

# G5 Upgrade Tool

**Applies to:** G5 Power Distribution Units

**Objective:** Perform automated bulk firmware upgrades.

**Pre-requisites:**

- Panduit G5 PDU
- g5-upgrade-tool.zip
  - g5-upgrade-tool.exe
  - pduReleases directory.

Use of this software is subject to the terms of the Panduit EULA:  
<https://www.panduit.com/content/panduit/na/en/legal-information/end-user-license-agreement.html>

## Description

The G5 Upgrade Tool automates the firmware update function for one or more G5 PDUs.

## Support

Please report issues with this software directly to the Panduit Engineering team contacts who provided you this software.

## Usage

The application window layout has these primary areas:

- Window title bar: shows the path to the open/saved configuration and the name: G5 Upgrade Tool.
- Menu bar: lists short cuts and common functions.
- Left-top: the Configuration entry area.
- Right-top: the Device List, showing IP Addresses, the function to be performed and the status of the operation.
- Right-middle: Actions performed on the Device List
- Bottom: Results text area.

The window can be resized and will adjust the user interface elements appropriately.

The menu system has these menus and menu items:

- File
  - Open... : Open a CSV file that uses the G5 Upgrade Tool schema.
  - Save : Save the current configuration to a new file if previously unsaved, or to the same file if previously opened/save.
  - Save as... : Save the current configuration to a new file.

- Edit : This menu provides standard clipboard operations for configuration data entry fields.
  - Cut : does not work on the Results field.
  - Copy
  - Paste : does not work on the Results field.
  - Select All
- Actions:
  - Start Upgrade : Perform the upgrade function on the configured PDUs.
- Help:
  - Documentation... : this documentation.
  - Licenses... : Panduit and Third Party Open Source Software License disclosures.
  - About G5 Upgrade Tool... : Information about the tool, including the version number.

Note: only one Scan Network and Start Upgrade operation can be performed at a time.

## Performing the Procedure

**WARNING:** *Do not interact with the daisy chain, network connections, button interfaces, FTPS, HTTPS, SSH or SNMP interfaces while this software is in use. Interacting with the PDU that is being upgraded WILL interfere with the upgrade process and cause the process to stop unexpectedly! Restarting the upgrade process without interruption will allow it to complete.*

1. Run the g5-upgrade-tool.exe by double clicking it.
2. Choose the “Add Device” or “Scan Network” notebook tab.
3. Enter the required paramters.
  - a. Scan Network uses ICMP Ping and SNMP v2 Read Community string to identify only G5 PDUs and adds them to the Device List.
  - b. Add Device just adds the device to the Device List. It does not verify the IP Address is a G5 PDU nor that it is reachable.
4. Click the “Add Device” or “Scan Network” button. The result of the operation is shown in the Results text area.
5. Enter the UserName and Password for SSH/HTTPS.
  - a. Note that the tool will read in a Password if one is provided, but will NOT Save the Password back to the file.
6. Choose the desired Firmware Version. By default, the newest version is selected.
7. When all devices have been added to the Device List, click “Start Upgrade”.
8. The progress bar thumb will move across the screen indefinitely until the operation is complete.

- a. Note that PDU upgrades take several minutes to complete. Please be patient. A PDU with max daisy-chain PDUs can take up to 45 minutes to complete firmware update.
9. The Results window shows the current operations and progress of the firmware upgrade process.
10. When complete, a line will report: “Upgrade results: 1 PASS, 1 FAIL, 0 previously passed” where the numbers are replaced with the actual status of the operation.
  - a. Note: “previously passed” devices are not upgraded on subsequent upgrade attempts.
11. If any units FAIL, you may click “Start Upgrade” again. Sometimes there are transient failures and it is safe to repeat the Upgrade process.
12. You may Save or Save as... when the operation is complete. The results will be preserved in the saved file.
  - a. Note: the result is replaced with ‘ready’ when you Open the file.

## Firmware Version

The pduRelease directory contains the supported firmware upgrade paths for this tool. For example, the pduRelease directory may contain:

- pduReleases/2.3.22/PANDUIT.FW
- pduReleases/3.1.1/PANDUIT.FW

To add a new firmware upgrade version:

1. Make a new directory inside the pduReleases directory with the name of the firmware release.
2. Copy the PANDUIT.FW file into the new directory.
3. Start or restart the tool.

## Configuration File (CSV) Schema

An example of the CSV configuration file used by the tool is:

```
'#ConfigFileVersion','1.0.0.0'
'#ConfigFileSchema','1'
'#UserName','admin'
'#FWVersion','PDU: 3.1.1'
'#SNMPv2Com','public'
'#AddIP','192.168.2.25'
'#StartIP','192.168.2.30'
'#EndIP','192.168.2.30'
192.0.2.2,'upgrade','ready'
192.0.2.3,'upgrade','ready'
```

The ‘#’ prefixed items are common configuration items as seen in the user interface. ‘AddIP’ belongs to “Add Device” and “StartIP”/“EndIP” belong to “Scan Network”.

If a Configuration Item is not present, or the tool will use empty values or default values (only FWVersion) in their place.

The ‘#ConfigFileVersion’ and ‘#ConfigFileSchema’ are necessary for future upgrades to this tool, to maintain backward compatibility.

The Device List are the entries that start with an IP Address. Duplicate entries are only operated on ONCE when the upgrade operation is applied.

The Device Lines are generally of the form:

```
IPAddress, 'function', 'status'
```

where ‘function’ is ‘upgrade’ and ‘status’ may be “PASS”, “FAIL”, or ‘ready’.

## Known Issues

The software must run from a writable directory, so it can create some temporary files.

You cannot run multiple instances of this software from the same directory, because of the non-unique filenames that are created/modified by this software in the same directory.

## Side effects

The tool creates/overwrites these files:

- ssh-debug.log
- g5-upgrade-tool-log.txt

The tool uses the FTPS, SNMP, HTTPS and SSH protocols to perform the necessary operations. When necessary, the tool temporarily reconfigures SNMP to use ‘public’ and ‘private’ credentials.

## Verbose Information

Extra information is shown in the text console if the application is run in cmd.exe instead of being double-clicked.

## Release History

v1.0.3.0: Eliminate sleep after mkfs. Proactive workaround (switch to non-blocking socket before ssh close) to try to avoid a socket timeout/shutdown race condition when the PDU is known to abruptly reboot. v1.0.2.0: Updated 2.3.22 transitional upgrade firmware image. v1.0.1.0: First release based on PG5-F1-GUT Requirements.