



Avaya Solution & Interoperability Test Lab

Application Notes for Eaton Powerware 9125 with Avaya Communication Manager - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Eaton Powerware 9125 to interoperate with Avaya Communication Manager. The 9125 range of Uninterruptible Power Supplies (UPS) from Powerware is a double conversion online UPS technology, where power is completely regenerated before reaching the connected load so that no power problems can reach any critical equipment. UPS keep systems up and running in the event of any power problems.

Information in these Application Notes has been obtained through *DeveloperConnection* compliance testing and additional technical discussions. Testing was conducted via the *DeveloperConnection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the configuration steps required for Eaton Powerware 9125 to interoperate with Avaya Communication Manager.

Uninterruptible Power Supplies (UPS) keep systems up and running in the event of any power problems. An online UPS design, power irregularities such as: spikes, surges, brownouts, and blackouts before they are passed on to critical equipment. The 9125 range of UPSs is available in a power range of between 1000VA and 6000VA. During compliance testing a 1000VA unit was tested.

The online design protects against all common power problems, including input harmonics. The online design is combined with Powerware's Advanced Battery Management (ABM™) technology, meaning that the 9125 UPS prolongs battery life. Alternative technologies available are 'line-interactive' and 'offline' (or 'standby'). Both of these technologies offer less protection against power problems and have a short break in the event of a power cut while the UPS transfers from mains power to battery power. Online technology maintains continuous supply in this situation.

ConnectUPS Web/SNMP cards which insert into the slot on the back of the Powerware 9125 UPS allow remote monitoring and controlling of the UPS from a web browser or other software available for free download. ConnectUPS card supports real-time web and SNMP communication over 10/100BaseT Ethernet connections and serve as a power-protected switching hub to support three additional 10/100BaseT links.

Figure 1 illustrates the network used for compliance testing.

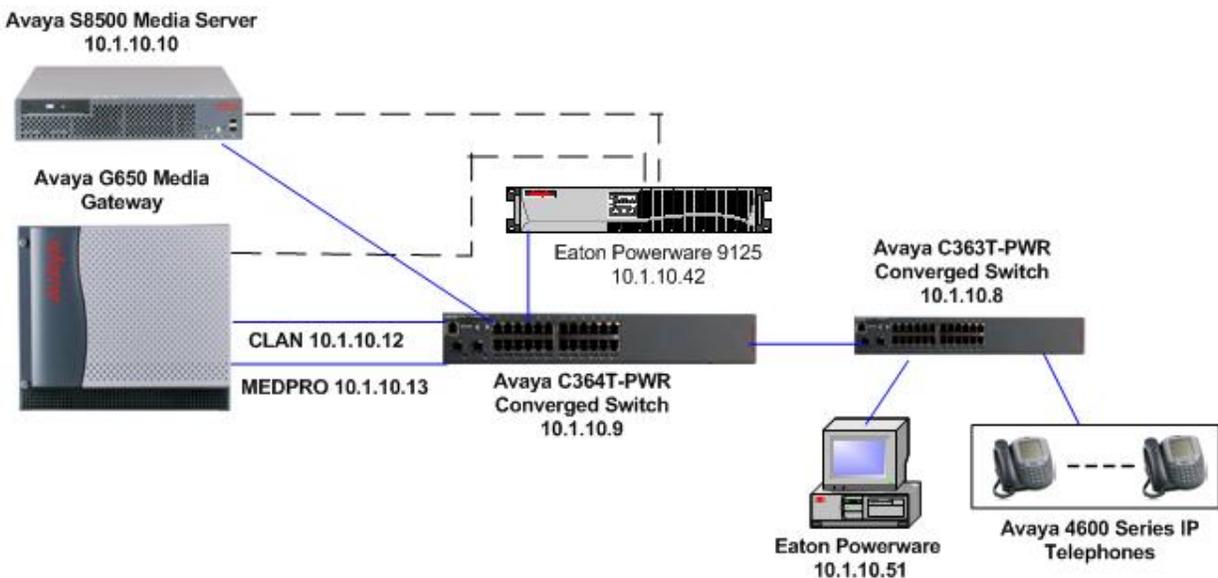


Figure 1: Avaya Communication Manager with Eaton Powerware 9125

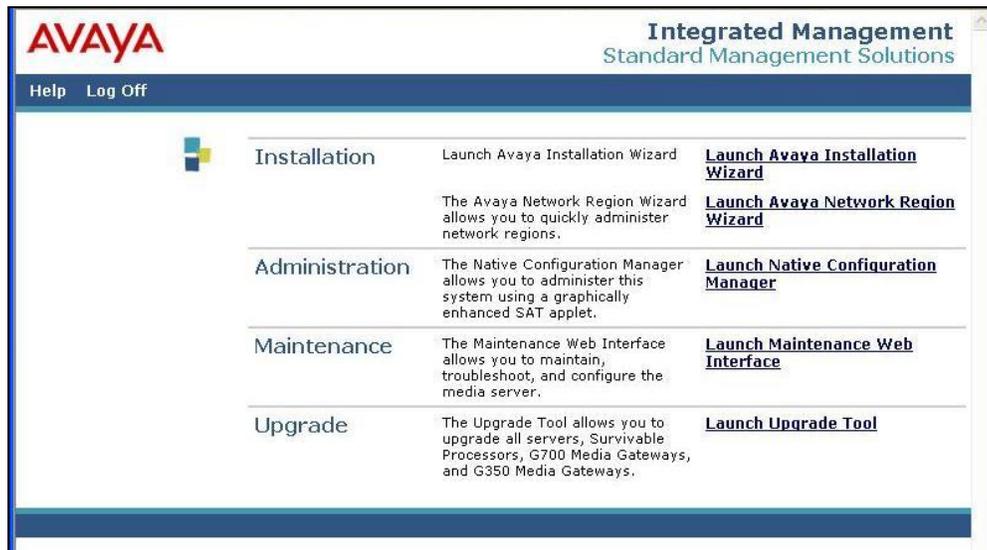
2. Equipment and Software Validated

Below is a list of the equipment and software versions used within the compliance-tested network.

Equipment	Software
Avaya S8500 Media Server running Avaya Communication Manager	4.0 (R014x.00.0.730.5)
Avaya G650 Media Gateway CLAN - TN799DP MEDPRO - TN2302AP	HW01 FW017 HW20 FW115
Avaya 4600 Series IP Telephones (H.323)	2.7
Avaya C364T-PWR Converged Stackable Switch	4.3.12
Avaya C363T-PWR Converged Stackable Switch	4.3.12
Eaton Powerware 9125 ConnectUPS Web/SNMP card	11.0 3.22
Dell Workstation 370	Windows XP Professional SP2

3. Configure SNMP on Avaya Communication Manager

Access the Avaya Communication Manager administration web interface by entering *http://<ip-addr>/* as the URL in an Internet browser, where *<ip-addr>* is the IP address of Avaya Communication Manager. Log in with the appropriate credentials to the Avaya Communication Manager web interface and click **Launch Maintenance Web Interface**.



Under **Server Configuration** options, select **Configure Server**.

AVAYA Integrated Management Maintenance Web Pages
This Server: [1] S8500a_DC1

Help Exit

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At the bottom of the screen click **Continue**.

Configure Server

Steps

Review Notices

Set Identities

Configure Interfaces

Configure ESS/LSP

Configure Switches

Set DNS/DHCP

Set Static Routes

Configure Time Server

Set Modem Interface

Configure RSA

Update System

Review Notices

WARNING: The following Web pages guide you through the process of configuring this server. To correctly configure this server, you must complete all steps in this sequence. Some parts of the configuration take effect immediately. Other parts do not change until the process is complete. If you do not complete all steps, the server will not function properly.

The configuration process runs in a separate browser window in front of the main browser window. The list to the left of this window shows the steps in the process. The blue bar highlights the step that you are currently completing. You can return to the main browser window at any time.

Before you begin, you must have the following information:

- IP address for this server.
- Host name for this server
- Function assignment and configuration information for each operational ethernet interface.
- IP addresses of UPS units.
- DNS configuration (if used).
- DHCP server configuration (if used).
- Configuration data for static network routes (if used).
- Network Time Server configuration data.
- Modem return route data from Avaya Services (if Avaya Services supports this server).
- Configure Remote Supervisor Adaptor (RSA).

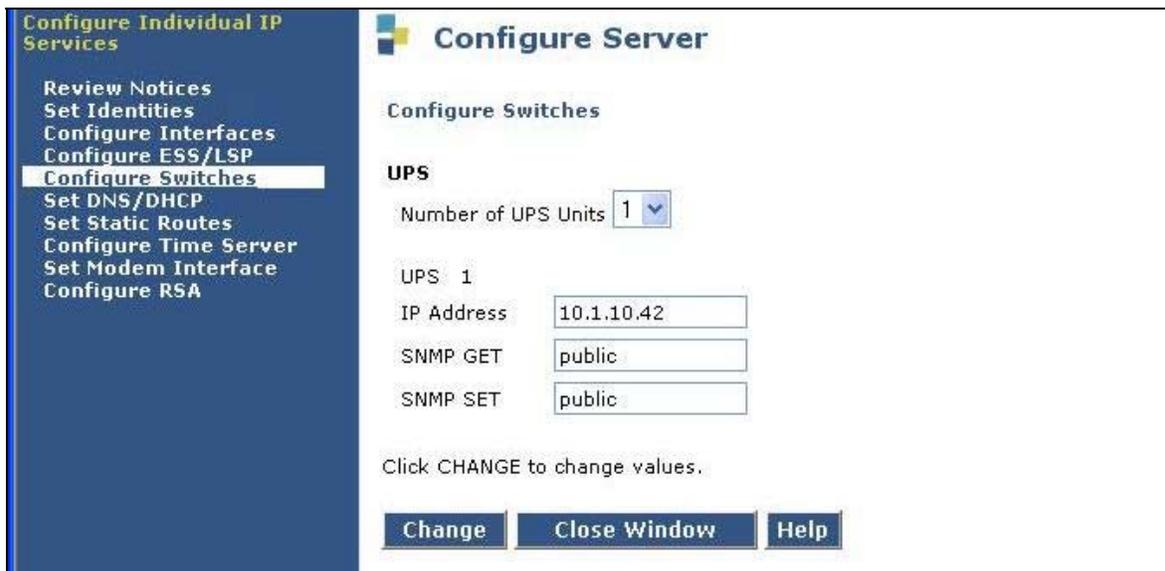
Click CONTINUE to proceed.

Continue **Help**

On the next screen click the **Configure individual services** radio button and then click **Continue** to proceed.



Click on **Configure Switches**. From the **Number of UPS Units drop** down list, select 1. In the **IP address** field, enter the IP address of the Connect UPS Web card configured in Section 4.1. Enter an SNMP string in the **SNMP GET** and **SNMP SET** fields as shown below. This should match the SNMP string that is entered in the Powerware UPS configuration in Section 4.2. Click the **Close Window** button to complete the configuration.



4. Configure Powerware 9125

4.1. Configure Connect UPS Web/SNMP card

Using a serial connection from a workstation connect to the Connect UPS Web/SNMP card.
Enter the appropriate password.

```
+=====+
|           [ ConnectUPS Web/SNMP Card Configuration Utility ]
+=====+

Enter Password: *****
```

At the menu options shown below, select **option 1** (Web/SNMP Card Settings).

```
+=====+
|           [ ConnectUPS Web/SNMP Card Configuration Utility ]
+=====+

1. Web/SNMP Card Settings
2. Reset Configuration to Default
3. Restart Web/SNMP Card
4. UPS Pass-Through
0. Exit

Please Enter Your Choice => 1
```

At the menu options shown below, select **option 1** (Set the IP Address, Gateway Address and MIB System Group).

```
+=====+
|           [ ConnectUPS Web/SNMP Card Configuration Utility ]
+=====+

1. Set the IP Address, Gateway Address and MIB System Group
2. Set Web/SNMP Card Control Group
3. Set Write Access Managers
4. Set Trap Receivers
5. Set Date and Time
6. UPS Event Actions
7. Set UPS Information
8. Set Superuser Name and Password
9. Email Notification
10. Set Website Links
11. Card Settings and Event Log Summary
12. Set External Contact Monitoring
13. Language Selection
14. Network Connection Test
0. Back to Main Menu

Please Enter Your Choice => 1
```

At the menu options shown below, select **option 1** to set the IP address.

```
+=====+
|           [ ConnectUPS Web/SNMP Card Configuration Utility ]
+=====+
      Web/SNMP Card Version : ConnectUPS Web/SNMP Card V3.22
      Ethernet Address      : 00-E0-D8-09-79-EA
1. IP Address             : 192.168.7.19
2. Gateway Address      : 192.168.7.1
3. Network Mask        : 255.255.255.0
4. DNS IP Address         : 0.0.0.0
5. Mail Server            :
6. sysContact             :
7. sysName                : ConnectUPS Web/SNMP Card
8. sysLocation            :
0. Return to previous menu
```

```
Please Enter Your Choice => 1
Enter IP address : [192.168.7.18] 10.1.10.42
```

Select **option 2** to set the Gateway address.

```
Please Enter Your Choice => 2
Enter Gateway address : [192.168.7.18] [10.1.10.1]
```

Select **option 3** to set the Network Mask.

```
Please Enter Your Choice => 3
Enter Network Mask : [255.255.255.0]
```

Select **option 0** to return to the previous menu and then select **option 0** to exit.

4.2. Configure Powerware 9125

Access the ConnectUPS Web/SNMP card administration web interface by entering *http://<ip-addr>/* as the URL in an Internet browser, where *<ip-addr>* is the IP address of ConnectUPS Web/SNMP card configured in Section 4.1. Log in with the appropriate credentials.

The screenshot displays the ConnectUPS Web/SNMP Card administration interface. The top navigation bar includes the EATON logo, the Powerware brand name, and the title 'ConnectUPS™ Web/SNMP Card'. Below this is a green menu bar with tabs for Summary, UPS History, Configuration, Control, Registered Clients, Language, and Help. The main content area is titled 'Summary' and contains several sections:

- Identification:** A table listing key device information.

UPS Model	PW9125 1000i
UPS Firmware version	FP: 11.0 INV: 11.0
VA Rating	1000 VA
User-Assigned Name	<input type="text" value="UPS Web Card"/>
Card's IP Address	10.1.10.42
- Current Status:** A table showing the system's operational state and environmental data.

Overall Status	SYSTEM NORMAL
External Contact #1 Status	Disabled
External Contact #2 Status	Disabled
Remote Temperature (Degrees C)	28
Remote Humidity (%)	17
Runtime (minutes)	7
Last Battery Test Status	Unavailable
Last Logged Events	03/04/2007 16:59:33 Low Battery Alarm present 03/04/2007 16:59:42 Low Battery Alarm no longer exists 03/04/2007 16:59:42 AC power has been restored
- Input:** A table showing the power source characteristics.

Voltage In (VAC)	241
Current In (AC Amps)	3.2
Frequency (Hertz)	50.1
- Output:** A table showing the power delivered to the load.

Voltage Out (VAC)	240
Current Out (AC Amps)	3.0

Select **Configuration** → **Web/SNMP Card Configuration** and verify card settings configured in Section 4.1.

EATON | Powerware **ConnectUPS™ Web/SNMP Card**

Summary **UPS History** **Configuration** **Control** **Registered Clients** **Language** **Help**

[UPS Event Actions](#) [UPS Shutdown and Restart Settings](#) [UPS Shutdown Schedule](#) [Web/SNMP Card Configuration](#) [SNMP Trap Receivers](#) [Email Notification](#) [Date and Time](#) [EMP Settings](#) [Help](#)

Web/SNMP Card Configuration:

Firmware Revision	ConnectUPS Web/SNMP Card V3.22
MAC Address	00-E0-D8-09-79-EA
ConnectUPS Web/SNMP Card IP Address	<input type="text" value="10.1.10.42"/>
Gateway Address	<input type="text" value="10.1.10.1"/>
Subnet Mask	<input type="text" value="255.255.255.0"/>
DNS IP Address	<input type="text" value="0.0.0.0"/>
Mail Server	<input type="text"/>
Website Link 1 IP Address	<input type="text" value="www.powerware.com/software/lice"/>
Website Link 1 Screen Text	<input type="text" value="Advantage - Register Here"/>
Website Link 2 IP Address	<input type="text" value="www.powerware.com/Software/Mu"/>
Website Link 2 Screen Text	<input type="text" value="Download Powerware MultiView"/>
History Log Frequency (minutes)	<input type="text" value="1"/>
BOOTP/DHCP Control	<input type="button" value="Disabled"/> ▾
Telnet Control	<input type="button" value="Enabled"/> ▾
TFTP Upgrade Control	<input type="button" value="Enabled"/> ▾
HTTP and Telnet Security Control	<input type="button" value="Disabled"/> ▾
Reset Configuration to Default	<input type="button" value="No"/> ▾
Restart ConnectUPS Web/SNMP Card	<input type="button" value="No"/> ▾

Select **Configuration** → **SNMP Trap Receivers**. In **Index** number 1, enter the following parameters.

- **IP address** – IP address of Avaya Communication Manager “10.1.10.10”.
- **Community String** – enter the same SNMP community string “public” configured in Section 3.
- **Severity Level** – from the drop down list select “All Traps”.
- **Trap Types** – from the drop down list select “RFC 1628 MIB Traps”.

Click the **Set Values** button.

The screenshot shows the 'ConnectUPS™ Web/SNMP Card' interface. The navigation menu includes Summary, UPS History, Configuration, Control, Registered Clients, Language, and Help. The 'Configuration' menu is expanded to show 'Web/SNMP Card Configuration', 'SNMP Trap Receivers', 'Email Notification', and 'Date and Time'. The 'SNMP Trap Receivers' section contains a table with 8 rows. The first row (Index 1) is configured with IP Address 10.1.10.10, Community String public, Severity Level All Traps, and Trap Types RFC 1628 MIB Traps. The other rows (Index 2-8) have IP Address 0.0.0.0, Community String public, and Severity Level Minor. The Trap Types for rows 2-8 are Disabled. A 'Set Values' button is located below the table.

Index	IP Address	Community String	Severity Level	Trap Types
1	10.1.10.10	public	All Traps	RFC 1628 MIB Traps
2	0.0.0.0	public	None	Disabled
3	0.0.0.0	public	Critical	Disabled
4	0.0.0.0	public	Major	Disabled
5	0.0.0.0	public	Minor	Disabled
6	0.0.0.0	public	All Traps	Disabled
7	0.0.0.0	public	None	Disabled
8	0.0.0.0	public	Minor	Disabled

5. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. The feature testing focused on UPS shutdown and restart settings. Serviceability testing included disconnecting the Powerware 9125 from the main power.

5.1. General Test Approach

The feature test was performed by first entering the IP address and the SNMP community strings configured on Avaya Communication Manager and Powerware 9125 and setting the trap type to RFC 1628 MIB traps. The Powerware 9125 UPS controlled shutdown was also tested. Serviceability testing included disconnecting the Powerware 9125 from the main power and testing the Powerware 9125 battery life and the ability for Powerware 9125 to log events and send alarms to Avaya Communication Manager when UPS power is interrupted or lost.

5.2. Test Results

All test cases were executed and passed.

6. Verification Steps

6.1. Avaya Communication Manager Alarms

When the Powerware 9125 UPS power is interrupted or lost, Avaya Communication Manager filters and records the following alarms shown in the screen below under **Alarms** → **Current Alarms** in the Avaya Communication Manager Maintenance Web Interface.

The screenshot shows the Avaya Integrated Management Maintenance Web Pages interface. The left sidebar contains a navigation menu with categories like Alarms, Diagnostics, Server, and Data Backup/Restore. The main content area is titled 'Current Alarms' and includes a description of the page, a Product ID field, and a table of Server Alarms. The table has columns for ID, Source, EvtID, Lvl, Ack, Date, and Description. The alarms listed are:

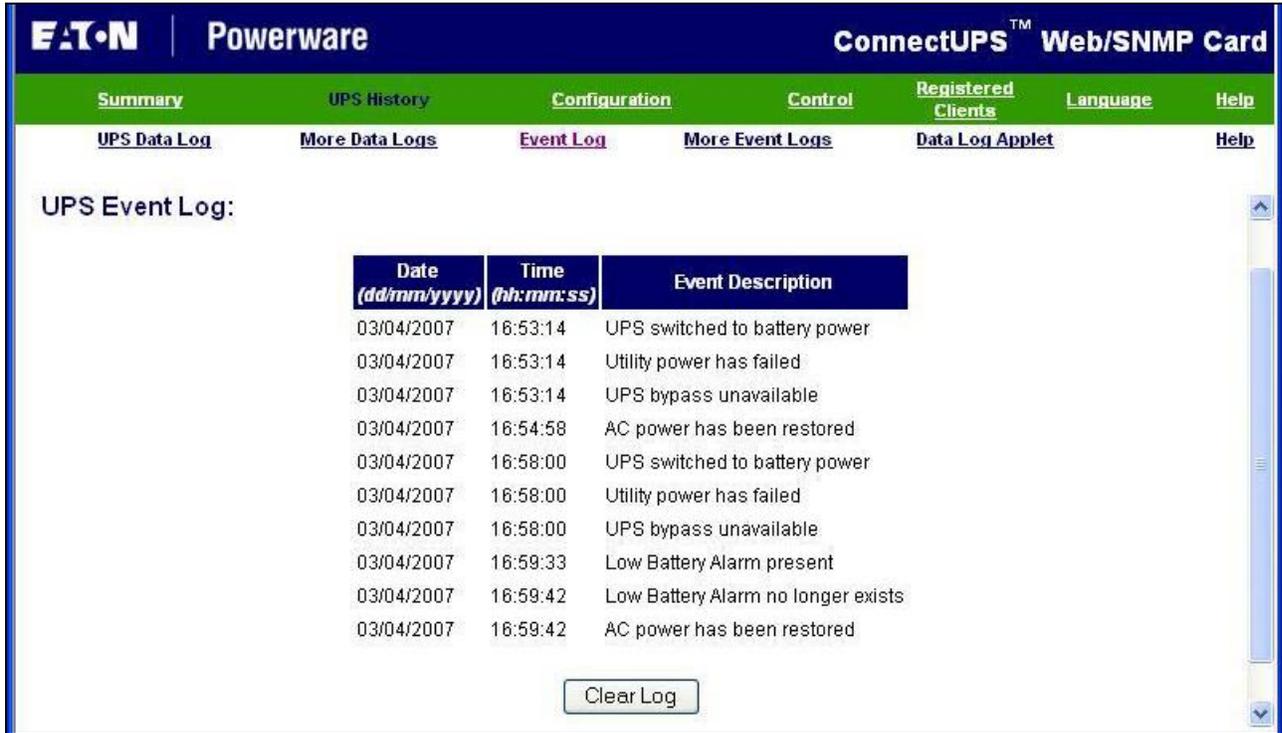
ID	Source	EvtID	Lvl	Ack	Date	Description
4	UPS	19	MIN	Y	Tue Apr 03 16:57:31 BST 2007	Miscellaneous trap, e.g., bad battery
3	UPS	19	MIN	Y	Tue Apr 03 16:57:23 BST 2007	Miscellaneous trap, e.g., bad battery
2	UPS	16	MIN	Y	Tue Apr 03 16:57:23 BST 2007	Miscellaneous trap, e.g., bad battery
1	UPS	16	MIN	Y	Tue Apr 03 16:57:21 BST 2007	Miscellaneous trap, e.g., bad battery
0	UPS	8	MAJ	Y	Tue Apr 03 16:57:19 BST 2007	Warning, System Power Failure: Possible UPS exhaustion in 5 minutes.

The following is a list of the event ID (**EvtID**) descriptions listed in the Maintenance Alarms for Avaya Communication Manager 4.0, Media Gateways and Servers document referenced in Section 9.

- **8** - “upsEstimatedMinutesRemaining” — UPS does not have an AC-power source.
- **16** - “upsAlarmInputBad” — An input condition is out of tolerance.
- **19** - “upsAlarmBypassBad” — The “source” power to the UPS, which (during a UPS overload or failure) also serves as “bypass” power to the load, is out of tolerance — incorrect voltage by $> \pm 12\%$ or frequency $> \pm 3\%$.
- **20** - “upsAlarmLowBattery” — The battery’s remaining run time \leq specified threshold.

6.2. Powerware 9125 event log

When the Powerware 9125 UPS power is interrupted or lost, the relevant logs are recorded and can be viewed under **UPS History** → **Event Log** in the ConnectUPS Web/SNMP card web interface as shown below.



The screenshot displays the Powerware ConnectUPS Web/SNMP Card interface. The top navigation bar includes links for Summary, UPS History, Configuration, Control, Registered Clients, Language, and Help. Below this, there are sub-links for UPS Data Log, More Data Logs, Event Log (which is highlighted), More Event Logs, Data Log Applet, and Help. The main content area is titled "UPS Event Log:" and contains a table with the following data:

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Event Description
03/04/2007	16:53:14	UPS switched to battery power
03/04/2007	16:53:14	Utility power has failed
03/04/2007	16:53:14	UPS bypass unavailable
03/04/2007	16:54:58	AC power has been restored
03/04/2007	16:58:00	UPS switched to battery power
03/04/2007	16:58:00	Utility power has failed
03/04/2007	16:58:00	UPS bypass unavailable
03/04/2007	16:59:33	Low Battery Alarm present
03/04/2007	16:59:42	Low Battery Alarm no longer exists
03/04/2007	16:59:42	AC power has been restored

Below the table is a "Clear Log" button.

7. Support

For any support related enquiries,

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8. Conclusion

These Application Notes describe the configuration steps for Eaton Powerware 9125 to interoperate with Avaya Communication Manager. All test cases were completed successfully and the configuration described in these Application Notes has been successfully compliance tested.

9. Additional References

This section references the Avaya and Powerware product documentation that are relevant to these Application Notes.

Avaya product documentation can be found at <http://support.avaya.com>.

- Maintenance Alarms for Avaya Communication Manager 4.0, Media Gateways and Servers, Feb 2007; Doc ID: 03-300430
- Administrator Guide for Avaya Communication Manager, Feb 2007; Doc ID: 03-300509

Company and product information available from Powerware can be found at <http://www.powerware.com/uk/>

- http://www.powerware.com/EMEA/UPS/9125_UPS.asp
- http://www.powerware.com/EMEA/UPS/9125_features.asp
- http://www.powerware.com/EMEA/UPS/9125_specs.asp
- <http://www.powerware.com/UPS/Connectivity.asp>

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