SNMP Trap Generator

Alert Forwarding Plug-in for HP Web Jetadmin

Whitepaper

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Overview

The SNMP Trap Generator application plug-in is a universal Web Jetadmin alert forwarding module that provides printer event conveyance through a comprehensively customizable SNMP trap. This solution provides integration with Enterprise System Management (ESM) applications like 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 SNMP traps for purposes of notification and processing.

The SNMP Trap Generator can be utilized in conjunction with the standard Web Jetadmin email method of alert forwarding and can be configured to send traps to three separate locations or trap destinations. The traps can be modified to include a variety of printer related information, designed to be inserted, prioritized and separated for ESM application compatibility. The SNMP Trap Generator plug-in also includes a MIB file to be loaded at the SNMP management station for MIB object translation. Leveraging the SNMP Trap Generator can potentially reduce the licensing costs and database overhead of managing printing devices directly from another ESM application. Through the SNMP Trap Generator, customers can now receive comprehensive Web Jetadmin printer alerts via SNMP traps produced by a single application source designed to monitor hundreds to thousands of printers.

SNMP Trap Generation

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

Although a "printer produced" SNMP trap is a simple event notification mechanism, it is not always comprehensive enough to determine the most appropriate or efficient course of action. When HP Web Jetadmin receives a trap from a printer, it will launch an SNMP information request process that is designed to gather additional device information and serve as the content for a more comprehensive Web Jetadmin generated alert. With the Web Jetadmin SNMP Trap Generator, this alert can now be forwarded as a SNMPv1 or SNMPv2 trap. Because SNMP is a "connection-less" protocol, traps can be missed by the SNMP management station. Web Jetadmin helps to compensate for this scenario by continuing to check device status at some user-defined interval and generating another trap if the device condition still exists.

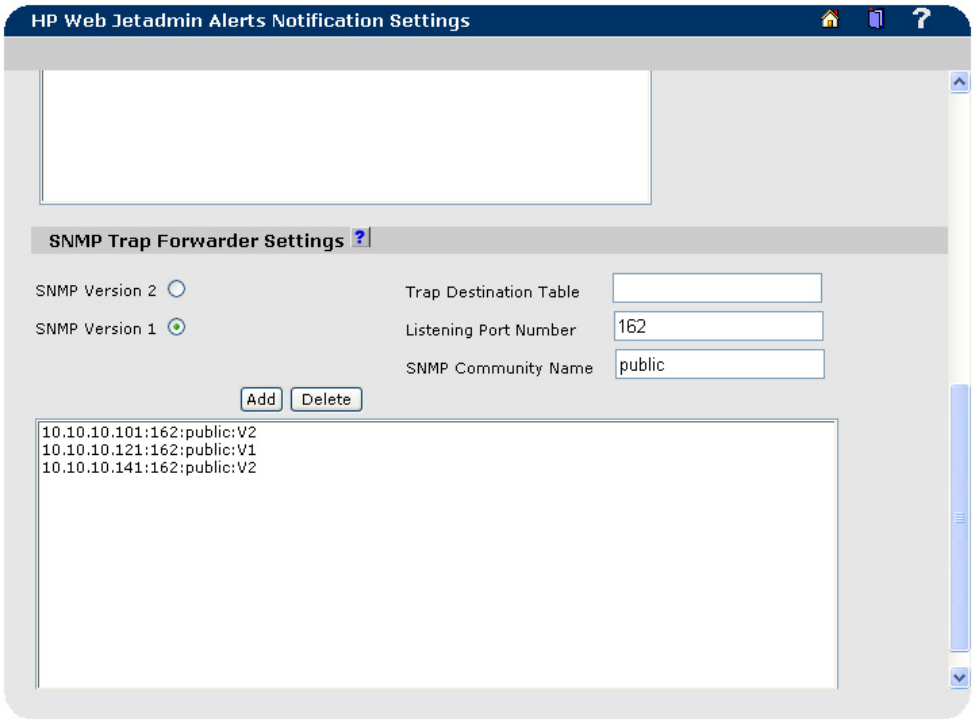
While the frequency of general traps produced by the managed device can't be controlled, the frequency and content of the trap generated by Web Jetadmin, can be. The example below shows the alert information gathering and forwarding process:

Installation

To install the SNMP Trap Generator plug-in into HP Web Jetadmin, select Product Update and click the Install folder. The first box will display a list of available plug-ins on the Web if HP Web Jetadmin has been configured to access the internet for downloads. By allowing HP Web Jetadmin to download product updates from the internet, the SNMP Trap Forwarder plug-in should now be available for install in the first box. If the SNMP Trap Forwarder plug-in has been downloaded to the hard drive, it can be browsed to and uploaded into the first box, making it ready for installation. Once the SNMP Trap Generator plug-in appears in the box above (as wjanotsnmptrapforwarder 3.0.0), highlight it and click Next to complete the installation. To verify successful installation, from the Navigation menu select Device Management, select Alerts, and select Notification Settings. Scroll to the bottom of the HP Web Jetadmin Alerts Notification Settings page and confirm the presence of the SNMP Trap Forwarder Settings configuration options.

Trap Forwarding Configuration

From the *HP Web Jetadmin Alerts Notification Settings* page, configure the trap destination information that is required for the proper forwarding of the traps. Maximum of (3) trap destination entries are allowed in the table. Only one version of trap may be assigned to a destination. Each trap destination also allows for a UDP port number and SNMP community name to be assigned. The example below shows the table after the addition of (3) entries:



Once the notification settings are complete, the trap destination information now becomes available for assignment to a specific alert and specific device. This is covered in the next section.

Trap Forwarding Assignment

The first step in the trap forwarding assignment process is to enable alerts on the device or devices requiring alert monitoring. HP Web Jetadmin provides the ability to enable alerts for just a single printer or multiple printers simultaneously. An individual printer can be enabled for alerts from the Status page of the device by selecting Alerts from the drop-down menu and clicking Enable alerts for this device. HP Web Jetadmin also includes the ability to enable alerts for several printers simultaneously. This technique saves time by allowing for multiple printers to be configured for alerts through a single configuration step. Multiple printers can be enabled for alerts simultaneously by selecting Alerts, Monitored Devices on the Navigation tree. A device list appears in the bottom box from which devices can be enabled for alerts by highlighting the desired devices and clicking Monitor with Default Settings. The next step is to subscribe to the alerts requiring forwarding and select the destination entry to receive the trap. The list of destination entries will be based upon the Notification Settings, as mentioned in the previous section of this document. Once an entry is selected, it will appear next to the subscribed alert. At this point, a subscribed alert, when the condition is met, will be sent to the trap destination listed next to the alert. This comprehensive trap will arrive it's destination in a raw format. The last step in this process is to load the provided MIB file (webjet.mib) or (webjet.cfg for HP System Insight Manager) into the receiving trap management application. By loading the MIB file, and directing it to read the trap variable, the trap can then be viewed in a formatted fashion. After installing the SNMP Trap Generator plug-in, these MIB files can be found in the *c:/Program Files/HP Web Jetadmin/doc/plugins/hpjalerts/modules/notification* directory.

SNMP Trap Template Modification

Installing the plug-in will result in the addition of snmp trap forwarding files to the *c:/Program Files/HP Web Jetadmin/doc/plugins/hpjalerts/modules/notification* directory. The format and content of the forwarded trap is determined by the configuration of the *hpaltsnmpmsg.txt* file that can be found in this directory. Open this file with a text editor; like Notepad or Wordpad, and scroll down to the last line on the page. This is the only line that requires customization if desiring different trap formatting or content other than what is provided by default. The default template is provided with the following fields in the specific order seen below:

Event
Front Panel Message
Host Name
IP Address
Hardware Address
IPX Name
IPX Address
Model Name
Serial Number
Asset Number
Description
Contact
Page Count

By default, these fields are separated by double white space, but can be separated by commas or single white space; the two most common methods of separation. These fields can be placed in any order or prefaced with any text. For example, by default, the Event field is prefaced with Event= followed by the actual field of [$_symptom]. This template file contains a list of ~44 fields that may be selected to include in the trap variable. The variety of content available, the prefacing of the field with text, and the specific field order makes the forwarded trap contents fully customizable for compatibility with the receiving SNMP management tool. Formatting examples are listed below:

An alert sting line that is customized as follows:

Event=[$_symptom$],Front Panel=[$_frontpanel$],IP Address=[$_ipaddr$],Contact=[$_syscontact$]

Would appear in the trap as:

Event=Cover Open,Front Panel=Close Top Cover,IP Address=10.10.10.1,Contact=John Doe

Or an alert string line that is customized as follows:

[$_ipaddr$] [$_assetnum$] [$maintenance_pages_remaining$]

Would appear in the trap as:

10.10.10.1 673345 25000

Supported Printers

The SNMP Trap Generator supports all printers that can generate a valid Web Jetadmin alert. The amount of potential alert content will vary depending upon the subscribed alert and the device itself. This would also hold true for third party devices being monitored by Web Jetadmin