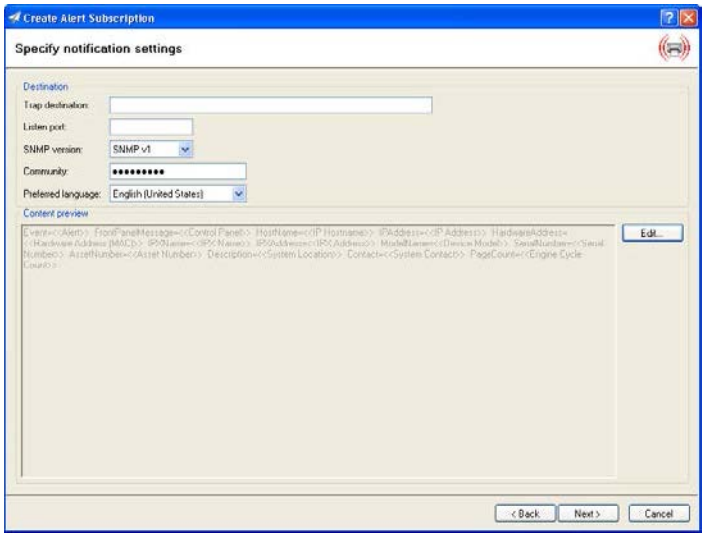


Figure 23—Configuring trap properties

When imaging and printing devices send traps, the content describing the event is typically a 5-digit code or an SNMP OID, and the frequency cannot be controlled. A device sends traps every time an event occurs. The advantage of using HP Web Jetadmin to act as the proxy for these traps is that events can be filtered to forward only the desired events at the desired frequency and with much more detailed content than a regular printer trap.

Traps can be selected as an output mechanism when subscribing to alerts (Figure 22) or by selecting **Tools** > **Options** > **Device Management** > **Alerts** > **SNMP Trap Generator**. The properties of the traps can be defined by clicking **Edit** (Figure 23). **Trap destination** includes entries to receive traps. **Listen port** dictates

which port is used when sending the trap. **SNMP version** configures SNMPv1 or SNMPv2 traps or SNMPv3 informs. **Community** configures the community name for the SNMPv1\v3 trap.

To edit the contents of the trap, click **Edit** (Figure 24). Select the items to include in the trap and drag them to the body.

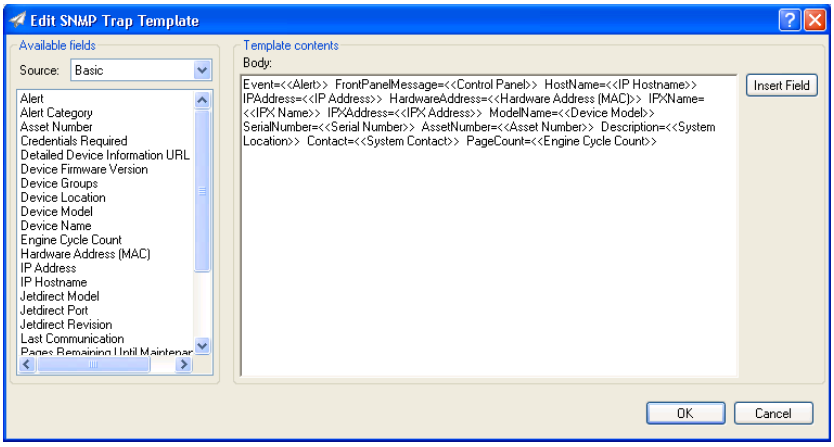


Figure 24—Editing trap content

```
▷ Frame 3834 (444 bytes on wire, 444 bytes captured)
▷ Ethernet II, Src: d8:d3:85:82:50:1c, Dst: 00:00:5e:00:01:01
▷ Internet Protocol, Src Addr: 16.88.169.202 (16.88.169.202), Dst Addr: 16.88.130.219 (16.88.130.219)
▷ User Datagram Protocol, Src Port: 4096 (4096), Dst Port: snmptrap (162)
▽ Simple Network Management Protocol
    Version: 1 (0)
    Community:
    PDU type: TRAP-V1 (4)
    Enterprise: 1.3.6.1.4.1.11 (iso.3.6.1.4.1.11)
    Agent address: 16.88.169.202 (16.88.169.202)
    Trap type: ENTERPRISE SPECIFIC (6)
    Specific trap type: 0
    Timestamp: 36234
    Object identifier 1: 1.3.6.1.4.1.11.2.47.1.1.0 (iso.3.6.1.4.1.11.2.47.1.1.0)
    Value: STRING: "Event=Cyan Cartridge Supply Threshold  FrontPanelMessage=Sleep mode on  HostName=npi7f20e8.a
```

SNMPv1 Trap Sample

```
▷ Frame 3282 (476 bytes on wire, 476 bytes captured)
▷ Ethernet II, Src: d8:d3:85:82:50:1c, Dst: 00:00:5e:00:01:01
▷ Internet Protocol, Src Addr: 16.88.169.202 (16.88.169.202), Dst Addr: 16.88.130.219 (16.88.130.219)
▷ User Datagram Protocol, Src Port: 4178 (4178), Dst Port: snmptrap (162)
▽ Simple Network Management Protocol
    Version: 2C (1)
    Community:
    PDU type: TRAP-V2 (7)
    Request Id: 0x3d25af4a
    Error Status: NO ERROR (0)
    Error Index: 0
    Object identifier 1: 1.3.6.1.2.1.1.3.0 (iso.3.6.1.2.1.1.3.0)
    Value: Timeticks: (13005) 0:02:10.05
    Object identifier 2: 1.3.6.1.6.3.1.1.4.1.0 (iso.3.6.1.6.3.1.1.4.1.0)
    Value: OID: iso.3.6.1.4.1.11.2.47.1.1.0
    Object identifier 3: 1.3.6.1.4.1.11.2.47.1.1.0 (iso.3.6.1.4.1.11.2.47.1.1.0)
    Value: STRING: "Event=Yellow Cartridge Supply Threshold  FrontPanelMessage=Sleep mode on  HostName=npi7f20e8
```

SNMPv1 Trap Sample

ALERT LOGGING

A log file is available to track the alert messages that HP Web Jetadmin sends. The alert log file lets you feed alerts into enterprise management systems or call-ticketing systems. The file can be parsed and fed into any of these systems with minimal effort.

The alert log is also an excellent source for troubleshooting because every alert that is processed is written to this log file. The log file can be configured during alert subscription or by selecting **Tools** > **Options** > **Device Management** > **Alerts** > **Log to File** (Figure 23). The size of the log file can be

controlled under **File Size**. The path of the log file is displayed on the screen. The contents of the log file can be defined by clicking **Edit** (Figure 25).

Simply drag desired items into the **Body** section to completely customize the data written to the log file for each event. Every event processed as an alert is logged in the log file with the desired parameters.

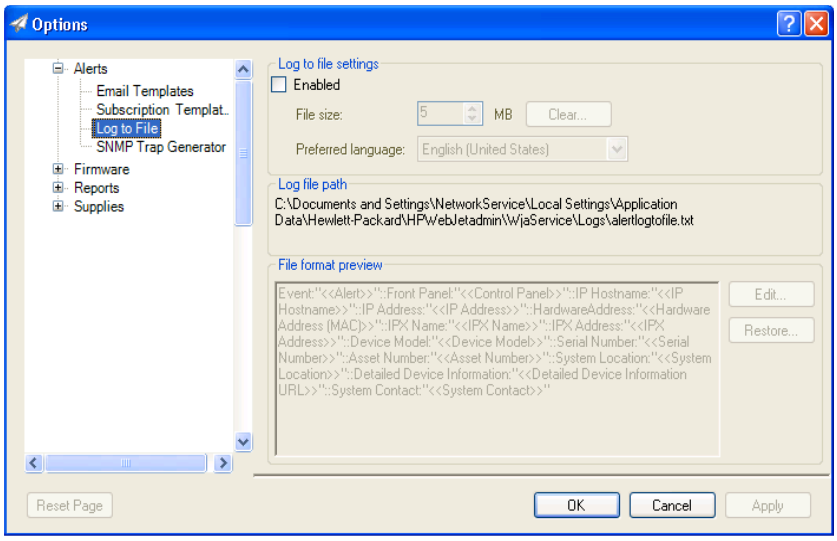


Figure 25—Enabling alert logging

USE ALERTS TO GENERATE HELPDESK TICKETS

HP Web Jetadmin provides multiple methods for the flexibility to automatically generate helpdesk tickets in products such as BMC Remedy. For example, Remedy can receive content in a number of formats for generating tickets, including SNMP traps, emails, or text files.

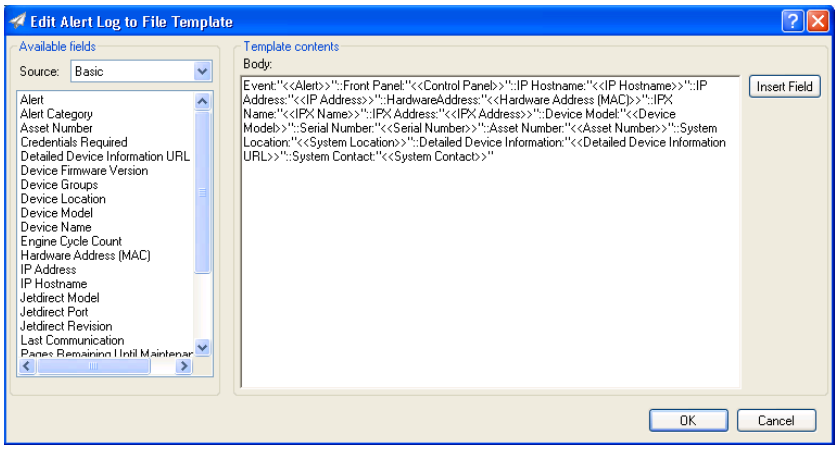


Figure 26—Editing alert log file content

HP Web Jetadmin allows for sending alerts as custom-defined SNMP traps. Remedy can be configured to look for traps containing only specific content to generate tickets and ignore traps that are not defined with this content.

It is also possible to run the optional armaild daemon on the Remedy server and open Remedy tickets via email. HP Web Jetadmin allows for customizing the content of alert emails to meet the exact specifications of the Remedy ticket.

Remedy can also be instructed to parse text files for keywords to be used to populate helpdesk tickets. Alert logging can be turned on in HP Web Jetadmin and the exact content of the logging can be custom defined to match the content expected by Remedy to generate tickets.

ADVANCED ALERTS DETAILS

Other application settings

Alerts polling rates can be adjusted by navigating to **Tools** > **Options** > **Device Management** > **Alerts** > **Polling Rate** where the following settings are available:

- **Default alert rate**: Used when no device communications exist for X hours (default is 24 hours).

- **Mission critical devices**: Used for devices with **Critical Alerts** settings. Polls every X minutes (default is 5 minutes).

TROUBLESHOOTING

If there is reason to believe that alerts are not being processed as they should be, several troubleshooting steps can be performed to help diagnose the problem. For example, if an alert is not being received at a particular email address when a device event occurs, perform the following troubleshooting steps:

1. Test whether the HP Web Jetadmin server is properly processing *any* polling type alert on *any* device. A very simple test of a polling alert is to subscribe to a **Supplies** alert where the threshold can be defined. Any printer can be tested. Simply enter a threshold for one of the toner cartridges where the threshold is greater than the current level. After the subscription is completed, an alert should be generated shortly thereafter to the desired specified address.

   -or-

   Test whether HP Web Jetadmin can properly process *any* trap type alert on *any* device. A very simple, remote test is an **Offline** alert under the **General** category. When an offline event occurs, the printer sends a trap to HP Web Jetadmin that should be processed. After the subscription is completed for the **Offline** event, an **Offline** condition can be easily generated from within HP Web Jetadmin on the status page of the device. Click the printer **Offline**. An alert should be generated shortly thereafter.
2. If neither test in step 1 generates alerts via email, there might be an issue with the HP Web Jetadmin communication to the mail server. An easy test is to remove the mail server from the equation. Subscribe to an alert and have it sent to **Alerts History** rather than email, and then navigate to **Alerts History** to see if the alert is present.
3. If polling alerts are processing properly, but trap type alerts are not, there might be an issue with the device sending traps or with HP Web Jetadmin receiving traps. Ensure that the IP address of the HP Web Jetadmin server is present in the trap destination table of the device under **Configuration** > **Network**. If it is present, check the router settings to ensure that traps are not being filtered.

SUMMARY

The alerts features in HP Web Jetadmin provide a powerful mechanism for monitoring the fleet through proactive and flexible notifications. Nearly all aspects of device status and/or trouble can be automatically conveyed to users via email, virtually in real time.

APPENDIX A—SNMPTARGETPARAMSTABLE

This appendix provides additional background information about the SNMPv3 trap tables that are configured on devices. HP Web Jetadmin and the device automatically handle the SNMPv3 trap tables.

The snmpTargetParamsTable shows the username, password, context and protocols (Figure 27).

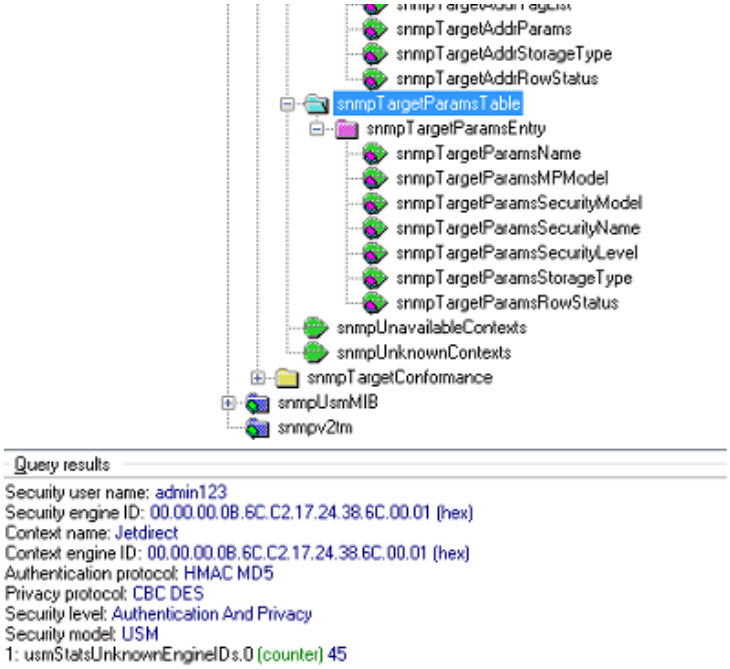


Figure 27— SNMP walk on snmpTargetParamsTable

APPENDIX B—SUPPORTED ALERT TYPES BY DEVICE MODEL

| Device | GENERAL ALERTS | | |

Device

| Device | GENERAL ALERTS | | |

| Device | GENERAL ALERTS | | |

Device

| Device | GENERAL ALERTS | | |

| Device | GENERAL ALERTS | | |