

Unix/Linux daemon server for the Enterprise UPS line

upseye.pl is a perl script which acts as a daemon server and controls the UPS through a serial port.

As a prerequisite, you will need:


- the *perl* program (suggested version ≥ 5.6)
- the *make* program

You can find an updated release of *perl* at the following address:

<http://www.cpan.org/ports/index.html>

Installation (on standard Unix/Linux)

To install the program follow the instructions:

- login as *root*
- copy the *upseye* tar file (depending on the release of the software, the name will be different: in this example the file is *upseye.0.2.0.tar.gz*) in the directory you will use for installation eg.: */usr*
- untar the file with the following command:
`tar -xzvf upseye.0.2.0.tar.gz`
- change to the *upseye* directory with the command:
`cd upseye.0.2.0`
-  be sure that no devices are connected to the serial port you will be using for the UPS: otherwise test results could be erroneous.
- run the installation script:
`./install`

the installation procedure will show a menu like this:

```
[0] destination directory (script location) [/usr/sbin]
[1] serial port connected to the UPS [/dev/ttyS1]
[2] maximum battery runtime (seconds) BEFORE shutdown [120]
[3] UPS shutdown delay (seconds) [180]
[4] command to shutdown system [/sbin/shutdown -h now]
[5] command to be run when the UPS goes in battery mode []
[9] UPS model/family [Enterprise]

[d] restore to defaults
[q] quit without installing
[u] remove files from boot script dir (remove daemon)

[s] install upseye and save modification

Select option:
```

choose the desired option and press <enter>

Menu options description

[0] destination directory

This parameter will be used as root for the `microdowell` installation subdirectory in which the configuration files and *perl* scripts will be copied. By default this directory is `/usr/sbin`. In this case, the installation directory will be:

`/usr/sbin/microdowell`

If changed, the installation script will check if the directory exists.

[1] serial port connected to the UPS

The serial port name used by the *upseye* daemon. You can change it according to your needs.

By default the device is `/dev/ttyS1` (COM2).

When changed, the script will check if the device is valid.

[2] maximum battery runtime (seconds) BEFORE shutdown [*n*]

If the UPS goes in battery mode for more than *n* seconds, the *upseye* daemon will activate the shutdown procedure. This value can be set from 1 to 900 seconds.

[3] UPS shutdown delay (seconds) [*n*]

Defines the delay (in seconds) between the start of the system shutdown and the UPS turn off (standby mode).

This time must be HIGHER than the time spent by the system to complete the shutdown procedure.

This value can be set from 60 to 900 seconds.

[4] system shutdown command [*command*]

Command that will be run to shutdown the system. Change it, if different from `/sbin/shutdown -h now`.

The command can be a script file or an executable program. It is important to set the complete execution path of the command.

[5] command to be run when the UPS goes in battery mode [*command*]

Command to be run when the UPS goes in battery mode (eg.: alerting users). By default this field is empty.

[9] UPS Model/Family [*model*]

You need to select the UPS model if your is different from the default (Enterprise). Select you UPS from the list shown. This option is NEEDED if you are using one of this UPS models: HiBox/BBox/BBoxPro

[d] restore to defaults

Restore to the default configuration data.

[q] quit without installing

Exit without installing the *upseye* daemon

[u] remove files from boot script dir (remove *upseye* daemon)

If you have already installed the *upseye* daemon, you can remove the file from the startup boot directory, so, at the next boot it will be disabled. You can reinstall it running again the *install* script.

[s] install *upseye* and save modifications

Choose this option to:

- compile the perl modules and install them (if not already installed):
be sure no devices are connected to the serial port.
- Configure the parameters files and
- Install the *upseye* daemon

If everything went ok, when you choose the [s] option, you will get a message like this:

```
creating script directory: /usr/sbin/microdowell
copying files to installation dir [/usr/sbin/microdowell]: OK
copying rcupseye script in [/etc/init.d]:OK
making links in directories [rc3.d + rc5.d]:OK
.
.
.
upseye files has been installed in [/usr/sbin/microdowell] :
if you need, you can modify
  /usr/sbin/microdowell/enterprise.ini
to better suite your needs: see documentation files for more info

the daemon will start at the first reboot of the system.
if you want to start/stop/restart it by hand, please use the command
  /etc/init.d/rcupseye          or
  /usr/sbin/microdowell/rcupseye

PLEASE REMEMBER TO CONNECT THE UPS TO THE SERIAL PORT /dev/ttyS1
```

**NOW YOU CAN CONNECT THE UPS TO THE SERIAL PORT!!!
USE THE STANDARD SUPPLIED SERIAL CABLE: cod.2600100B [2607200A for HiBox Advanced]**

If the destination directory (see [0]) was `/usr/sbin`, as in this example, you will find the *upseye* files in the directory `/usr/sbin/microdowell`

If you have chosen a different destination directory, change the following examples accordingly to your choices.

To activate the *upseye* daemon installation, you will need to reboot your computer or to start it by hand with the command:

```
/usr/sbin/microdowell/rcupseye start
```

the parameter for the *rcupseye* script can be:
start, stop, status, restart

You can rerun the installation script to change the configuration parameters.



If you need to configure the behaviour of the *upseye* daemon in a different way than the parameters set in the installation script, edit the `/usr/sbin/microdowell/enterprise.ini` file, following the instructions in the *configuration* chapter.

Installation (on non LSB compliant Unix/Linux)

The installation script looks for the presence of the following directories:

```
/etc/init.d          or          /etc/rc.d
```

One of those two directories, contains the scripts files to be executed during the system startup.

If your system does not follows this rule, you will get this error message:

```
Unable to find the boot scripts directory
/etc/init.d/rc5.d or /etc/rc.d/rc5.d"
please edit this installation script
and modify the variable according to your needs
'InitDir'
```

to correctly install the *uspeye* daemon, you must modify the 'InitDir' variable in the *install* script:
(eg: in SuSE 6.0 the variable must be changed to: `/sbin/init.d`)

Troubleshooting

During the installation, the script can complain about the following problems:

- *perl* or *make* programs not installed:
please install them (you will find them in your OS installation CDs)
- Unable to find directory [Device-SerialPort...]
the installation *tar* file seems corrupted or you deleted some files from the installation directory.
- Errors found during the installation: installation halted
The script was unable to install the *perl* 'SerialPort' module: try to identify the problem reading the file *ErrLog*.
If you are not able to correct it, please send an email with the *ErrLog* file to:
research@microdowell.com

daemon activation/testing

You can run the daemon in interactive mode (not as a daemon) with the following command:

```
perl upseye.pl -i
```

it will not show any message except for a "started..." message.

to see the different parameters used by upseye.pl, run:

```
perl upseye.pl -help
```

To test if the daemon is working correctly, you can open a telnet connection to the 18881 port:

```
telnet localhost 18881
```

you will get a screen like this:

```
Suse8:~/ups # telnet localhost 18881
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
D-2000 00 "MicroDowell SpA - TCP/IP - v0.0 gamma" v0.0 Socket[2]
D-2001 "ENT20 " "00002037" "FFFFFFFF" "FFFFFFFF" 2002/05/24 0.1 1.2 0.0.7 4
D-2002 IP=0.0.0.0 MASK=0.0.0.0 GATEWAY=0.0.0.0 SLAVE
D-2100 24184 00 00000718 0718 33 000 00 00 4 02 00 58
D-2101 228.7 234.9 54.1 33.0 0.0 50.0 0.0
D-2102 0 0 100 -1 0 14926 2076 0
D-2100 24188 00 00000718 0718 33 000 00 00 4 02 00 59
D-2101 228.2 233.3 54.1 33.0 0.0 50.0 0.0
D-2102 0 0 100 -1 0 14927 2076 0
D-2100 24192 00 00000718 0718 33 000 00 00 4 02 01 00
D-2101 227.1 233.2 54.2 33.0 0.0 50.0 0.0
D-2102 0 0 100 -1 0 14927 2076 0
^]
telnet> quit
Connection closed.
```

every few seconds you will get some more data: everything is OK.
Exit from the telnet session pressing CTRL-] followed by 'quit'

You can check the network communication with the daemon, loading the upseye *client* program (eg: windows) on a different computer and setting the IP address of the server to the address of daemon computer.
If you are unable to connect to the daemon server (the computer on which this script has been installed), be sure to check if the server is protected by a firewall.
If so, open the ports 18881 and 18882 to the clients.

upseye daemon configuration

To configure the daemon you need to modify the file
/usr/sbin/microdowell/enterprise.ini
of the several fields present in the .ini file, the user needs to modify:

Serial port configuration [UpsParams]:

```
[UpsParams]
Port=/dev/ttyS0          change it to the port to which the UPS is connected.
                        eg: on FreeBSD COM1 is: /dev/cuaa0
```

Console Message notification [UpsMDW]:

By default, when the *network message* flag (in **Settings=**) is set to 1 (see Events configuration), the *Upseye* daemon will run a *wall* command.

If you want to disable this option or you want use a different command to notify users, modify the following lines:

```
[UpsMDW]
MsgFile=/tmp/UpseyeMsg
MsgCmd=wall
```

where:

`MsgFile` is the name of the script file to be run; the content of 'MsgFile' is:

```
#!/bin/sh
echo $1 > /tmp/UpseyeMsg.msg
MsgCmd /tmp/UpseyeMsg.msg
```

where:

'*MsgCmd*' is the name of the program (*wall*) to be run (defined with `MsgCmd`).
'*\$1*' is the string with the message to be displayed

If you don't want to send notifications to the users you can:

- set `MsgCmd` to null. eg: `MsgCmd=`
- change the *network message* flag (in **Settings=**) to disable the specific notification

Events configuration [E_*]:

The upseye program handles 16 types of events; each event can be associated to an action (e.g. the system shutdown). Here follows a short description of each event:

E_START	upseye started: activated when the program is started
E_STOP	upseye stopped: activated when the program is stopped
E_NOC	unable to communicate with the UPS
E_COMSTART	UPS communication started
E_COMLOST	UPS communication lost
E_BAT	UPS on battery: activated when the UPS switches to battery mode
E_BLOW	UPS low battery condition
E_POWON	UPS mains power restored: the mains is on after a battery mode switch
E_OVERLOAD	UPS output overload
E_HTEMP	UPS internal temperature limit exceeded
E_TESTKO	UPS self test failed
E_FAULT	UPS generic fault
E_10TOSD	Ten minutes to scheduled shutdown
E_1TOSD	One minute to scheduled shutdown
E_SYSSD	unscheduled system shutdown: activated when the system must be turned off due to limit UPS functioning conditions (e.g. overload and/or battery low, ...)
E_SCHED	Scheduled system shutdown started

The actions and the settings of the events are defined in every corresponding section [E_*].

Each event can be associated to 5 types of actions:

- system logging: the event is stored in the system log
- network message: a message with the description of the event is forwarded to all the clients
- command file execution: executes a program/command file
- e-mail message: (not currently available)
- system shutdown

Here follows a short description of one section:

[E_BAT] event section name (in this case when the the UPS is in battery mode)
EventID=5 event id (reserved: don't change)
Enabled=1 1: the event is enabled, 0: the event is not handled by the program
Settings=11111 this is a *bit field* value; reading from left to right shows if an event action is enabled (value=1) or disabled (value=0) (field values 2 or 3 are reserved, don't change them)

1	1	1	0	1	

Example of an enterprise.ini file:

Requirements:

1. The UPS is connected to COM2 (/dev/ttyS1)
2. After 5 minutes (300 sec) the shutdown is started, **AND the UPS is in battery mode**, the UPS will be shut off
3. when upseye.pl starts the shutdown procedure [E_SYSSD], will wait for 10 seconds and will run the command '/sbin/shutdown -h now'
4. if the UPS goes in *Battery LOW* [E_BLOW], shutdown IMMEDIATELY.
5. when the UPS is battery mode [E_BAT]:
 - a. after 50 seconds run the script file /usr/scripts/WarnUsers
 - b. if on battery for more than 4 minutes (240 sec), shut down the system

```
[UpsParams]
Port=/dev/ttyS1
```

```
[Schedule]
... - other parameters not shown...
SDDelay=300 - After starting the system shutdown (ShutdownCmd), the UPS will SHUT OFF in 300
seconds (ONLY if the UPS is in battery mode)
```

```
[E_BAT] - UPS in battery mode
... - other parameters not shown...
CmdFile=/usr/scripts/WarnUsers
CmdFileDelay=50
ShutdownDelay=240
```

```
[E_BLOW] - UPS in Battery LOW
... - other parameters not shown...
ShutdownDelay=1 - Immediate shutdown (after 1 second)
```

```
[E_SYSSD] - System Shutdown
... - other parameters not shown...
ShutdownDelay=10
ShutdownCmd=/sbin/shutdown -h now
```