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UPS Manager

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Introduction

Available Software and Manual

The HP UPS Manager II is the software to configure HP-UX and Windows NT systems with HP UPS devices. The software bundle comes with the UPS device. The software is also available on the newer Application CDs (at least since 2002), check for the product B4153A. The following parts are available:

B4153-13006	HP UPS Manager II CD
B4153-90013	HP UPS Manager II manual
B4153-90012	HP UPS Manager II product release notes

The software bundle consists of four file sets

UPSMGRCLIENT	HP UPS Manager Client
UPSMGRMT	HP UPS Manager II 3.x
UPSMGRNTCLIENT	HP UPS Manager NT-Client
UPSMGRPROXY	HP UPS Manager Proxy

A license is required for each UPS; one license is included with the UPS.

Install the software on computers running HP-UX with the swinstall utility. On Windows NT systems the SNMP service must be installed prior to installing HP UPS Manger II Client file sets. To install SNMP open the "Control Panel", double-click on the "Network" icon, select "Services" and press "Add". Select SNMP and press "OK" (you probably need the Windows NT 4.0 workstation or server CD for this task). Reboot the system. Copy the HP UPS Manger II Client file sets from the CD to the NT system and start the installation with setup.exe. Follow the instructions of the setup program.

System Requirements

Hardware   HP 9000/700 or 800 Series computer with at least 64MB RAM, (graphics monitor and mouse needed for GUI version of HP UPS Manager II), 45 MB disk space for the Management station, 2 MB for the client;

any Intel-based PC capable of running Windows NT 4.0;

Software   HP-UX 10.20, 10.30, 11.00 or 11i (PHSS_14040 or successor for 10.20, PHSS_13871 or successor for 11.00), SNMP protocol must be installed if the UPS device is connected via LAN;

Windows NT 4.0 (Service Pack 3 or higher) – client only.

Concepts of HP UPS Manager II

As can be seen above, the HP UPS Manager II bundle contains software for clients and a manager. The manager part does what the name implies, it manages the configuration of the UPS device and all of the nodes, which are connected to the UPS. The client part responses to any situation that is configured with the manager. Often a UPS device is only connected to one machine, so the manager and client are on the same system. But if several systems are

connected to the UPS or to several UPSs, there is one system, which acts as the Management Station, while the others are only clients. Configuration can only be done on the Management Station. The client is after all nothing more than a daemon checking for the status of the UPS device.

Possible Setups

The UPS device can be connected to the managing node in two ways. Either directly with a RS232 (serial) cable (comes with the UPS) or via LAN. If connected via LAN the Management Station can manage UPS devices over different subnets.

Important Information

The HP PowerTrust USP devices don't go well along with the HP UPS Manager. They <u>do not</u> provide the correct information for System Action Time, UPS Time, Battery Temperature, and Seconds on Battery in the UPS info window (or ASCII terminal). The test button should **never** be used with an HP Power Trust, this can result in having to re-install and re-configure HP UPS Manager.

Setting Up the Connection

Serial Connection

After connecting the computer with the UPS device via the serial cable do the following:

1. Start `/opt/upsmgr/proxy/bin/setup`;
2. Choose "3. Show current configuration";
3. If a UPS device is already shown and you changed the device go back to the Main Menu, choose "2. Delete UPS" and select the UPS device to be deleted. If you add another UPS to an already existing one go back to the Main Menu;
4. Choose "1. Add UPS", then select the Type of the UPS device, and then select the serial port where the UPS is connected.

    NOTE:
    The default port for the serial connection on most systems is `/dev/tty0p0`, but on the L-class and N-class systems it is `/dev/tty0p1`. If the wrong device file is given, no daemons will start up and the system will show "Communication Lost", if you try to configure it.

5. Choose "0. Exit", the proxy agent for the serial connection is configured now.

The daemons for the proxy agent are "mgupsd" for Merlin Gerin UPS devices and "ptupsd" for HP PowerTrust and Best Power UPS devices. You can 'grep' for them in the 'ps –ef' output.

LAN Connection – SNMP module configuration

The following information is needed before you can begin to configure the SNMP board:

hardware (MAC) address of the SNMP board, IP address, gateway address, and netmask address.
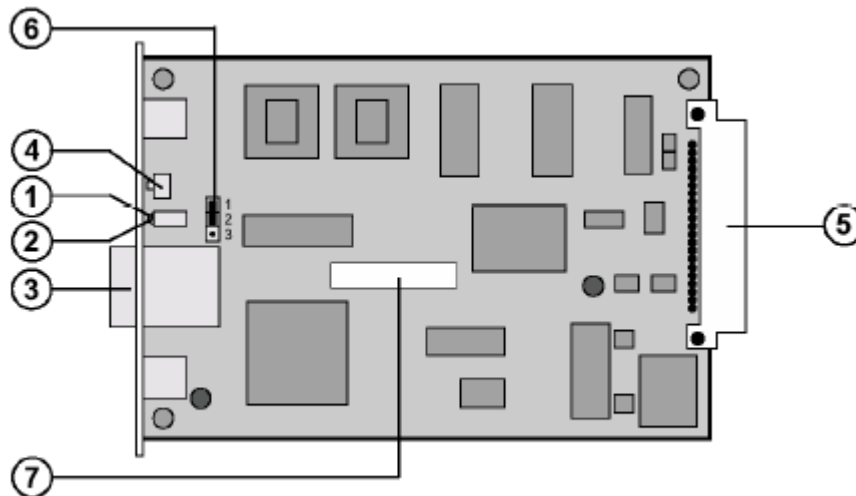

Figure 1: A6593A, SNMP board of the HP Power Trust II MR UPS device

1.   Red Transmit LED: ON: Card energized. Flashing: Transmitting.
2.   Green Receive LED: ON: Ethernet connection OK. Flashing: Receiving.
3.   Ethernet 10BaseT RJ-45 connector.
4.   Reset button.
5.   PowerTrust II-MR internal bus.
6.   Factory test jumper (Normal operating position shown.)
7.   MAC address label.

The MAC address and accompanying IP address of the built-in SNMP board of the HP Power Trust II MR is located <u>on the board</u>. If you cannot get the address information elsewhere, you have to pull out the SNMP board. The board can be hot swapped, if absolutely necessary, but it is recommended to turn the UPS device off. The MAC address is situated on a label (7 – see figure 1 above) in the middle of the board. You see a bar code and next to it the MAC address. You can compute the factory default IP address from the MAC address. Take the last two octets (e.g. if the MAC address is 0080C8ABAA01, take AA01) and convert them to decimal (in our example AA = 170, 01 = 1). The IP address is always in the form of 168.8.X.Y (in our example the IP address is 168.8.170.1). The default netmask is 255.255.0.0, gateway is 0.0.0.0.

The configuration can be done with the GUI or the ASCII interface. You need a graphical display if using the GUI (CDE, ReflectionX, etc.). Assuming you are using the GUI start it with:

```
# /opt/upsmgr/manager/bin/upsmgrmap
```

In the UPS Domain Map window pull down the "Options" menu and select "UPS Interface Config". In the newly opened window select "UPS_EX15_EX20_EX30_EX40" and click on "Run". A panel opens where the hexadecimal hardware (MAC) address has to be specified. Click on "Configure" and provide the network information in the panel. Set "Trap Community" to "public". Click on "Configure" and review your entries. Click on "Start" and a progress window is shown. Upon completion a confirmation window opens. Click on "OK".

The SNMP board is configured.

If you have no access to a graphical display, start the ASCII interface with:

```
# /opt/upsmgr/manager/bin/upsmgrascii
```

In the Main Menu select "6. UPS Interface Configuration" and choose "1. UPS_EX15_EX20_EX30_EX40". Enter successively hardware address, IP address, gateway, and netmask of the SNMP-Module, Enter "public" for "Trap Community" and enter the IP address of the Management Station. A message "Please wait, the configuration of the SNMP-Module is running ..." is shown during the progress. After completion the SNMP board is configured.

Moving a UPS Device from one Subnet to another – Setting the SNMP Module to Factory Default

When moving a previously configured UPS device with an SNMP module it is sometimes necessary to reset the SNMP board to factory default in order to change the configuration.

To return to factory default IP network settings, remove the SNMP Card from its slot, move the jumper (6 – see figure 1 above) to the factory network parameter position (pin 2-3). Return the SNMP card to its slot in the Power Trust II MR UPS. After 45 seconds the card will return to its factory default IP configuration. Remove the SNMP card and set the jumper (6) to the Personalized network parameters position (pin 1-2). Return the SNMP card to the UPS. The A6593A SNMP Card will now respond to its factory default IP address.

Configuring the UPS and Dependent Computers

The configuration can be done with both the GUI and the ASCII interface, but the GUI provides more information and more options than the ASCII interface. Furthermore checking the connection is easier with the GUI tool. If you have access to a graphical display, use it!

Adding the UPS Device to the UPS Domain Map

Using the GUI start it with

```
# /opt/upsmgr/manager/bin/upsmgrmap
```

From the UPS Domain Map pull down the "UPS" menu and select "Add". Enter the hostname or IP address of the UPS, if it is connected via LAN (meaning it has an SNMP module). Enter the hostname of the computer, if it is connected via serial cable. The Object Name will be automatically added (e.g. <hostname>:UPS). Click "OK" to confirm. There should be a green icon for the added UPS device in the UPS Domain Map.

For the ASCII interface start it with

```
# /opt/upsmgr/manager/bin/upsmgrascii
```

Select "1. Add UPS" and then "1. Set IP Address/Hostname". Enter the hostname or IP

address for the UPS, if connected via LAN, otherwise enter the hostname or IP address of the computer it is connected to via serial cable. Select "3. OK" and get back to the Main Menu.

Configuring the UPS

Using the GUI:

Select the icon in the UPS Domain Map, pull down the "UPS" menu and select "Configuration". You are shown the default values, which are good for most configurations, so you do not have to change anything. Check for "UPS Manager Control", which should be checked or pressed. Click on the "Managed" button and press "OK"

Using the ASCII interface:

Select "4. Edit UPS" from the Main Menu. Select the appropriate number for the UPS device you want to configure. Choose "4. UPS Configuration". Check the values and go back to the Main Menu. Usually there is nothing more to be done to configure the UPS device with the ASCII interface.

Adding a Computer as a UPS Dependent Node

Using the GUI:

Click on the UPS icon in the Domain Map and pull down the "UPS" menu, select "Dependencies". In the panel click on "Add" and enter the name of the computer you want to assign to the UPS. The Object Name will be automatically added (e.g. <hostname:CLIENT). Click on "OK". There should be a window now (the UPS Segment Map) showing the UPS device and the dependent node.

You can confirm the connection between the UPS device and the computer by starting the HP UPS Manager Client

```
# /opt/upsmgr/client/bin/upsmgrclient
```

The traffic shows the connection status. It is possible that it shows the yellow light (Communication Lost) first, before jumping to green. This may take up to a minute, so be patient. If, say, after several minutes the light is still yellow, you should do some troubleshooting (see section below).

Using the ASCII interface:

Select "4. Edit UPS" from the Main Menu and select the appropriate number for the UPS device, you want to configure. Then choose "1. Add Dependency", select "1. Set IP Address/Hostname" and enter the name of the computer you want to assign to the UPS. Select "3. OK" and go back to the Main Menu.

You can confirm the connection between the UPS device and the computer by choosing "7. UPS Info" from the Main Menu. Look for "Active Alarms", there should be no entry. If it shows "Communication Lost" even after several minutes go ahead for troubleshooting (see section below).

Configuring the Computer

Using the GUI:

Double-click on the UPS icon on the UPS Domain Map; the UPS Segment Map should open. Click on the icon for the computer you want to configure and pull down the "Node" menu. Click on "Configuration. In the panel check if "UPS Manager Control" is checked or pressed. Press "Managed" and "OK". Most of the time the default values are ok.

If you indeed have to make some changes to the node configuration, you have to click on the alarm in the node configuration panel (see paragraph above). The alarm line will be highlighted, then click on "Modify Entry". In the panel you can modify the time for action delay and action duration (see explanation below). You can define a "Message to User" and insert the "Action Script". This can be a customized, self-written script, e.g. to shut down SAP or an Oracle database, or a simple command. For example, if you take a look at the "Action Script" for the alarm "OnBattery", you see it is simply "/etc/shutdown".

Using The ASCII interface:

Select "4. Edit UPS" from the Main Menu and select the appropriate number for the UPS device, you want to configure. Then choose "3. Node Configuration", pick the right node from the list (there is often only one node). You see a list of configured alarms. Most of the times the defaults are ok, but if you have to change something, just enter the number of the alarm to be changed. <u>You enter the vi editor now!</u> There is a lengthy introduction to the vi editor at the beginning, scroll down to the values and you can change action delay and duration, message and script (see explanation below). Remember you are in the vi editor, so leave with ":wq" to save your changes.

Explanation of Peak Delay, Action Delay and Action Duration

In the configuration panel for the dependent node computer you see several "Alarms", whether they are handled or not, and the times for "Action Delay" and "Action Duration". Action Delay means how long the UPS Manager waits until it starts the associated script for this alarm. Action Duration is the time needed to execute the "Alarm Script". In the configuration panel for the UPS device you can see the "Alarms", if the UPS will shut down or not and the "Peak Delay". "Peak Delay" is the grace period in which the power can come back on, so no action will be initiated.

Example 1:

The default value for the alarm "OnBattery" is 60 seconds. That is, after 60 seconds on UPS battery the "Action script" (/etc/shutdown -h -y 0) will come to effect, starting to shutdown the system. The default peak delay for "OnBattery" is 30 seconds. If the power comes back up during this 30 seconds (so the UPS is not on battery anymore, but back on the AC power line), no action script will be initialized. In our example the system won't shutdown. If the alarm will hold on for 60 seconds, the action script will be initialized. A message to the users is sent, reading, "System is going down because of power failure. Please log off" and the shutdown sequence begins. The default action duration is 240 seconds. This is a guess that most systems can do the shutdown sequence in 4 minutes or less. (If your system needs more time than this you have to change the action duration.) After the shutdown has completed the

UPS will <u>power down</u> the computer, meaning the computer is <u>disconnected</u> from the power line. After all dependent computers have completed their shutdown sequences the <u>UPS itself</u> will power down.

Example 2:

If the customer has an SAP or Oracle database on the system (which is very common), and he wants to shut down the database safely, he has to provide an action script. You can put the path to the action script for "OnBattery" in the place of the default path to `/etc/shutdown` (be sure that the new action script has also a shutdown command in it). The customer should know how long it takes to shut down the database <u>and</u> the system. Put in the appropriate value for the action duration.

Testing the UPS Configuration

Well, there is only one real test for the configuration: Pull the plug! If a downtime is available, this is the recommended test. You can plug the UPS device back in during the action delay, so no action scripts will be initialized. But if time is at hand let the whole sequence run, just to be sure everything is really ok.

Only UPS devices with SNMP connections provide testing through HP UPS Manager II. Pull down the "UPS" menu from the UPS Domain Map and click on "Test". On the panel you can select a test and run it.

Remember the Important Information above, <u>do not use</u> the "Run Test" button on HP Power Trust UPS devices.

There is no test available in the ASCII interface.

Troubleshooting

The most common problem is "Communication Lost!". In this case check the following:

- Are the daemons (mgupsd, ptupsd) running? Check with
  `ps –ef | grep ups`

- Is more than one daemon running? If two or more dameons are running on the same port, they can cause an alternating line of "Communication Lost!" – Communication ok" messages in `/var/adm/syslog/syslog.log`. Check the port with
  `fuser –f /dev/ttyXpY`
  Kill the inappropriate process which is clogging the port.

- When connected via serial cable: Is the right device file chosen? Check which device files are present with 'ioscan –fn'. This is not always useful, if the UPS is connected via a MUX panel. In the worst case you have to try all ttys.

- When connected via LAN: Is the IP address of the UPS device right? Is the UPS known by DNS servers, routers etc.? Is the netmask set right? Can you ping the UPS? Can you linkloop to its MAC address? Check the LAN cables. In the worst case, you

have to reset the SNMP module to factory default (see section above).

- A LAN-connected UPS device can be ping'd and is reachable with its factory default IP address, but it appears that the factory default network configuration cannot be changed. It may be the case, that the jumper on the SNMP card is incorrectly set to factory default.