

Using Threshold Rules With Email Notifications

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SiteAudit version 2.4 introduced the capability to create alerts based on page volume (lifetime counters) or consumable thresholds. Threshold rules are used in conjunction with notification rules to alert individuals to page volume or consumable conditions defined by the user. Generated threshold alerts are shown in the SiteAudit Incident History view.

Threshold Rules Basics

The alerts generated by printers are limited and vary depending on manufacture and printer model. SiteAudit threshold rules make up for this limitation by providing the capability to generate specific alerts for various consumable and print volume conditions that are of interest to various individuals within an organization. For instance, it is possible to detect printers that are under/over-utilized or consumables that should be reordered or replaced. In the former case, a notification can be sent to an administrator to determine if printers should be replaced or removed. In the latter case, a notification can be sent to the person in charge of ordering supplies.

Threshold rules used in conjunction with notifications enable alerting applications to be more effective. There are uses in applications such as

- pre-emptive service
- toner replacement
- cost per page control
- over utilization
- click penalties
- output abuses

SiteAudit threshold types include 23 different counters (print, copy, fax, scan, duplex, color, etc.), 12 consumables (current level, description, serial number, etc.), and 3 Service Level Agreement criterion that can be monitored for various conditions. For a complete list of threshold types, refer to *Threshold Types* section at the end of this document.

How It Works

Typically, printers generate alerts that SiteAudit detects and stores and can be viewed in the Incident History View. In the case of threshold rules, alert conditions are defined by the administrator and SiteAudit generates the incident when the conditions of the rule are detected. These are also inserted into the Incident History View. SiteAudit can then send an email notification to the appropriate recipient(s) as defined in the Notification Configuration dialog. It is important to note there are three distinct processes at work when using threshold rules. There is the generation of an alert condition, the detection of an alert, and the transmission of an email notification.

Scenario

The HP Color LaserJet 4600 printer does not generate an alert when the cyan toner falls below a 2% consumable level. However, the administrator has determined that 2% is the correct threshold for ordering new toner and would like to be notified when it is time to order it.

The administrator can create a threshold rule that generates an alert when the cyan toner on any printer falls below 2%. A notification rule can be created to notify the administrator, via email, when the alert occurs. The notification rule can be designed such that an email notification is issued only when the threshold rule is true for Dell 3100cn printers. The configuration of this threshold rule is discussed in the following section.

Creating Consumable Threshold Rules

Threshold rules work by defining the condition that results in an alert being generated by SiteAudit. The alert description should accurately describe the alert. For the example described in Scenario 1, an appropriate alert description is, 'Toner level has fallen below 2%.'

- To create a threshold rule, select **Thresholds Configuration...** from the **Setup** menu.

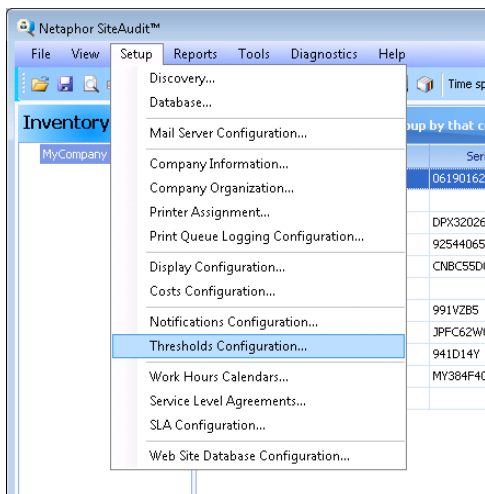


Figure 1 Setup menu options

Creating a Consumable Threshold Rule

Click the **New Threshold** button to create a new consumable threshold rule and then select **Consumables** from the **Threshold** pull down menu.

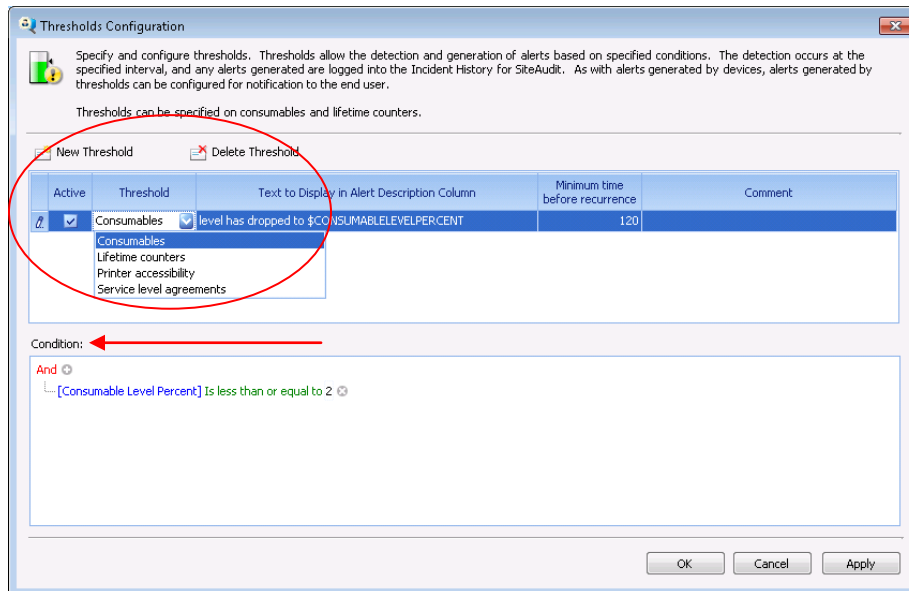


Figure 2 Example of a consumable threshold

- Alert Description

Enter the alert description in the **Text to Display in the Alert Description Column** text box. The description is displayed in the **Description** column in the Incident History view and in the alert notification sent to email recipients; therefore, the description should be precise to be most effective. For example, the alert description for the threshold rule described in Scenario 1 might be, 'Toner level has fallen below 2%.'

Keywords can be used to insert dynamic data into the alert description thereby making it more precise. The keyword, `$CONSUMABLEDESCRIPTION`, used in the alert description text is substituted for with actual consumable description when the alert is generated, i.e. *Cyan Print Cartridge HP C9721A*.

The following keywords can be used in the alert description:

- `$CONSUMABLEDESCRIPTION` The description of the consumable item
- `$CONSUMABLELEVELPERCENT` The remaining level of consumable item as %
- `$CONSUMABLECURRENTLEVEL` The remaining consumable level as pages

Example use of keyword: 'Toner level has dropped to `$CONSUMABLELEVELPERCENT`'

In this example, the keyword is replaced with the remaining amount of the consumable item as a percentage.

Specifying the Rule Condition

- 1.1.1.1.1.1 Highlight the threshold and rule and use the And / Or plus other options to create the exact set of conditions needed for the threshold rule. See *Figure 3* to see the condition created to detect when a consumable item level is less than or equal to 2%.

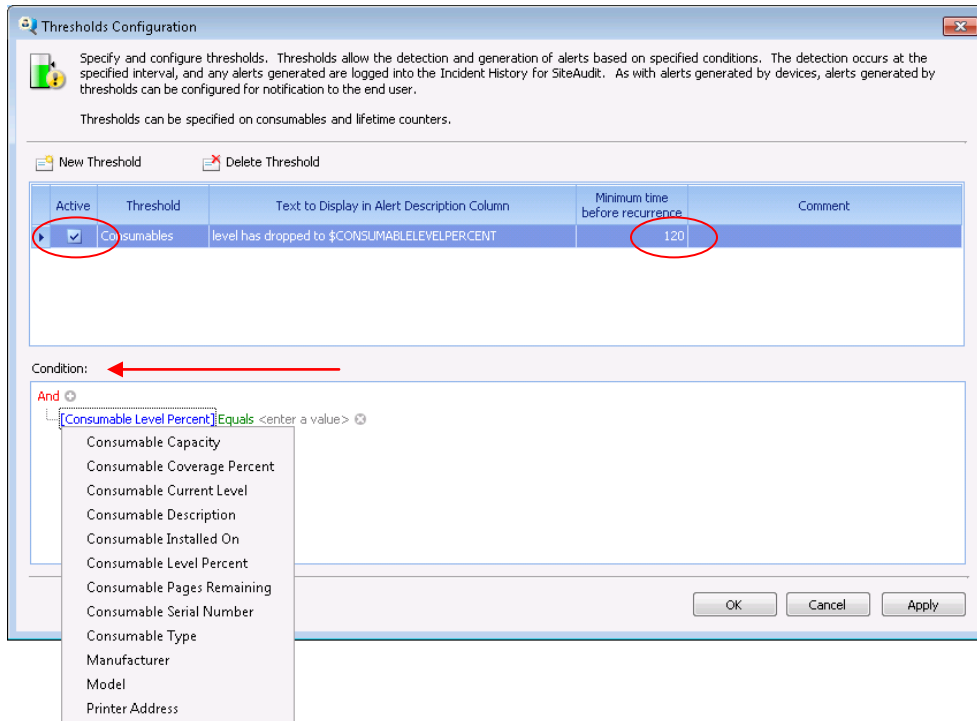


Figure 3 Example of a consumable threshold rule

Minimum Time Before Recurrence

SiteAudit periodically checks a threshold rule condition based on internal monitor settings. The first time a threshold condition is evaluated to true, an incident is entered into the Incident History View and an email notification is sent to recipients if configured to do so. The threshold is then evaluated every period specified in the **Minimum Time Before Recurrence (minutes)**. If this period is exceeded and the threshold conditions still evaluate to true, then the original alert is marked as *Resolved* in the Incident History view and a new incident is created – and a new notification will be delivered to recipients if configured to do so. This process repeats until the threshold condition is no longer true, in which case the incident is marked as *Resolved*. There should never exist a case where more than one of the same threshold incidents are *Unresolved* for a device, which is to say there should never be duplicate threshold alerts.

The default period for **Minimum Time Before Recurrence (minutes)** is 120 minutes but can be set as low as 60 minutes.

Check the **Active** box to enable the threshold. If this box is not checked, SiteAudit will ignore the rule.

Note: For information about creating email alert notifications, refer to section 'Creating a Notification'

Consumables Details

Consumable data is displayed in the Details tab for a selected printer. To display the details, select a printer in a view and choose **Printer Details...** from the View menu. The details can also be invoked by right-clicking any printer in a SiteAudit view and selecting **Details...** Consumable information for all printers is available on the Consumables View.

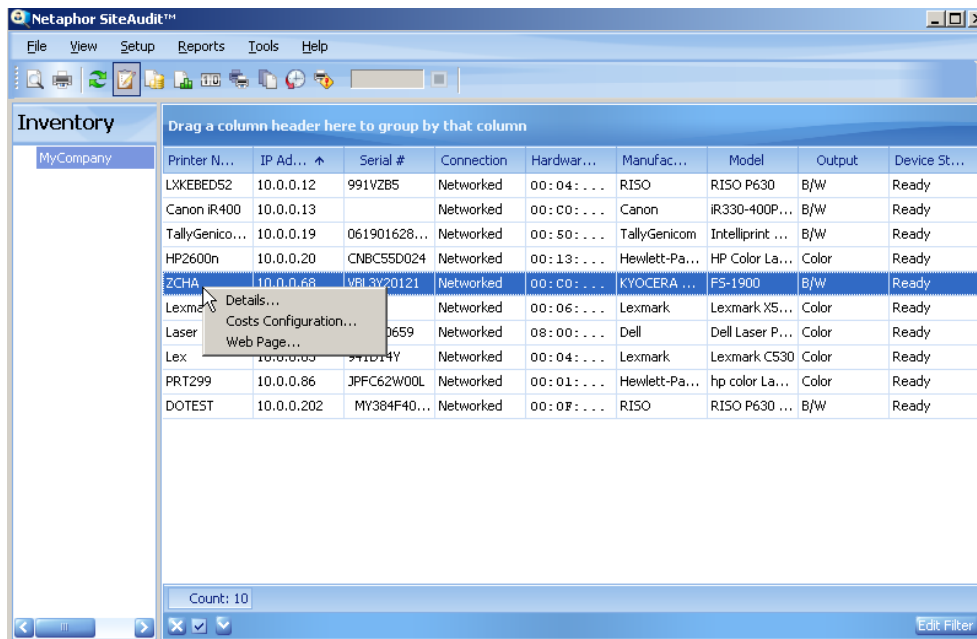


Figure 5 Invoking printer details

The consumable information is shown on the Consumables tab in *Figure 6*. Check to make sure the data needed for the condition is available. SiteAudit depends on the printer to make this data available. For example, not all printers support toner coverage, serial number, or installed date for all consumables as shown in *Figure 6*.

Details							
Identification	Counts	Consumables	Inputs	Outputs	Print Servers	Storage	Asset Information
Description	Type	Serial #	Installed	Coverage	Level		
Cyan Toner	Toner	0812328F91		2.0%	100.0%		
Magenta Toner	Toner	0812330DE1		2.0%	100.0%		
Yellow Toner	Toner	812309081		2.0%	100.0%		
Black Toner	Toner	081232BAD1		3.0%	100.0%		
Photo Drum:Cyan	Opc				89.0%		
Photo Drum:Magenta	Opc				89.0%		
Photo Drum:Yellow	Opc				89.0%		
Photo Drum:Black	Opc				89.0%		
Waste Toner Box	Waste toner				100.0%		
Fuser	Other				Some		
Transfer Belt	Other				Some		

Figure 6 Consumable details. Some column data is not supported by the device.

Creating a Lifetime Counter Threshold Rule

This section describes the creation of a lifetime counter threshold rule, which is similar to creating a consumable threshold rule. Please read the section, "Creating a Consumable Threshold Rule," before continuing.

To create a lifetime counter threshold rule, open the **Thresholds Configuration...** dialog from the **Setup** menu. Click the **New Threshold** button and select **Lifetime counters** from the **Threshold** pull down menu. See *Figure 1*. Add an alert description for the rule. Remember to be precise with the Alert Description.

Specify the condition for the rule. Lifetime Counter conditions include the following choices:

- Bw Large Paper
- Bw Pages
- Bw Pages Copied
- Bw Pages Printed
- Bw Small Paper
- Color Large Paper
- Color Pages
- Color Pages Copied
- Color Pages Printed
- Color Small Paper
- Copied Pages
- Duplex Pages
- Faxed
- Large
- Printed
- Printer Address
- Scanned
- Small
- Total
- Total Color Usage
- Total Mono Usage
- Total Print Queue
- Total Usage

Use the And / Or plus other options available with conditions to create the exact set of conditions needed for the threshold rule.

Select the frequency at which SiteAudit checks the condition of the rule: '**Minimum Time Before Reoccurrence (minutes)**'. The default is 120 minutes.

Check the **Active** box to enable the threshold.

Note: For information about creating email alert notifications, refer to section '*Creating a Notification*'

Creating a Printer Accessibility Threshold Rule

This section describes the creation of a printer accessibility threshold rule, which is similar to creating a consumable threshold rule. Please read the section, "Creating a Consumable Threshold Rule," before continuing.

To create a printer accessibility threshold rule, open the **Thresholds Configuration...** dialog from the **Setup** menu. Click the **New Threshold** button and select **Printer accessibility** from the **Threshold** pull down menu. See *Figure 1*. Add an alert description for the rule. Remember to be precise with the Alert Description.

Specify the condition for the rule. Lifetime Counter conditions include the following choices:

Manufacturer
Minutes Since Last Contact
Minutes Since Last Successful Contact
Model
Printer Address

Use the And / Or plus other options available with conditions to create the exact set of conditions needed for the threshold rule.

Select the frequency at which SiteAudit checks the condition of the rule: '**Minimum Time Before Reoccurrence (minutes)**'. The default is 120 minutes.

Check the **Active** box to enable the threshold.

Note: For information about creating email alert notifications, refer to section '*Creating a Notification*'

Scenario 2

For examples using Service Level Agreement thresholds, please reference the **SiteAudit Service Level Agreement (SLA) Tracking** document.

Creating a Service Level Agreement Threshold Rule

This section describes the creation of a Service Level Agreement Threshold rule, which is similar to creating a consumable threshold rule. Please read the section, "Creating a Consumable Threshold Rule," before continuing.

To create a Service Level Agreement threshold rule, open the **Thresholds Configuration...** dialog from the **Setup** menu. Click the **New Threshold** button and select **Service Level Agreement** from the **Threshold** pull down menu. See *Figure 1*. Add an alert description for the rule. Remember to be precise with the Alert Description.

Specify the condition for the rule. Lifetime Counter conditions include the following choices:

Agreement Name
Printer Address
Up Time

Use the And / Or plus other options available with conditions to create the exact set of conditions needed for the threshold rule.

Select the frequency at which SiteAudit checks the condition of the rule: '**Minimum Time Before Reoccurrence (minutes)**'. The default is 120 minutes.

Check the **Active** box to enable the threshold.

Note: For information about creating email alert notifications, refer to section '*Creating a Notification*'

Creating an Email Notification for a Threshold Rule

SiteAudit notification is rules-based and uses conditions to define rules. Creating a notification for a threshold rule is similar to creating other notifications except that the **AlertDescription** condition must be used to identify a threshold rule. This is clarified in the following examples. Refer to the **Rules-Based Incident Notification Overview** knowledgebase article

To create or edit a notification rule open the notification configuration dialog by selecting *Setup* → *Notification Configuration...* See *Figures 7 and 8*.

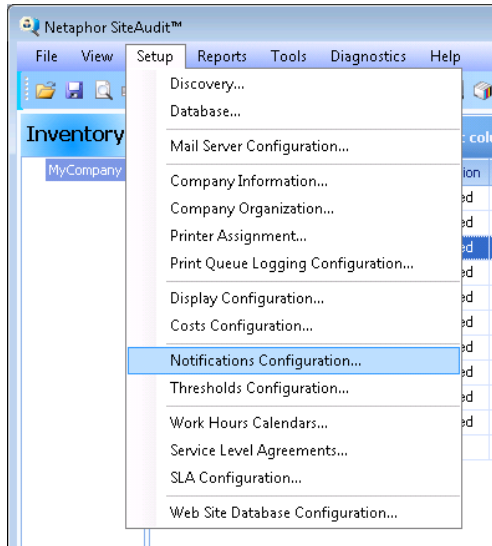


Figure 7 Open the Notification Configuration dialog

The following steps will create the rule highlighted in *Figure 8*.

- Click the **New Rule** button to create a new notification rule
- Enter a name for the rule such as, 'Dell 3100cn Toner Replacement'
- Check the **Active** box to enable the notification

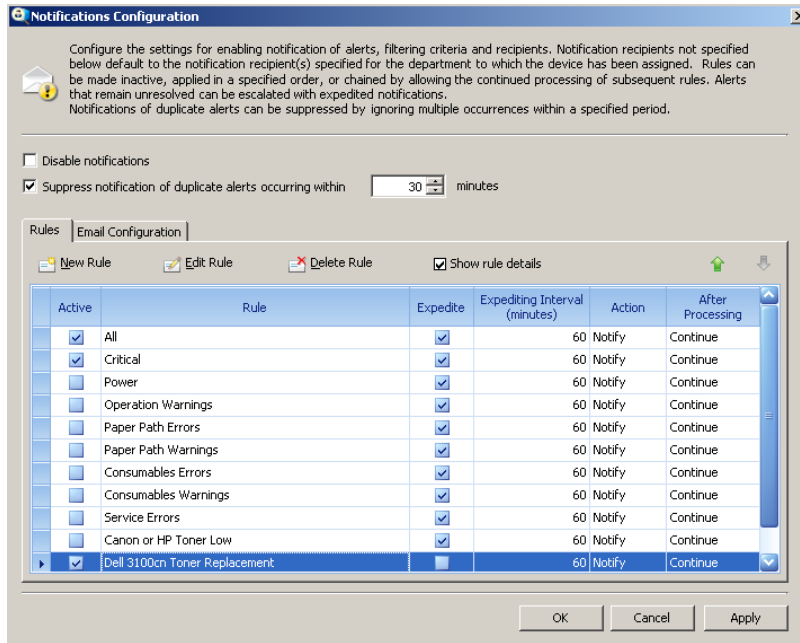


Figure 8 Notifications Configuration dialog

Click the **Edit Rule** button to open the rule configuration dialog.

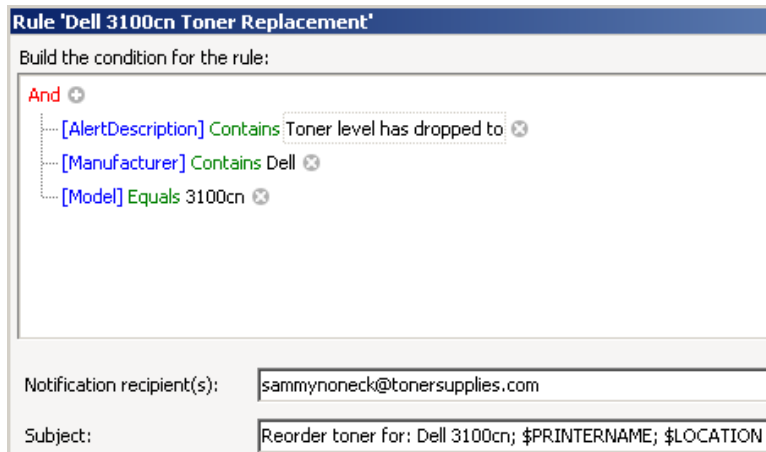


Figure 9 The rule configuration dialog showing the condition for a consumable notification. This rule is activated when a toner level on a Dell 3100cn device drops below the level defined in the threshold rule. See the threshold rule in Figure 10.

Notification Rule - Condition:

The most important point to remember when creating threshold rule notifications is to use the text from the threshold rule description in the **AlertDescription**. For example, the alert description text in Figure 9 is used to generate an alert for the threshold rule shown in Figure 10.

Active	Threshold	Text to Display in Alert Description Column	Minimum time before recurrence (minutes)
<input checked="" type="checkbox"/>	Consumables	Toner level has dropped to \$CONSUMABLELEVELPERCENT	120

Figure 10 The alert description text for a threshold rule is used to identify the alert and must be used when creating the alert notification. See Figure 9.

The following steps will create the rule condition shown in Figure 9.

1. Click the **+** button to create a new condition.
2. Select the **AlertDescription** condition and enter the text from the threshold rule's alert description.
3. Repeat step 1
4. Select the **Manufacturer** condition and enter **Dell**
5. Repeat step 1
6. Select the **Model** condition and enter 3100cn

Other conditions to consider include: Department, Location, and IPAddress. A complete list of conditions is shown in Figure 11. These conditions add specificity to a rule. For example, an administrator may want to receive a notification only when the toner is low on Dell 3100cn printers located on the 3rd floor, or for any printer on a particular sub-network.

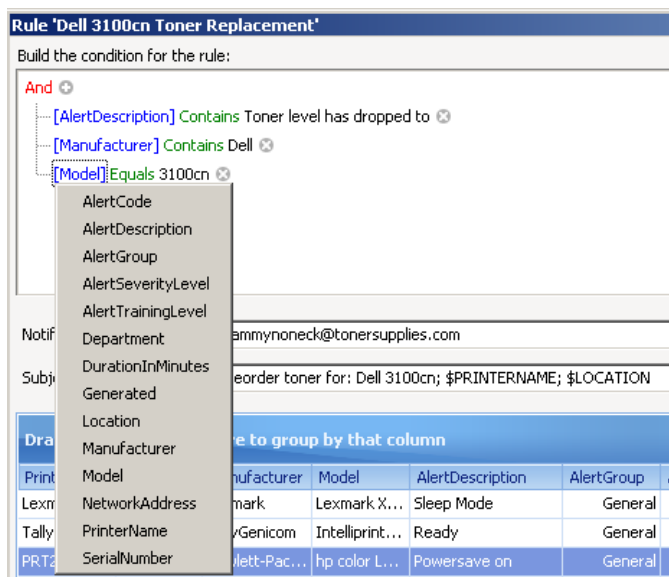


Figure 11 Various notification conditions

Email Recipient, Subject and Keywords

One or more email recipients can be assigned to each notification rule. Therefore, it is easy to direct alert notifications to the right person/s. Enter email addresses, separated by a semi-colon, in the **Notification recipient(s)** textbox.

It is important to enter descriptive text in the **Subject** textbox such that the alert is easily identifiable. Refer to the **Subject** in Figure 9.

To help make email subjects more descriptive, SiteAudit provides several keywords. Keywords are dynamically replaced with text derived from the generated alert.

The following keywords are permitted in the subject line:

\$ALERTSEVERITYLEVEL	The alert severity level
\$ASSETTAG	The printer asset tag
\$CONTACT	The contact person as specified in the printer
\$DEPARTMENT	The department where the printer is assigned
\$IPADDRESS	The IP address of the printer
\$LOCATION	The printer location
\$MANUFACTURER	The printer manufacturer
\$PRINTERNAME	The printer name
\$SERIALNUMBER	The printer serial number
\$ALERTDESCRIPTION	The alert description text
\$PRODUCTNUMBER	The printer product number
\$MODEL	The printer model

Two keywords are used in the subject line in *Figure 9*. The actual printer name and its location are inserted into the email subject line.

Expedite and Notifications on Thresholds

Notification rules are evaluated approximately every 10 minutes by default. When Expedite is enabled, the rule will be evaluated every period specified by the Expedite Interval (minutes) to determine if the rule evaluates to true. If it does, an expedited email notification is sent to the specified recipients.

For example, suppose a notification rule has been configured for Expedite every 60 minutes. Then, for as long as the rule is true, an email will be sent every 60 minutes until the notification rule no longer evaluates to true.

Disable notifications

Suppress notification of duplicate alerts occurring within minutes

Rules **Email Configuration**

New Rule Edit Rule Delete Rule Show rule details

Active	Rule	Expedite	Expediting Interval (minutes)	Action	After Processing
<input type="checkbox"/>	Paper Path Errors	<input checked="" type="checkbox"/>	60	Notify	Continue
<input type="checkbox"/>	HP Service Alert	<input checked="" type="checkbox"/>	60	Notify	Continue
<input type="checkbox"/>	Service Errors	<input checked="" type="checkbox"/>	60	Notify	Continue
<input type="checkbox"/>	Consumables Errors	<input checked="" type="checkbox"/>	60	Notify	Continue
<input type="checkbox"/>	Paper Path Warnings	<input checked="" type="checkbox"/>	60	Notify	Continue
<input checked="" type="checkbox"/>	ToshibafatalError	<input checked="" type="checkbox"/>	1440	Notify	Continue

Figure 11b. Notification rule with Expedite enabled

Expedite is enabled in the ToshibafatalError rule shown in Figure 11b and the Expediting Interval is set for 1440 minutes. As long as the condition that caused the notification

evaluates to true, a new expedited email notification will be delivered every 1440 minutes. This is true for each unresolved incident evaluated by this notification rule.

There should never be more than one of the same unresolved threshold incidents for a device. Therefore, the Suppress notification of duplicate alerts occurring within X minutes does not apply to thresholds.

Example Email Alert Notification

SiteAudit alert notifications are delivered as XML documents. Users can create a CSS stylesheet to display the alert information as desired. SiteAudit ships with a simple stylesheet that produces the alert notification shown in *Figure 12*.

SiteAudit™ Alert Notification

Alert Field	Field Value
AlertRule	Volume Threshold 2000
PrinterName	Laser Printer 3100cn
NetworkAddress	10.0.0.83
SerialNumber	925440659
Manufacturer	Dell
Model	Dell Laser Printer 3100cn
Location	Floor 7 Copier room
Contact	Charles Winthrop III tel: 949 899 9003
AlertIndex	-99
AlertLocation	0
AlertCode	10001
AlertTime	656995700
AlertSeverityLevel	Other
AlertTrainingLevel	Other
AlertGroup	Other
AlertGroupIndex	0
AlertDescription	Exceed 2000 Printed Pages
Generated	1/8/2009 8:22:23
Duration	8:04:39:32
DurationInMinutes	11799
Department	Boeing East Company/Lower Campus Floor 7
Company	Boeing East Company
AssetTag	ABDKK1222

Figure 12 SiteAudit email alert notification based on a lifetime counter threshold rule

Threshold Benefits

The key benefits of threshold rules are discussed below:

Provides greater control over consumables management

- The variety of conditions allow threshold rules to solve specific consumable problems
- When consumables should be ordered and replaced
- Whether page coverage exceeds its target application e.g. office printing
- Assist with yield calculations

Greater control over printer use

- page volume thresholds provide information about whether a printer is over or under utilized

Comprehensive

- all manufacturers & models are eligible for threshold rules

Appendix

Threshold Types

SiteAudit provides twenty page volume and nine consumable types that can be used when creating threshold rules. These threshold types are listed below.

Consumables Thresholds:

- Consumable Capacity *Total capacity of consumable item in number of pages*
- Consumable Coverage Percent *Percent coverage utilization*
- Consumable Current Level *Estimated number of pages of toner available*
- Consumable Description *Description of the consumable item*
- Consumable Installed On *Date consumable was installed*
- Consumable Level Percent *Percent of consumable remaining*
- Consumable Pages Remaining *Number of pages remaining for a consumable*
- Consumable Serial Number *Consumable serial number*
- Consumable Type *Consumable type*
- Manufacturer *Printer manufacturer*
- Model *Printer model*
- Printer Address *Printer IP address*

Lifetime Counter Thresholds:

- Bw Large Paper *Quantity of b/w large*
- Bw Pages *Total b/w pages*
- Bw Pages Copied *Quantity of b/w pages copied*
- Bw Pages Printed *Quantity of b/w pages printed*
- Bw Small Paper *Quantity of bw small*
- Color Large Paper *Quantity of color large*
- Color Pages *Total color pages*
- Color Pages Copied *Quantity of color pages copied*
- Color Pages Printed *Quantity of color pages printed*
- Color Small Paper *Quantity of color small*
- Copied Pages *Total quantity of copied pages*
- Duplex Pages *Quantity of duplex pages*
- Faxed *Quantity of faxed pages*
- Large *Quantity of large pages*
- Printed *Total quantity of printed pages*
- Printer Address *Printer IP address*
- Scanned *Quantity of scanned pages*
- Small *Quantity of small pages*
- Total *Total quantity of pages*
- Total Color Usage *Total color usage*
- Total Mono Usage *Total mono usage*
- Total Print Queue *Total print queue count*
- Total Usage *Total usage*

Printer Accessibility Thresholds:

- Manufacturer *Printer manufacturer*
- Minutes Since Last Contact *Minutes since last attempted contact with printer*
- Minutes Since Last Successful Contact *Minutes since last successful contact with printer*
- Model *Printer model*
- Printer Address *Printer IP address*

Service Level Agreement Thresholds:

- Agreement Name *Name of the Service Level Agreement*
- Printer Address *Printer IP address*
- Up Time *Percent of time without incidents*

Consumable Types

When creating a threshold based upon a Consumable Type, the appropriate integer consumable type value must be used. Below is a listing all of the consumable types and their text descriptions.

Type	Description
• 1	<i>Other</i>
• 2	<i>Unknown</i>
• 3	<i>Toner</i>
• 4	<i>Waste Toner</i>
• 5	<i>Ink</i>
• 6	<i>Ink Cartridge</i>
• 7	<i>Ink Ribbon</i>
• 8	<i>Waste Ink</i>
• 9	<i>Opc</i>
• 10	<i>Developer</i>
• 11	<i>Fuser Oil</i>
• 12	<i>Solid Wax</i>
• 13	<i>Ribbon Wax</i>
• 14	<i>Waste Wax</i>
• 15	<i>Fuser</i>
• 16	<i>Corona Wire</i>
• 17	<i>Fuser Oil Wick</i>
• 18	<i>Cleaner Unit</i>
• 19	<i>Fuser Cleaning Pad</i>
• 20	<i>Transfer Unit</i>
• 21	<i>Toner Cartridge</i>
• 22	<i>Fuser Oiler</i>
• 23	<i>Water</i>
• 24	<i>Waste Water</i>
• 25	<i>Glue Water Additive</i>
• 26	<i>Waste Paper</i>
• 27	<i>Binding Supply</i>
• 28	<i>Banding Supply</i>
• 29	<i>Stitching Wire</i>
• 30	<i>Shrink Wrap</i>
• 31	<i>Paper Wrap</i>
• 32	<i>Staples</i>
• 33	<i>Inserts</i>
• 34	<i>Covers</i>