CISCO WLAN POLLER GUI

User Guide

Document Version	v5.05
Application Version	WLAN Poller GUI v5.05
Date	March 2026
Classification	Customer Visible
Author	Wireless BU

1. Overview

The Cisco WLAN Poller GUI (WPGui) is a PySide6-based network automation tool designed for Cisco enterprise wireless environments. It enables network engineers to perform various operations like bulk CLI operations across Wireless LAN Controllers (WLC) and Access Points (AP) via SSH, collect structured outputs, validate firmware, and perform image upgrades with built-in safety checks.

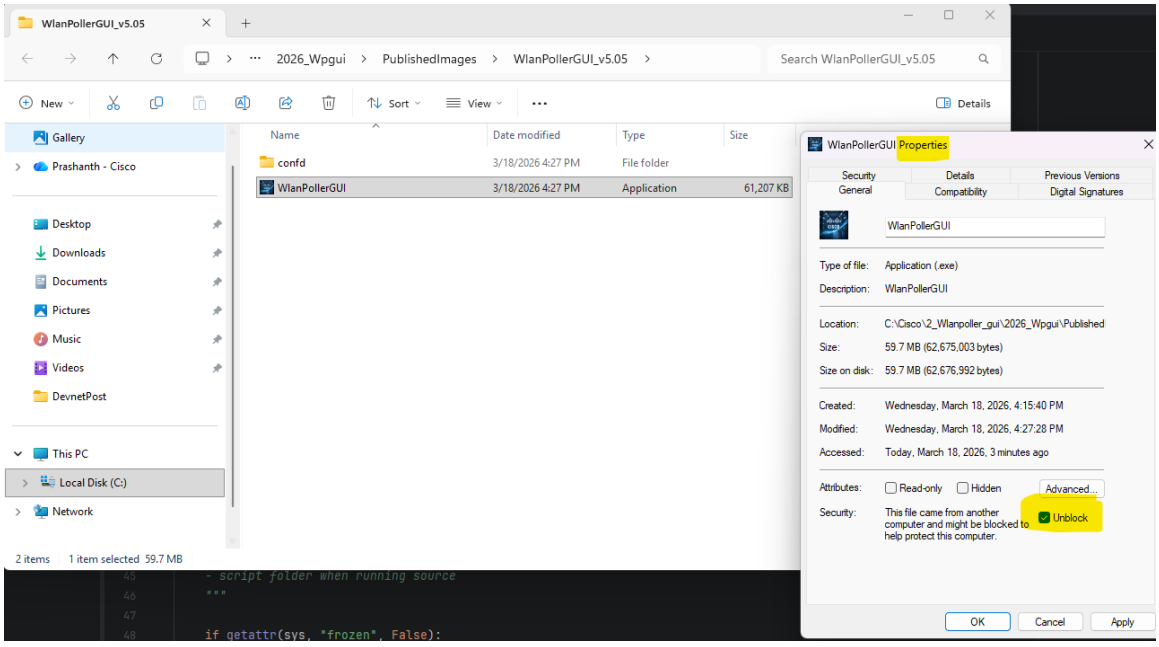
This document covers the advanced use cases available in v5.05 focusing on features introduced or significantly enhanced in this release. Each use case includes a detailed step-by-step procedure, expected output, and relevant safety alerts.

Wpgui Image Name for Windows & MAC Book:

System (Win/Mac)	Wpgui Image Name

System (Win/Mac)	**Wpgui Image Name**	**Version**
Windows	Wpgui_Windows_Ver505.zip	V5.05
MAC Book X86	Wpgui_MacX86_Ver505.zip	V5.05
Mac Book Arm64 M1/M2/M3/M4+	Wpgui_MacArm64_Ver505.zip	V5.05

Unzip the file & execute the wpgui application file. In Windows if you run into any errors to launch the application please unblock & try again as shown below under properties.



2. Use Case Index

UC ID	Use Case Title	Applicable Mode
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UC-04	AP Only Mode — Direct SSH Polling	AP Only
UC-05	Device Reload via Confirm Injection (%reload%)	AP Only / WLC & AP
UC-06	Timed Delay Between Commands (sleep N / pause N)	AP Only / WLC & AP
UC-07	AP Image Download via archive download-sw	AP Only / WLC & AP
UC-08	Image-to-Model Mismatch Detection Alert	AP Only / WLC & AP
UC-09	Pre-Run Image Verification Warning (Step 4 Proceed Alert)	AP Only / WLC & AP
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UC-11	Log Search Analyzer - Parser	

UC-01 AP Flash & Vulnerability Checker

Description

The AP Flash Checker (Flash Vulnerability Decoder) is a built-in workflow in WPGui that connects to each AP via SSH and runs a set of diagnostic commands to read flash contents, decode the installed image, and identify vulnerable firmware versions. It is selected in Step 3 as a workflow option and requires no manual command entry — WPGui auto-generates the necessary commands based on the selected workflow.

Use Case Attributes

Operation Mode	AP Only (or WLC & AP)
Trigger	Step 3 Select 'AP Flash Checker' from the workflow dropdown
AP Commands	Auto-generated: show flash:, show version, dir flash:
WLC Connection	Not required
Output	Per-AP .log file + vulnerability summary table in Step 7 Run Log

Prerequisites

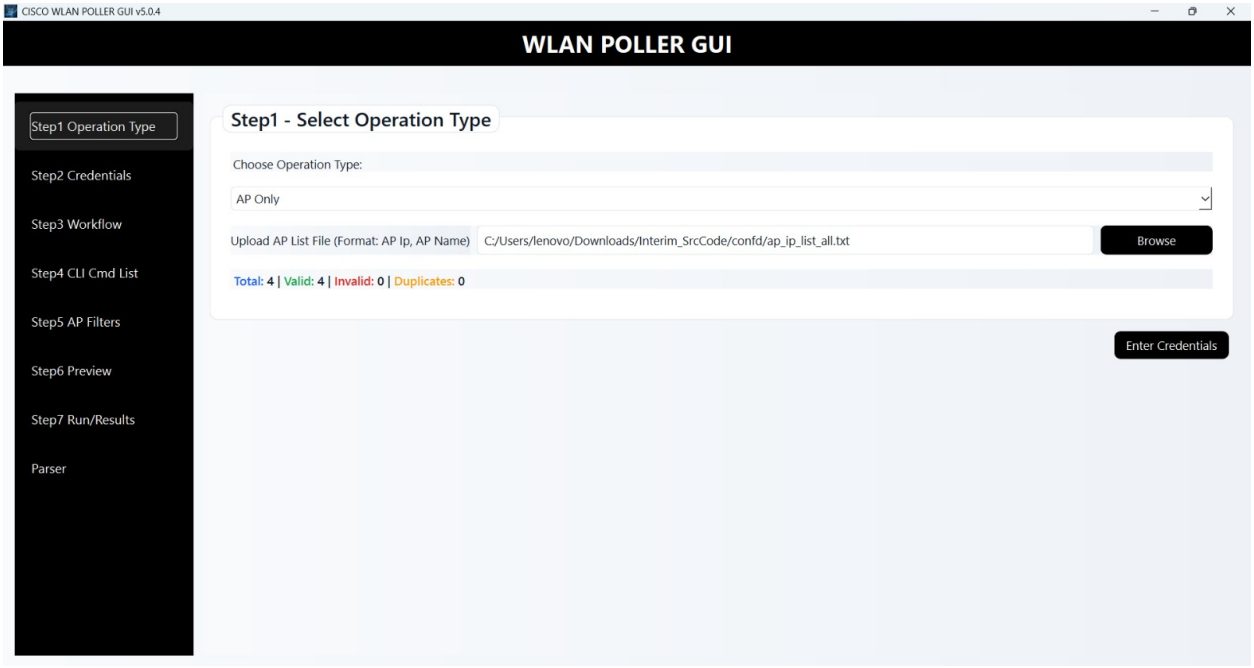
- AP list file (.txt or .csv) uploaded in Step 1. Format: IP Model Name (space or comma separated, one AP per line).
- AP SSH credentials (username, password, enable password) configured in Step 2.

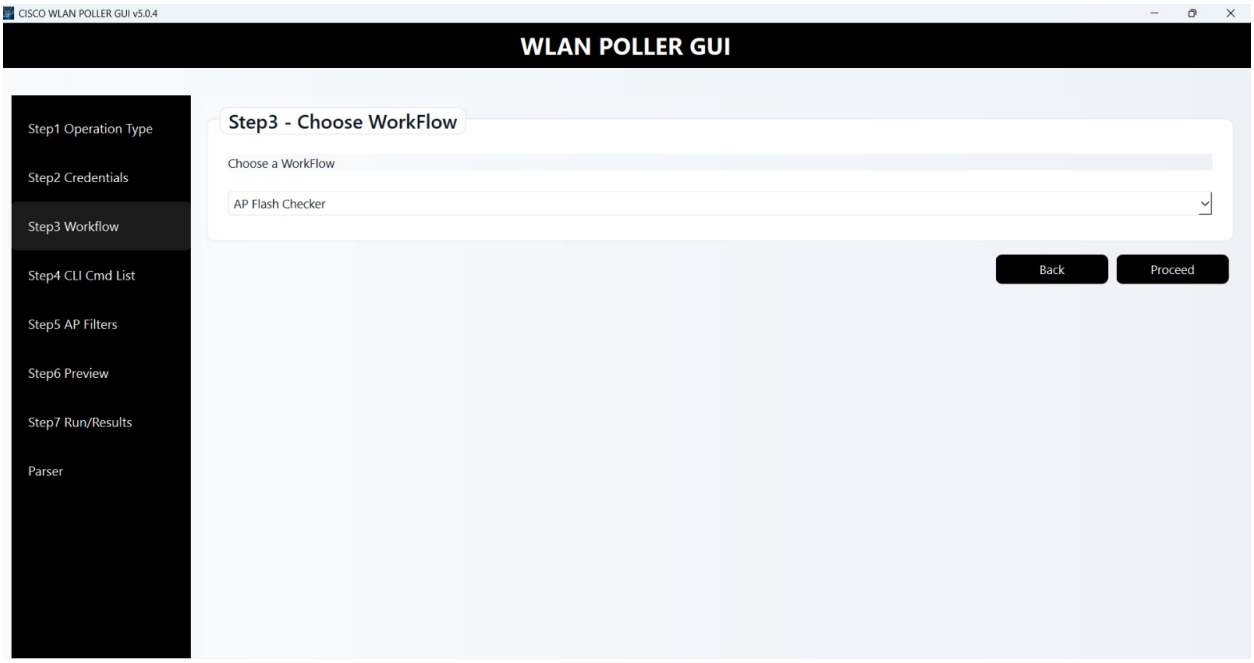
Step by Step Procedure

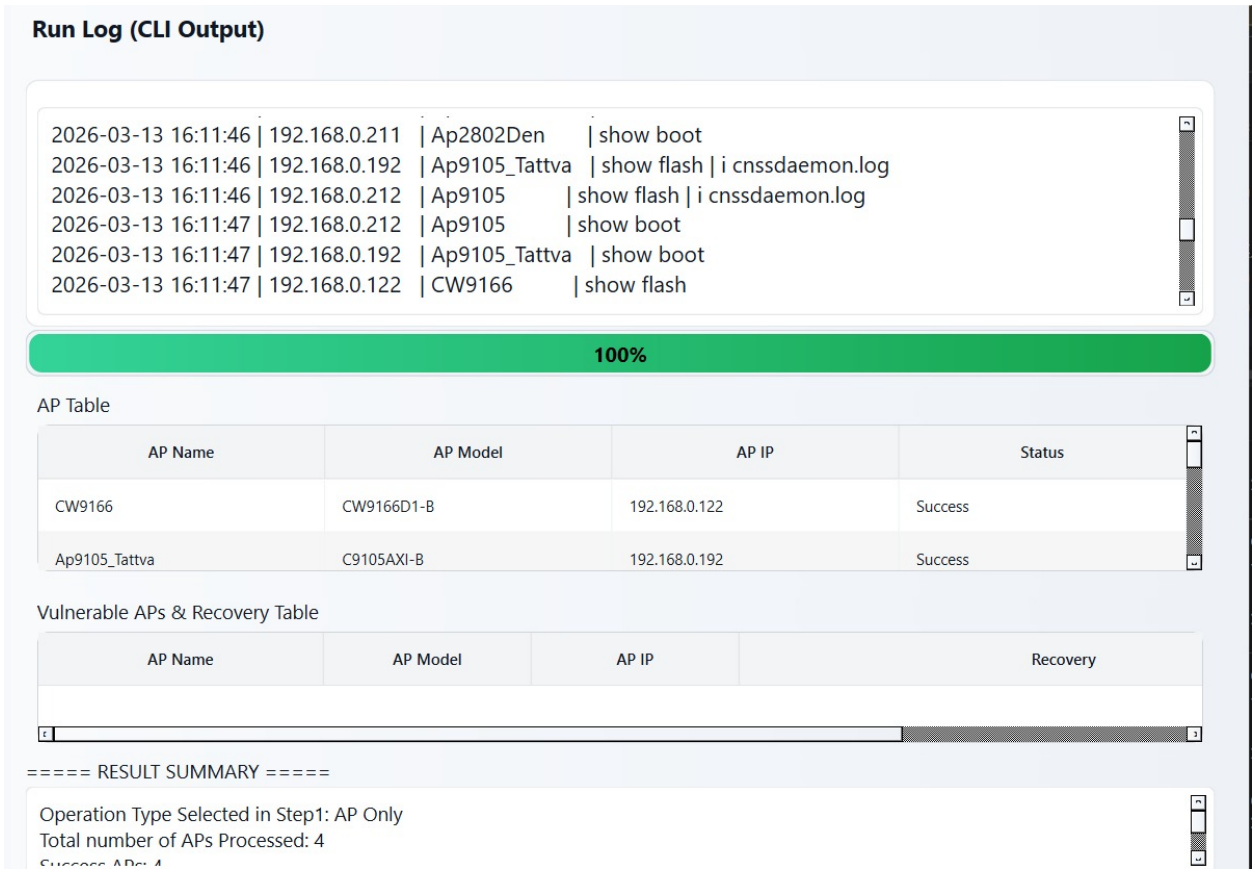
1	Step 1: Set Operation Type to 'AP Only'. Click Browse to upload the AP list file.
2	Step 2: Enter AP username, password, and enable password. Click Save.
3	Step 3: Select 'AP Flash Checker' from the workflow dropdown. No command entry is required — commands are auto-generated.
4	Step 6: Review the run preview. Click 'Confirm and Start WlanPoller'.
5	Step 7: Monitor the Run Log. Each AP will display flash contents and a vulnerability verdict: SAFE, VULNERABLE, or UNKNOWN.

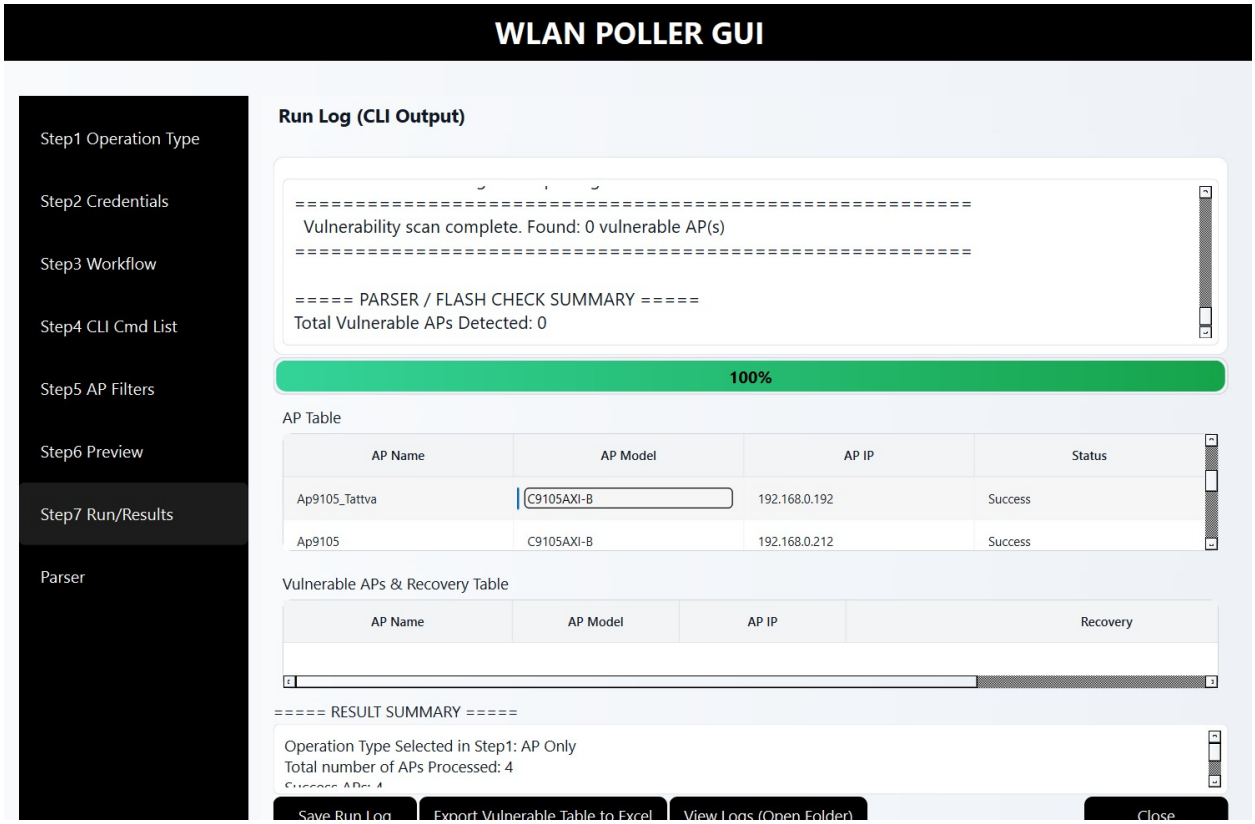
Supported Access Point Models

9117	9171
9124	9174
9130	9176
9136	9178
9162	9179
9163	9172
9164	9166
9167	









UC-02 WLC & AP Mode Dual-Stage Polling

Description

WLC & AP mode executes a two-stage operation: it first runs a set of CLI commands on the Wireless LAN Controller over SSH, then automatically fetches the AP list from the WLC and polls each AP individually. This is the most complete operation mode, suitable for monitoring commands, full-site audits, configuration pushes, and image upgrades across all APs registered on the WLC.

Use Case Attributes

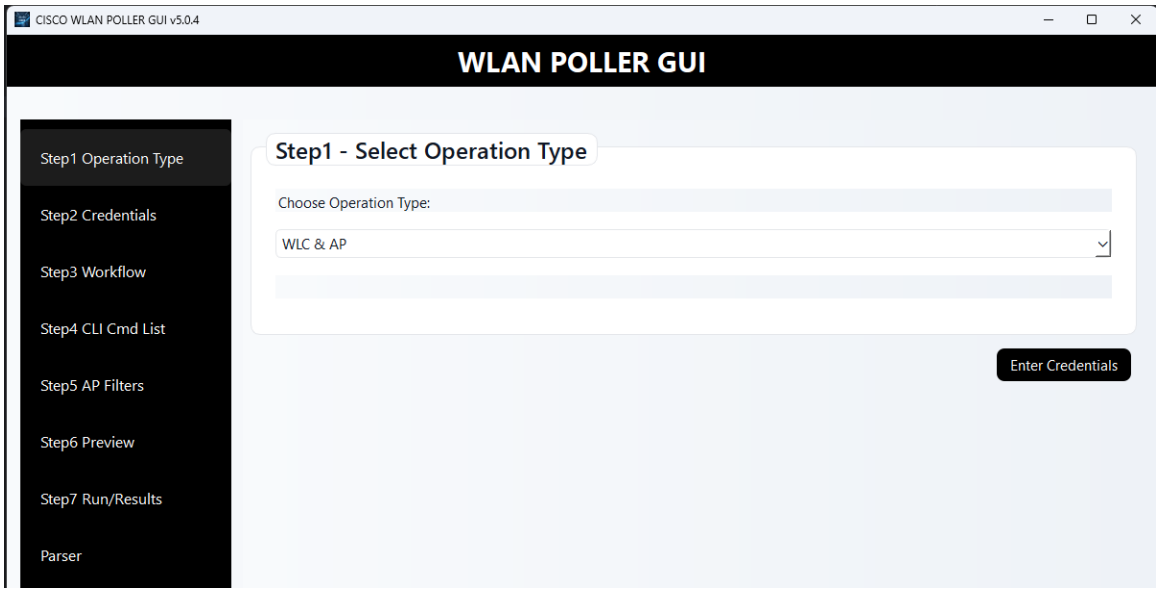
Operation Mode	WLC & AP
Trigger	Step 1 Select 'WLC & AP' from Operation Type dropdown
WLC Commands	Optional if provided, run before AP polling
AP Commands	Mandatory executed on each AP via SSH
AP Filter	Optional filter by Site Tag or AP Model Group
Output	Per-AP .log file + WLC outputs.txt under data/YYYY/MM/DD/RUN-N/

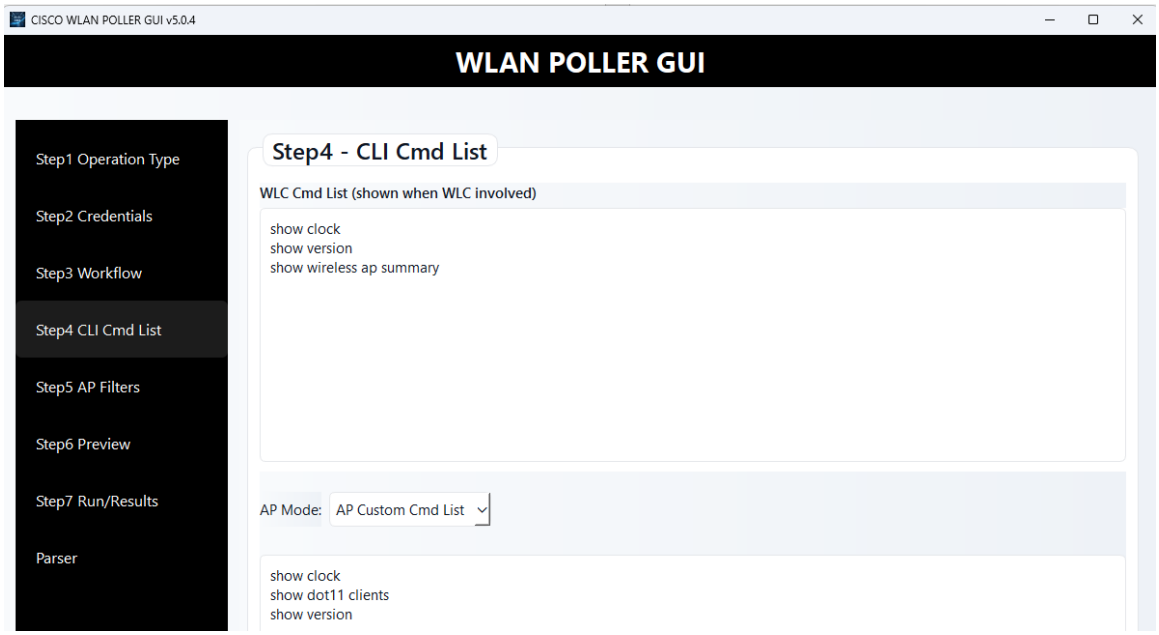
Prerequisites

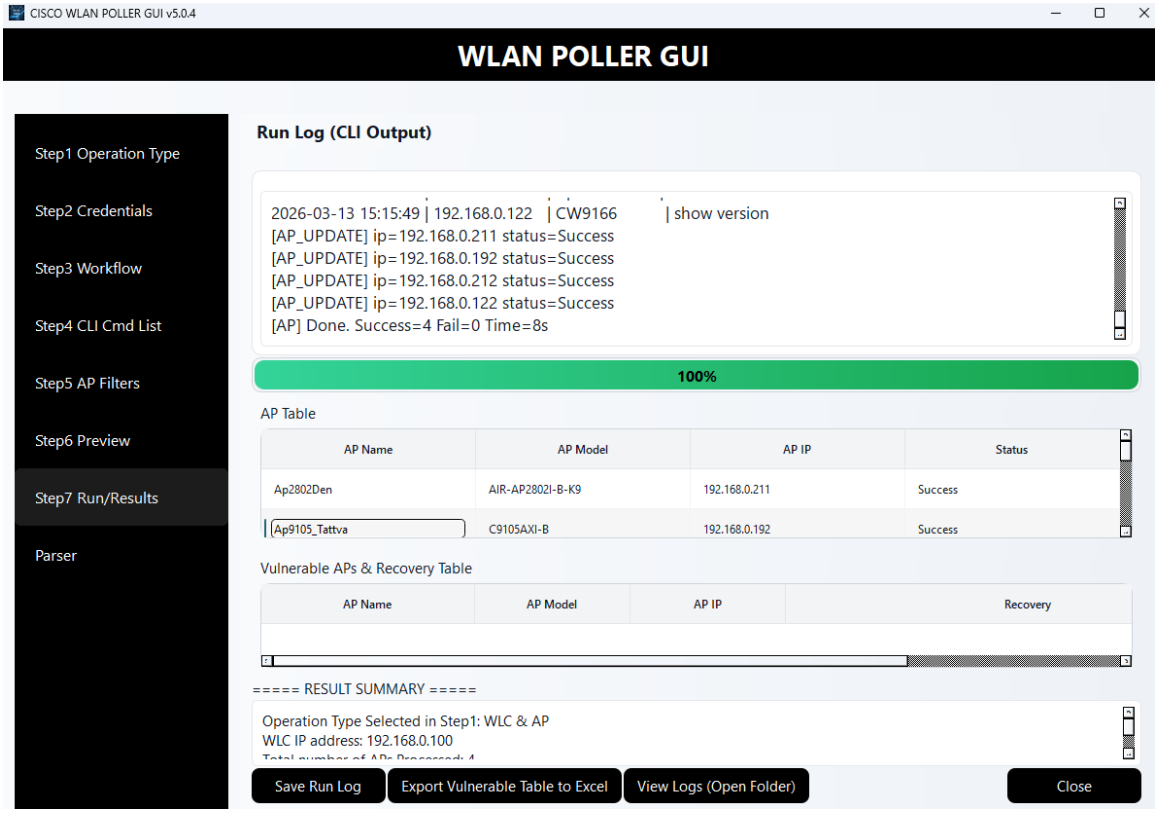
- WLC IP, username, and password configured in Step 2.
- AP SSH credentials (username, password, enable password) configured in Step 2.
- WLC reachable on TCP port 22.
- WLC CLI account has privilege to run 'show ap summary'.

Step by Step Procedure

1	Launch WPGui Application. On Step 1, set Operation Type to 'WLC & AP'.
2	Navigate to Step 2. Enter WLC IP, WLC username/password, AP username/password, and enable password. Click Save.
3	Navigate to Step 3. Select workflow: 'Custom CLI Commands'.
4	In Step 4. Enter WLC commands in the WLC Cmd List box. Enter AP commands in the AP Cmd List box. Click Save.
5	Navigate to Step 5. Optionally select a Site Tag or Model Group filter. Click Preview.
6	Review Step 6 Preview. Click 'Confirm and Start WlanPoller'.
7	Monitor Run Log and AP Table for per-AP status (Success / Fail).







UC-03 WLC Only Mode — Controller-Only CLI Polling

Description

WLC Only mode connects exclusively to the Wireless LAN Controller over SSH and executes a defined set of CLI commands. No AP polling is performed. This mode is ideal for WLC-level diagnostics, configuration audits, bulk command execution on the controller, or any operation that does not require touching individual Access Points.

Use Case Attributes

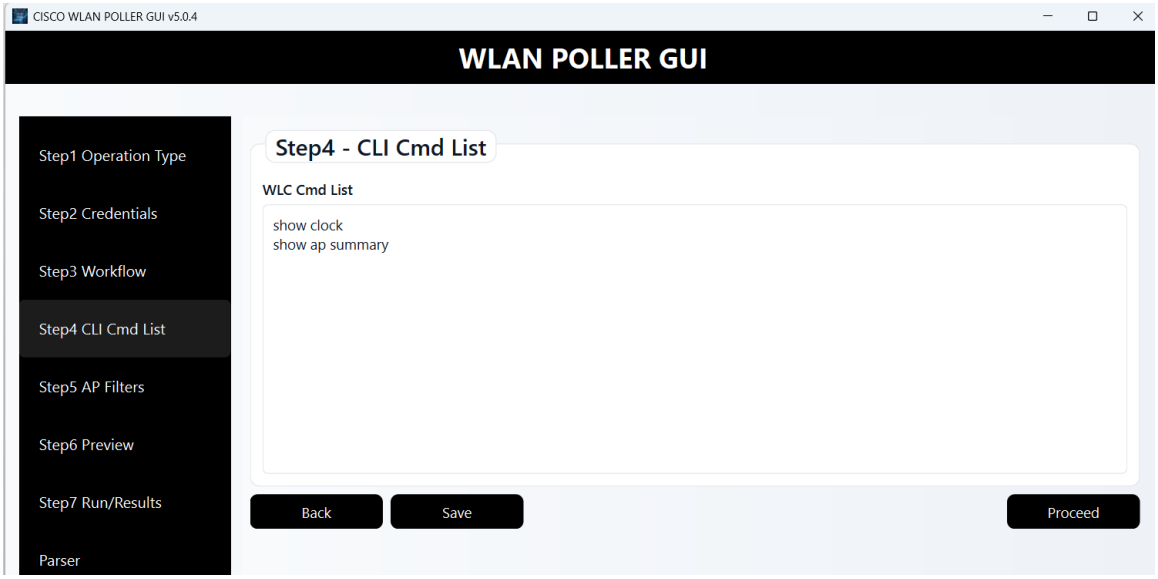
Operation Mode	WLC Only
Trigger	Step 1 — Select 'WLC Only' from the Operation Type dropdown
WLC Commands	Mandatory — entered in Step 4 WLC Cmd List box
AP Connection	Not required
Output	WLC outputs.txt under data/YYYY/MM/DD/RUN-N/

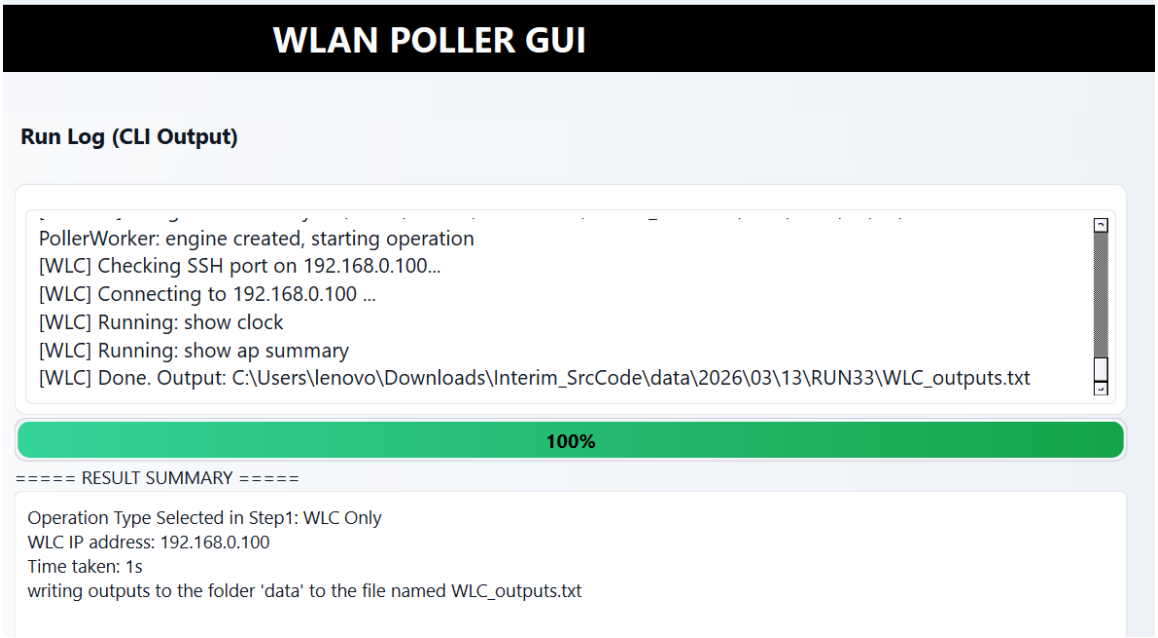
Prerequisites

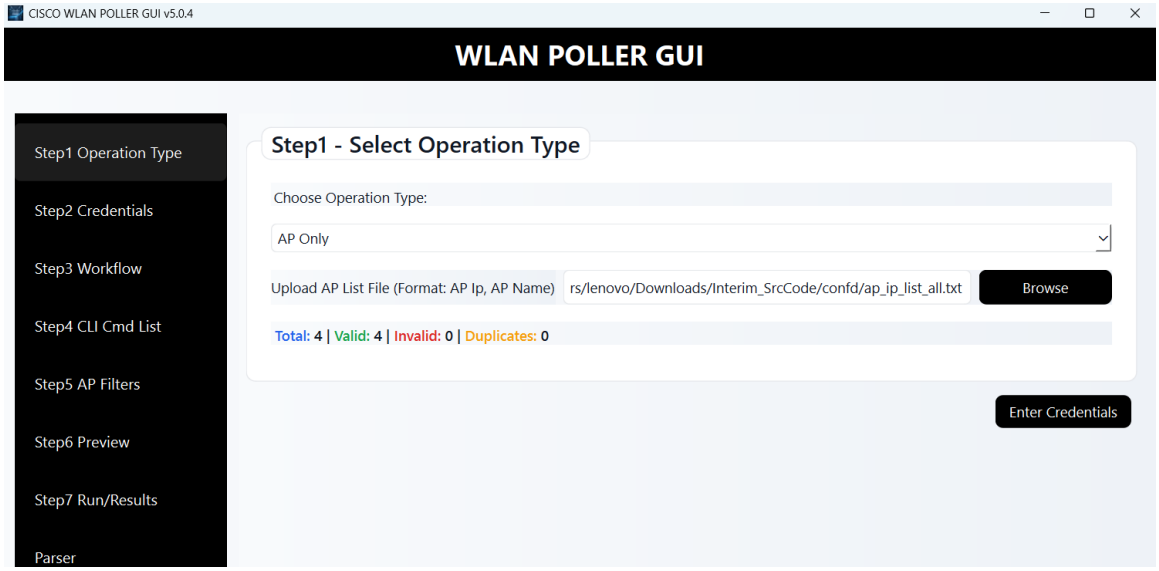
- WLC IP, username, and password configured in Step 2.
- WLC reachable on TCP port 22.

Step by Step Procedure

1	Step 1: Set Operation Type to 'WLC Only'.
2	Step 2: Enter WLC IP, WLC username, and WLC password. Click Save.
3	Step 3: Select workflow: 'Custom CLI Commands'.
4	Step 4: Enter WLC commands in the WLC Cmd List box. Click Save.
5	Step 6: Review the run preview. Click 'Confirm and Start WlanPoller'.
6	Step 7: Monitor the Run Log. WLC output is saved to data/YYYY/MM/DD/RUN-N/hostname outputs.txt.







UC-04 AP Only Mode — Direct SSH Polling

Description

AP Only mode connects directly to a list of APs via SSH using credentials configured in Step 2. It does not connect to any WLC. The AP list is uploaded manually in Step 1 as a .txt or .csv file. This mode is the most flexible direct-SSH operation mode — it supports any AP reachable over TCP/22, regardless of whether a WLC is present.

Use Case Attributes

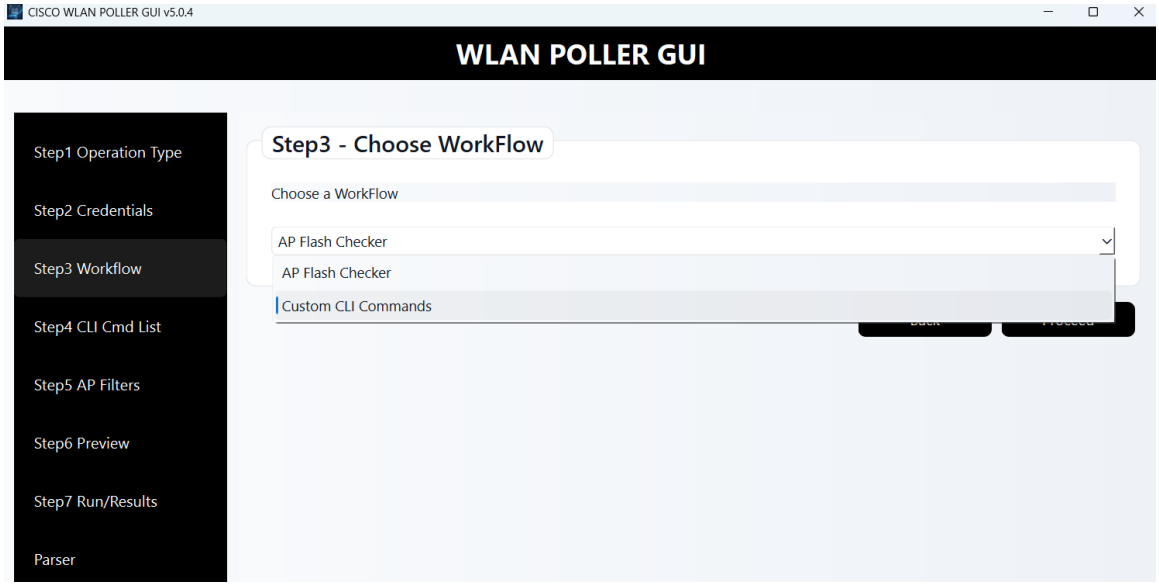
Operation Mode	AP Only
Trigger	Step 1 — Select 'AP Only' and upload AP list file
AP List Format	IP [Model] [Name] — space or comma separated, one per line
AP Commands	Mandatory — entered in Step 4 AP Cmd List box
WLC Connection	Not required
Output	Per-AP .log file under data/YYYY/MM/DD/RUN-N/

Prerequisites

- AP list file (.txt or .csv) uploaded in Step 1.
- AP SSH credentials configured in Step 2.

Step by Step Procedure

1	Step 1: Set Operation Type to 'AP Only'. Click Browse and upload the AP list file.
2	Step 2: Enter AP username, password, and enable password. Click Save.
3	Step 3: Select workflow: 'Custom CLI Commands'.
4	Step 4: Enter AP commands in the AP Cmd List box. Click Save.
5	Step 6: Review the run preview. Click 'Confirm and Start WlanPoller'.
6	Step 7: Monitor the Run Log and AP Table for per-AP status.



UC-05 Device Reload via Confirm Injection (%reload%)

Description

WPGui supports automatic confirmation injection for interactive CLI commands that display a [confirm] or (yes/no) prompt. Any command wrapped in % delimiters (e.g. %reload%) is treated as a confirm-required command. WPGui sends the command over the SSH channel, waits 3 seconds, then automatically injects a 'y' keystroke to confirm. This allows reload, erase, write erase, and similar disruptive commands to be scripted safely.

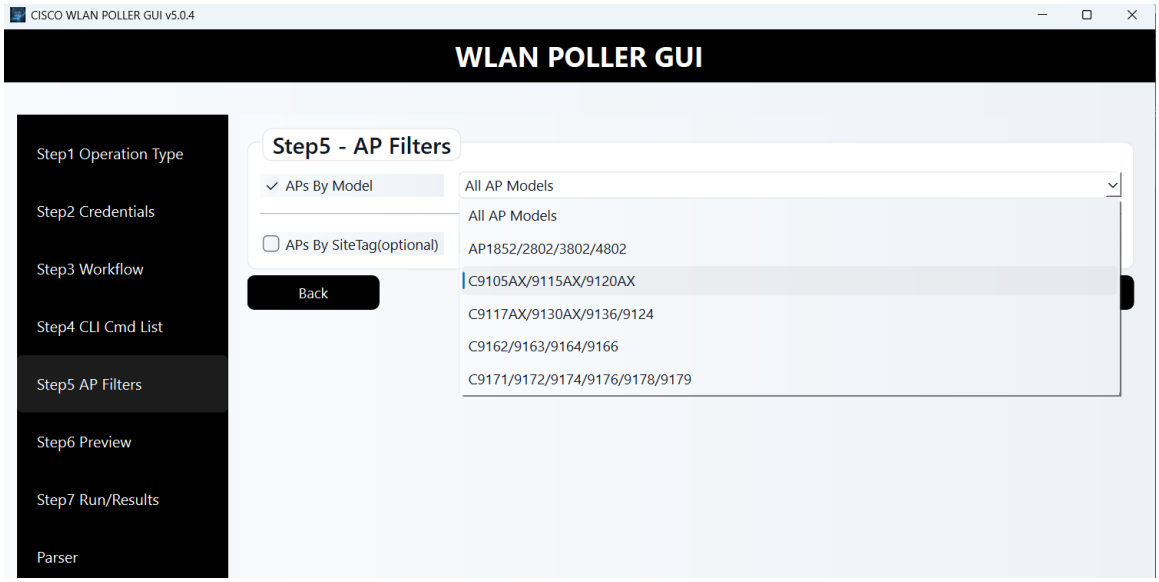
Use Case Attributes

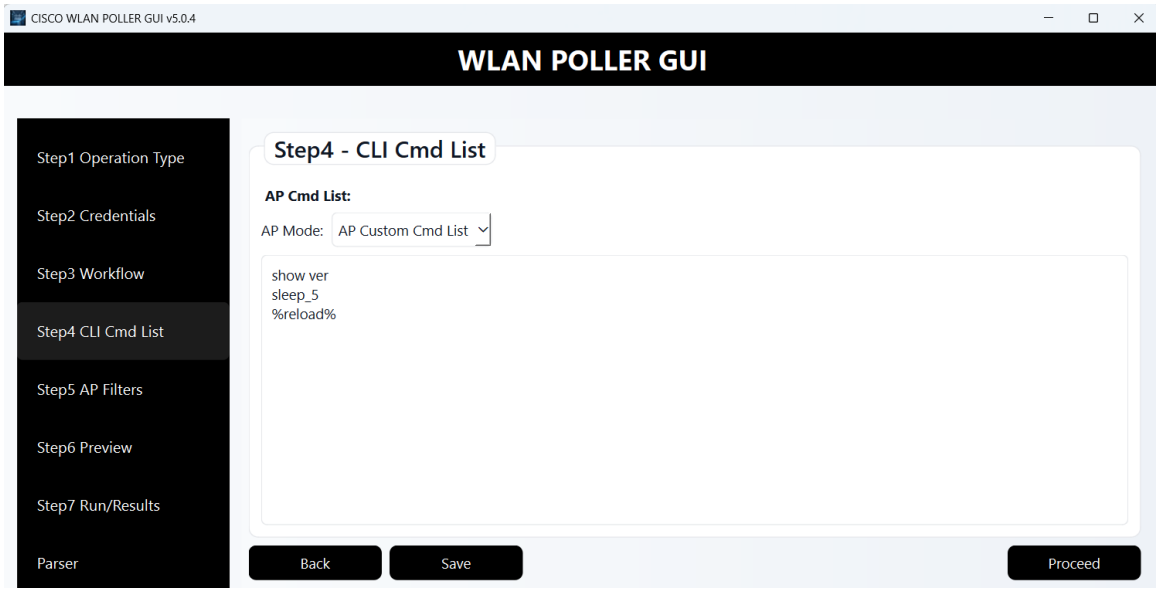
Syntax	%command% (e.g. %reload%)
Behaviour	Sends command, waits 3s, injects 'y' to confirm
Applicable Modes	AP Only, WLC & AP
Commands supported	reload, write erase, erase flash:, format flash:, and any other [confirm] or (yes/no) prompt commands

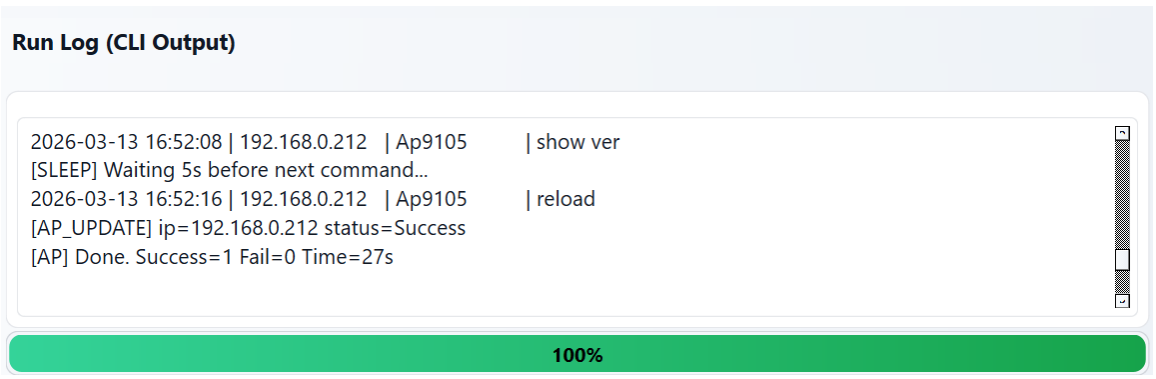
Step by Step Procedure

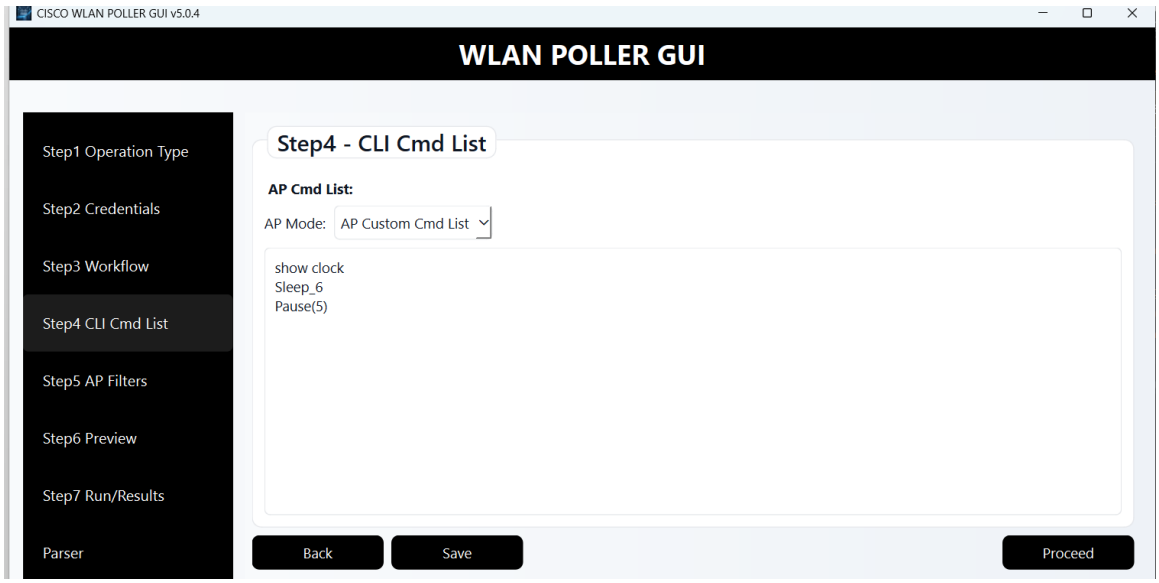
1	Step 4: Enter %reload% (or any other confirm-required command wrapped in % delimiters) in the AP Cmd List box.
2	Step 6: Review the run preview. Verify the command list is correct.
3	Click 'Confirm and Start WlanPoller'. WPGui will automatically inject 'y' to confirm the reload prompt.
4	Step 7: Monitor the Run Log. Connection will drop after reload — this is expected. The AP will reconnect on next run.

WARNING: Use with caution. Confirm injection cannot be cancelled once sent. Verify AP list and command before starting.









UC-06 Timed Delay Between Commands (sleep_N / pause_N)

Description

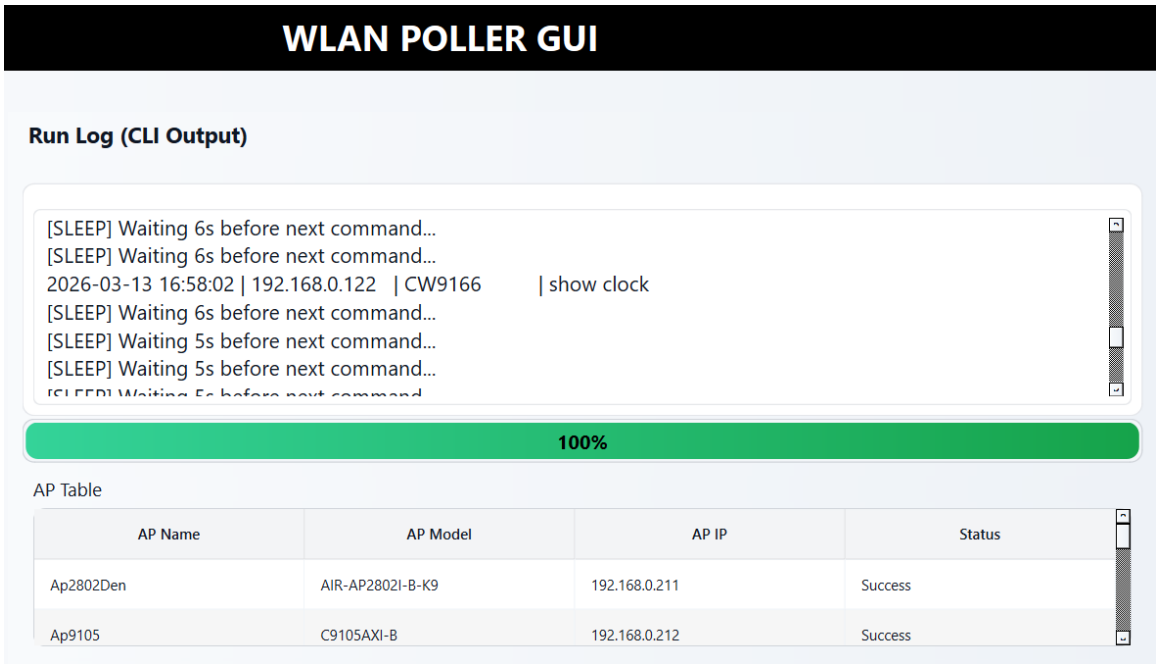
WPGui supports inserting a timed wait between CLI commands using the sleep_N or pause_N special command syntax. When WPGui encounters this token in the command list, it pauses execution for N seconds before sending the next command. This is useful for device operations that require a stabilisation period — for example, waiting after a reload command before polling again, or delaying between configuration pushes.

Use Case Attributes

Syntax	sleep N or pause N where N is an integer number of seconds
Example	sleep_30 — pauses for 30 seconds
Maximum Value	3600 seconds (1 hour). Values above 3600 are rejected with a log warning.
Applicable Modes	AP Only, WLC & AP
Behaviour if N > 3600	Command is skipped with a warning logged. No delay is inserted.

Step by Step Procedure

1	Step 4: Add sleep_N or pause_N as a line in the AP Cmd List between two commands.
2	Step 6: Review the run preview. The sleep command will be listed in the AP section.
3	Click 'Confirm and Start WlanPoller'. WPGui will log [SLEEP] Waiting Ns... at the appropriate point.
4	Step 7: Monitor the Run Log for the [SLEEP] message confirming the delay is active.



UC-07 AP Image Download via archive download-sw

Description

WPGui supports AP firmware image download using TFTP, SFTP, or SCP protocols. When an AP CLI command contains sftp:// or scp://, WPGui routes the command through a specialised interactive handler that monitors the AP's output channel in real-time, detects transfer progress symbols (!!!! or ....), automatically injects SFTP/SCP credentials if prompted, and detects completion or failure conditions. This handler replaces the standard send_command path for image transfer commands only.

Use Case Attributes

Supported Protocols	TFTP, SFTP, SCP
Interactive Handler Trigger	sftp:// or scp:// detected in the AP command string
Credential Injection	SFTP/SCP username and password injected automatically from confd/config.ini [FTP] section
Progress Display	!!!! and .... symbols from AP output shown in Run Log
Completion Detection	archive done / archive download completed / image transfer complete / error / failed / AP prompt returned
Timeout	3600 seconds per command

Interactive Handler Behaviour

username: prompt detected	Injects ftp_user from [FTP] section
password: prompt detected	Injects ftp pasw from [FTP] section
[confirm] prompt detected	Injects newline (Enter)
(yes/no) prompt detected	Injects 'yes'
error / failed / no such file	Failure — loop exits, last line logged as result
permission denied / connection refused / timed out	Failure — loop exits, connection error logged

Step by Step Procedure

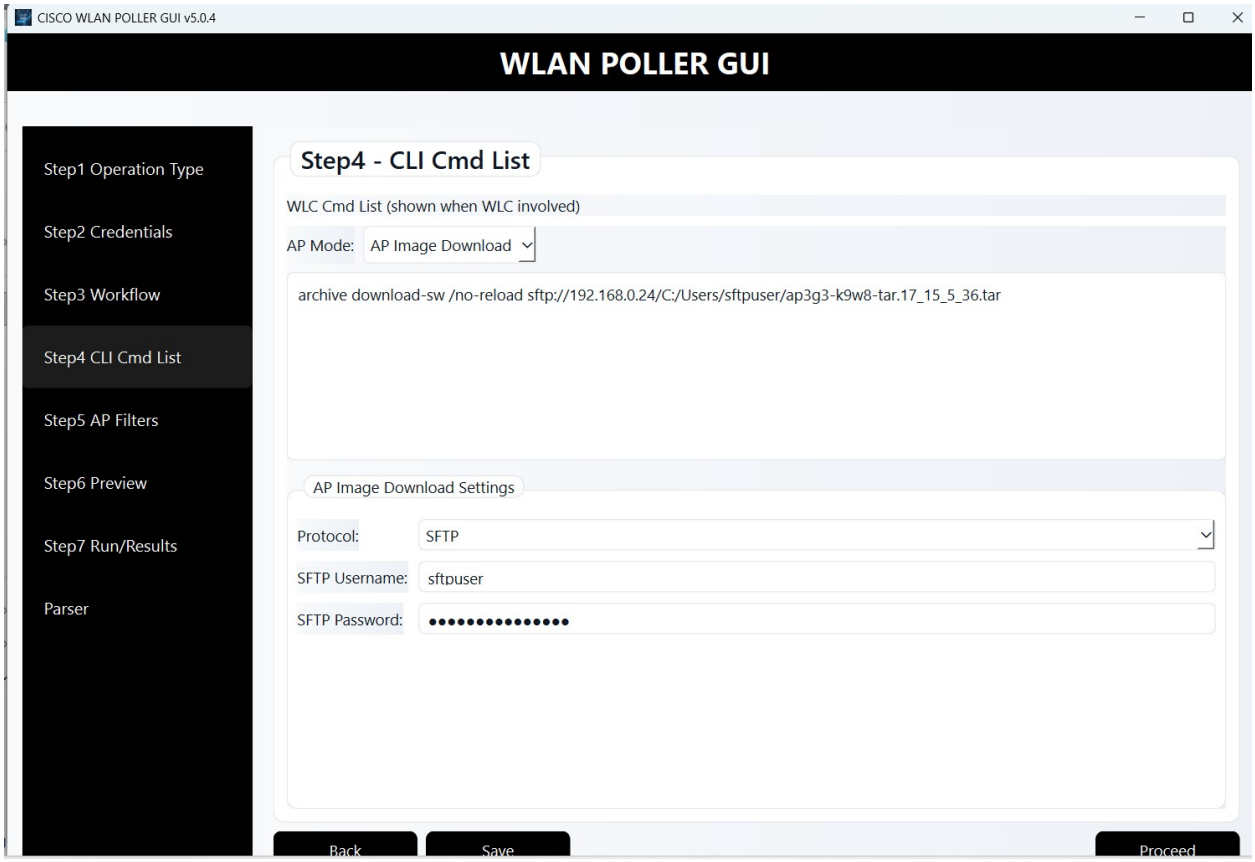
1	Step 3: Select workflow 'Custom CLI Commands'.
2	Step 4: Enter the archive download-sw command with the appropriate protocol and image path.
3	Step 6: Confirm the pre-run image verification dialog (UC-10). Click 'Confirm and Start WlanPoller'.
4	Step 7: Monitor the Run Log. WPGui loops on AP output and logs the [IMAGE DOWNLOAD] Result line on completion.

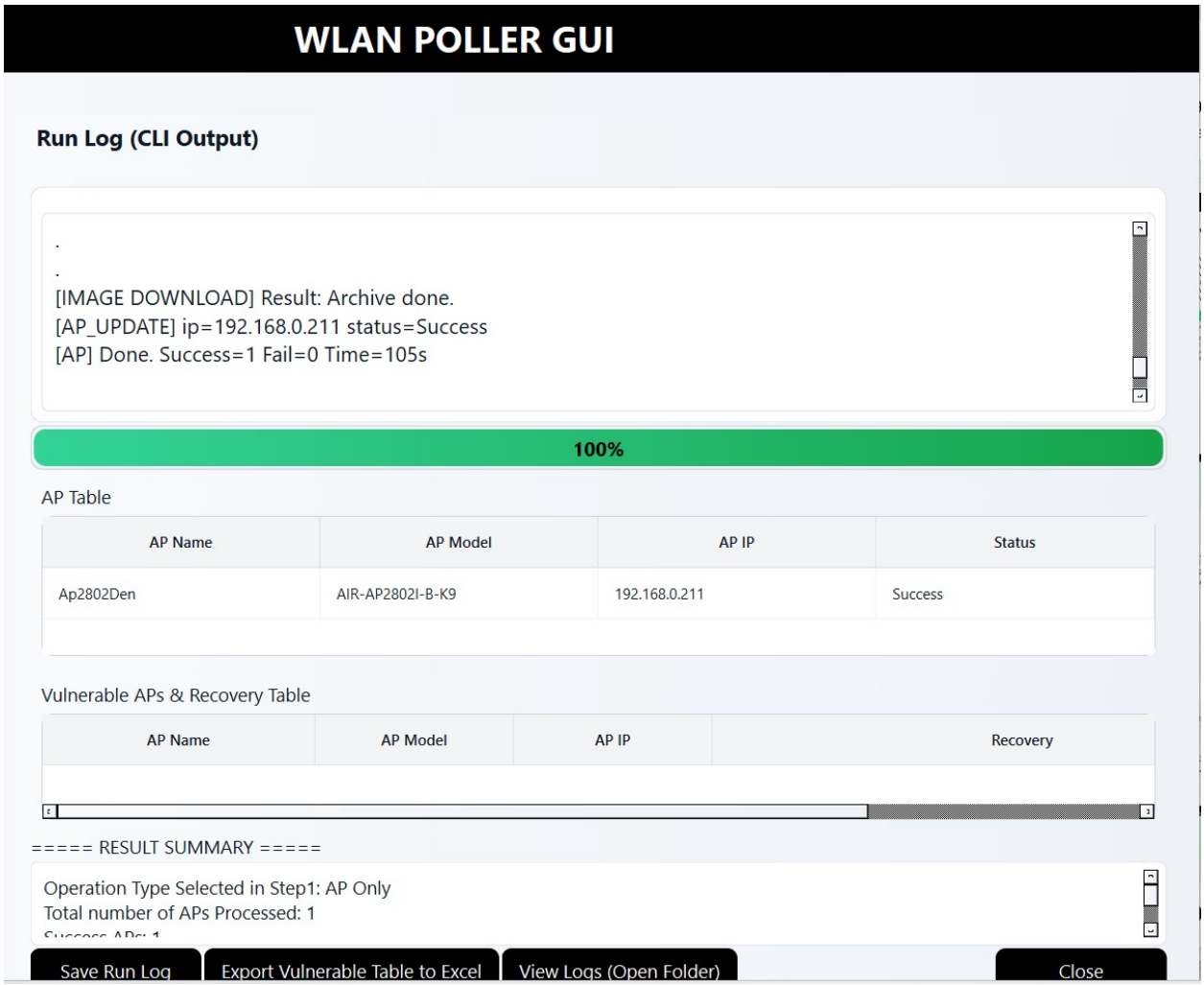
Expected Run Log Output — Success

```
2026-03-12 17:46:05 | 192.168.0.212 | Ap9105 | archive download-sw /no-reload sftp://...
!!!!!!!!!!!!!!!!
.......
!!!!!!!!!!!!!!!!
[IMAGE DOWNLOAD] Result: archive done
```

Expected Run Log Output — Failure

```
2026-03-12 17:46:05 | 192.168.0.212 | Ap9105 | archive download-sw /no-reload sftp://...
.
[IMAGE DOWNLOAD] Result: Image transfer failed
```






```
Directory /tmp/ntevents not found.
status 'upgrade.sh: Script called with args:[ACTIVATE]'
do ACTIVATE, part2 is active part
status 'upgrade.sh: mount ubifs /dev/ubivol/part1 as /bootpart, status=0'
status 'upgrade.sh: Verifying image signature in part1'
status 'upgrade.sh: status 'Successfully verified image in part1.''
status 'upgrade.sh: activate part1, set BOOT to part1'
status 'upgrade.sh: AP primary version after reload: 17.15.5.36'
status 'upgrade.sh: AP backup version after reload: 17.12.6.28'
Successfully setup AP image.
Archive done.

Ap2802Den#
```

UC-08 Image-to-Model Mismatch Detection Alert

Description

WPGui validates the firmware image filename in the archive download-sw command against the AP model in the AP list. If the image prefix does not match the expected prefix for the AP model, an [IMAGE MISMATCH] warning is emitted in the run log and written to the per-AP output file before the transfer is attempted. The transfer still proceeds — it is a warning, not a blocker.

AP Model to Image Prefix Mapping

AP1852	ap1g3 — e.g. ap1g3-k9w8-tar.152-4.JA1.tar
AP2702	ap3g2 — e.g. ap3g2-k9w8-tar.153-3.JJ8.tar
AP2802 / AP3802 / AP4802	ap3g3 — e.g. ap3g3-k9w8-tar.17_15_5_36.tar
AP9105 / AP9115 / AP9120	ap1g7 — e.g. ap1g7-k9w8-tar.17_12_6_28.tar
AP9117 / AP9130 / AP9136 / AP9162 / AP9179	ap1g8 — e.g. ap1g8-k9w8-tar.17_14_1.tar

Example Mismatch Run Log Output

```
[IMAGE MISMATCH] Model C9105AXI-B (AP9105) expects image prefix 'ap1g7'
but command uses 'ap3g3'. File: ap3g3-k9w8-tar.17_15_5_36.tar

# Transfer still attempted — result will typically be:
[IMAGE DOWNLOAD] Result: upgrade.sh: ERROR: Image type mismatch. Expected:ap1g7 Got:ap3g3
```

NOTE: The mismatch detection fires before the transfer command is sent. Even though the transfer proceeds, the AP itself will also report a mismatch error during extraction. This alert serves as an early warning so the operator can cancel and correct the image filename before wide-scale deployment.

```
Upgrading ...
status 'upgrade.sh: Script called with args:[NO_UPGRADE]'
do NO_UPGRADE, part2 is active part
status 'upgrade.sh: Script called with args:[-c PREDOWNLOAD]'
do PREDOWNLOAD, part2 is active part
status 'upgrade.sh: Creating before-upgrade.log'
status 'upgrade.sh: Start doing upgrade arg1=PREDOWNLOAD arg2=,from_cli arg3= ...'
status 'upgrade.sh: Using image /tmp/cli_part.tar on ax-bcm32 ...'
status 'upgrade.sh: ERROR: Image type mismatch. Expected:ap1g8 Got:ap3g3'
status 'upgrade.sh: Cleanup for do_upgrade...'
status 'upgrade.sh: /tmp/upgrade_in_progress cleaned'
status 'upgrade.sh: Cleanup tmp files ...'
```

UC-9 Pre-Run Image Verification Warning (Step 4 Proceed Alert)

Description

When the operator clicks Proceed on Step 4 and the AP command list contains an image download command (archive download-sw, sftp://, or scp://), or the AP Mode dropdown is set to 'AP Image Download', WPGui displays a modal warning dialog requiring explicit Yes confirmation before advancing to the next step. This is a last-chance checkpoint before the run configuration is locked and the image download is queued.

Trigger Conditions

- AP Cmd List contains archive download-sw in any command line, OR
- AP Cmd List contains sftp:// or scp:// in any command line, OR
- AP Mode dropdown is set to 'AP Image Download'.

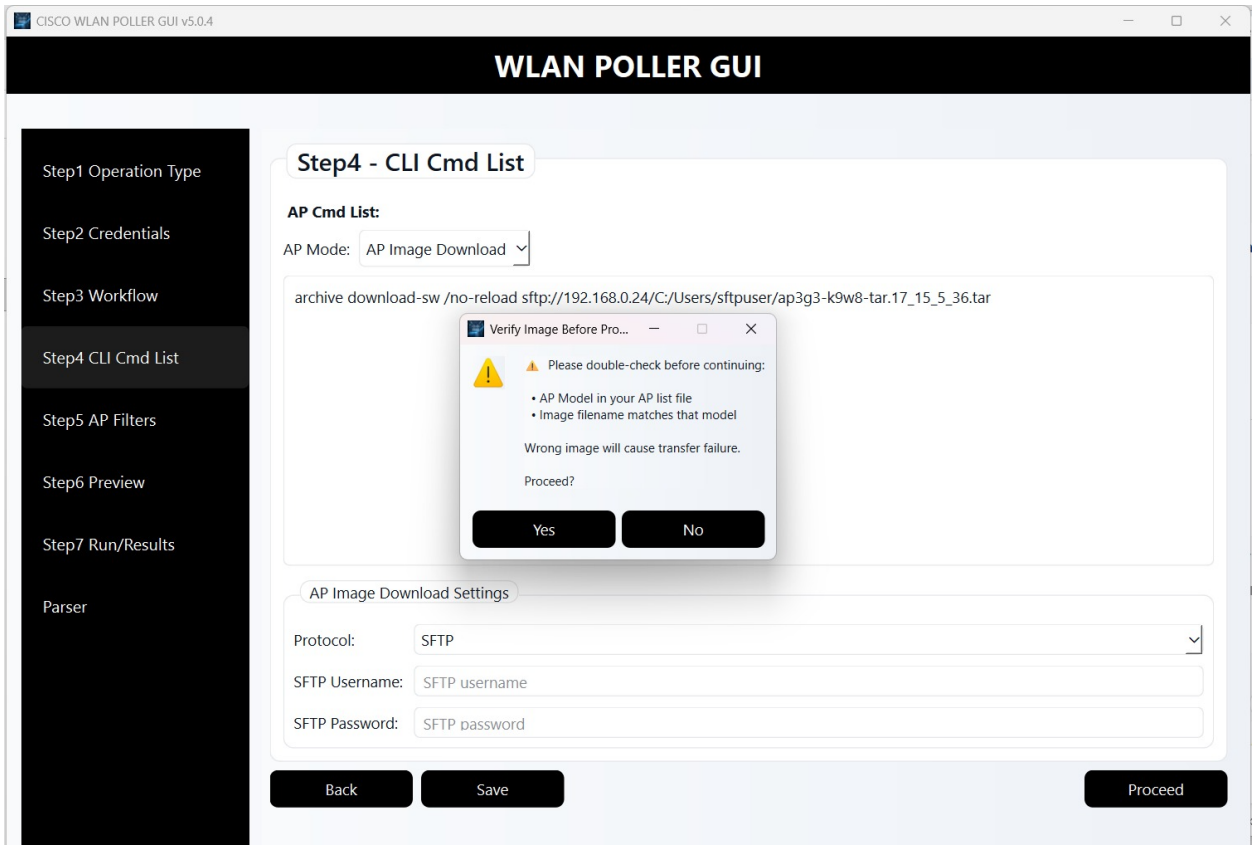
Dialog Content

```
Title: Verify Image Before Proceeding

Message: Please double-check before continuing:
  - AP Model in your AP list file
  - Image filename in the command matches that model
  Wrong image will cause transfer failure on the AP.
  Are you sure you want to proceed?

Buttons: [ Yes ]  [ No (default) ]
```

NOTE: The dialog defaults to 'No'. The operator must actively click 'Yes' to proceed. Clicking 'No' returns to Step 4, allowing the operator to review and correct the command or image filename.

Step by Step Procedure

1	Step 4: Enter an AP command containing archive download-sw or sftp://. Click Proceed.
2	Read the dialog carefully. Verify the AP model and image filename match.
3	Click 'Yes' to proceed to Step 5 / Step 6, or 'No' to return to Step 4 and correct the configuration.



UC-10 Credential Encryption — XOR + Base64 Password Protection

Description

WPGui automatically encrypts all credential fields (WLC password, AP password, AP enable password, and SFTP password) before writing them to confd/config.ini. Encryption is applied transparently by the IniStore class — the operator always enters and sees plain-text credentials in the GUI. The encrypted values are stored on disk using a two-step process: XOR byte-level obfuscation against an internal key, followed by Base64 encoding. On every read, values are automatically decrypted in memory before being passed to the SSH engine. No plain-text passwords are ever written to disk.

Encryption Mechanism

Algorithm	XOR byte-level obfuscation + Base64 encoding
Internal Key	WlanPollerKey (fixed, embedded in PollerEngine.py)
Prefix	ENC:: — all encrypted values are prefixed to distinguish them from plain text
Scope	Any config.ini field whose key contains pasw, password, or enable
Storage Location	confd/config.ini under [WLC], [AP], and [FTP] sections
Decryption	Automatic on every IniStore.get() call — engine always receives plain text

Encryption Flow

1	Operator enters credentials in Step 2 (WLC/AP passwords) or Step 4 (SFTP password). Values are displayed as masked fields in the GUI.
2	Operator clicks Save. GUI calls IniStore.bulk_set() which detects password fields by key name (pasw / password / enable).
3	IniStore.encrypt_value() runs: raw UTF-8 bytes are XOR'd against the repeating WlanPollerKey byte sequence, then Base64-encoded. The result is prefixed with ENC:: and written to config.ini.
4	On the next application launch, IniStore reads config.ini. When get() is called for a password field, it detects the ENC:: prefix, Base64-decodes the value, reverses the XOR, and returns the original plain-text string.
5	The decrypted value is passed directly to ConnectHandler (Netmiko) for SSH authentication. It is never written back to disk in plain text.

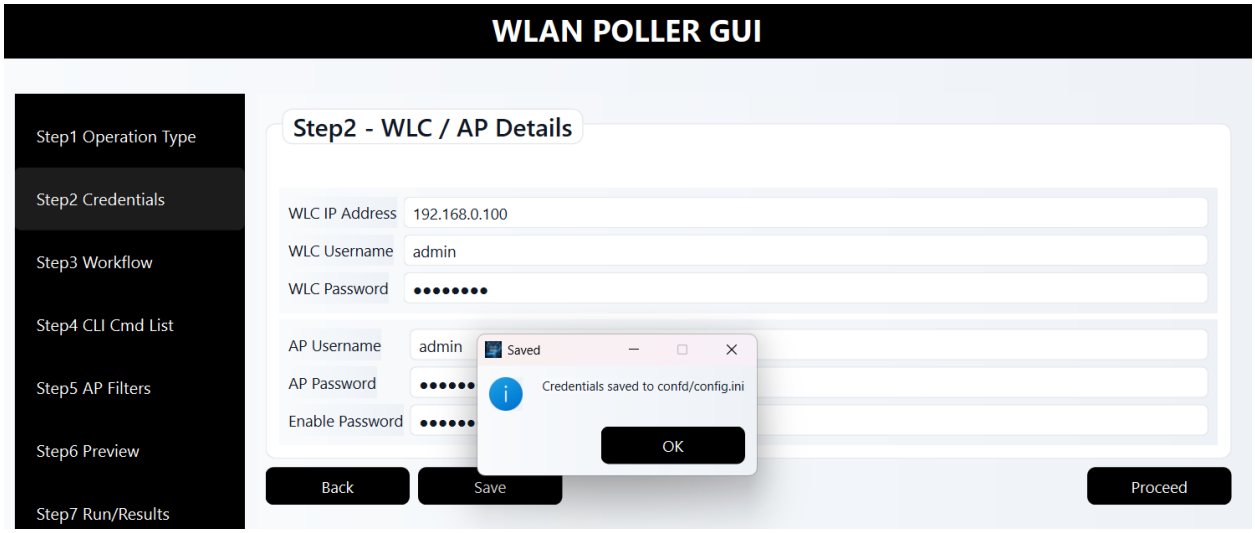
config.ini Encrypted Format

```
[WLC]
wlc_ip = 192.168.1.1
wlc_user = admin
wlc_pasw = ENC::HxsYBgMRCxQHDg==  <- encrypted

[AP]
ap_user = Cisco
ap_pasw = ENC::GRYFDxcSAhUB  <- encrypted
ap_enable = ENC::GRYFDxcSAhUB  <- encrypted

[FTP]
ftp_user = sftpuser
ftp_pasw = ENC::BxILEA8TCxcB  <- encrypted
```

Prerequisites

- confd/ folder must exist and be writable. WPGui creates it automatically on first launch.
- No manual action is required by the operator — encryption and decryption are fully automatic.
- If config.ini is copied to another machine, credentials will decrypt correctly because the XOR key is embedded in PollerEngine.py.

NOTE: XOR + Base64 is an obfuscation mechanism, not cryptographic-grade encryption. It prevents plain-text passwords from being visible in the config file and in log output, but it is not a substitute for OS-level file permissions. Ensure confd/config.ini is protected by appropriate file system access controls on the host machine.




```
[WLC]
wlc_ip = 192.168.0.100
wlc_user = admin
wlc_pasw = ENC::FAUSDT9eXl8=

[AP]
ap_user = admin
ap_pasw = ENC::FgUGAjVeXl8=
ap_enable = ENC::FgUGAjVeXl8=

[FTP]
ftp_addr = 192.168.0.24
ftp_path = C:/Users/sftpuser
ftp_user = sftpuser
ftp_pasw = ENC::GhUyGiIAAgs1EzgWSGVf
ftp_proto = SFTP
scp_port = 22

[GENERAL]
last_ap_list_file = ap_ip_list.txt
```

UC-11 — Log Search Analyzer

Description

The Parser is a built-in analysis feature in WPGui that allows users to scan previously generated AP or WLC output logs for specific keywords or patterns. It helps engineers quickly locate relevant information such as errors, configuration parameters, or operational messages without manually opening each log file.

The Parser works by searching the log files generated during earlier WlanPoller runs and identifying files that contain the specified pattern. It is accessed from the Parser section and requires only a search keyword or regular expression to begin analysis.

Use Case Attributes

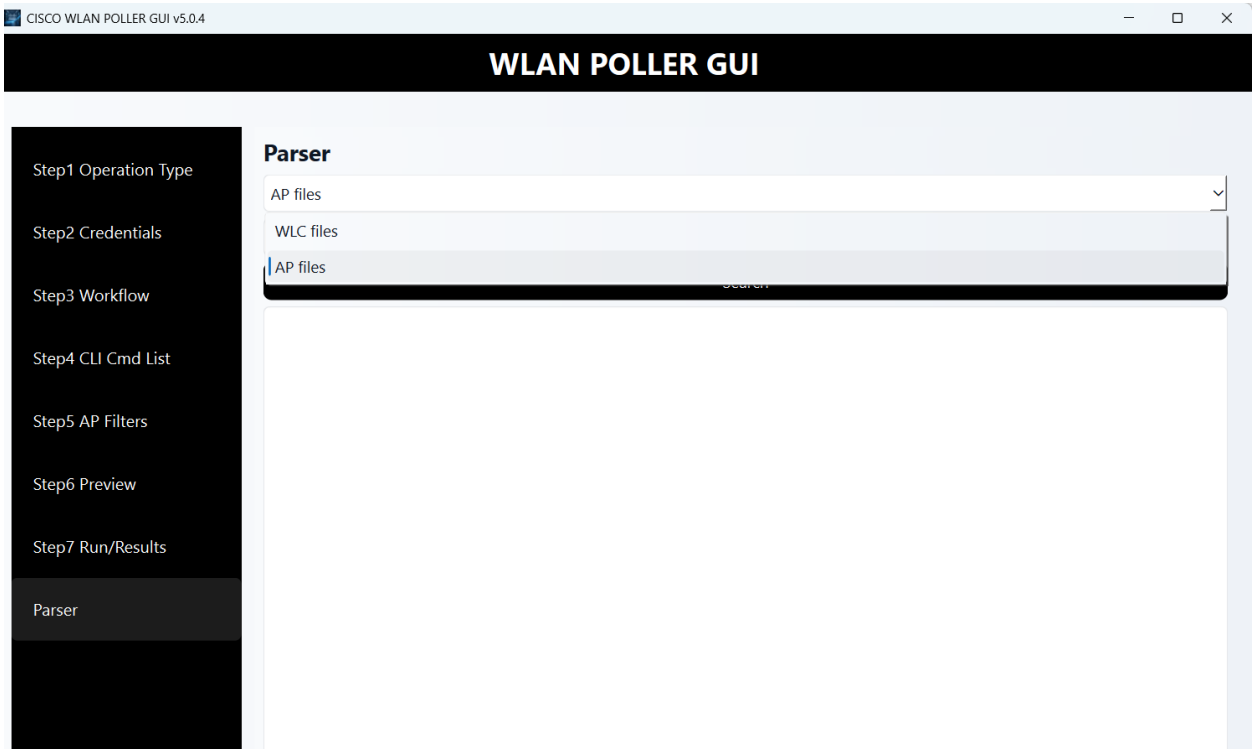
Operation Mode	Parser
Trigger	Open the Parser page and enter a search pattern
Input	Keyword or Regular Expression
Search Scope	AP log files or WLC log files from previous runs
Output	List of log files containing the matching pattern displayed in the Parser output window

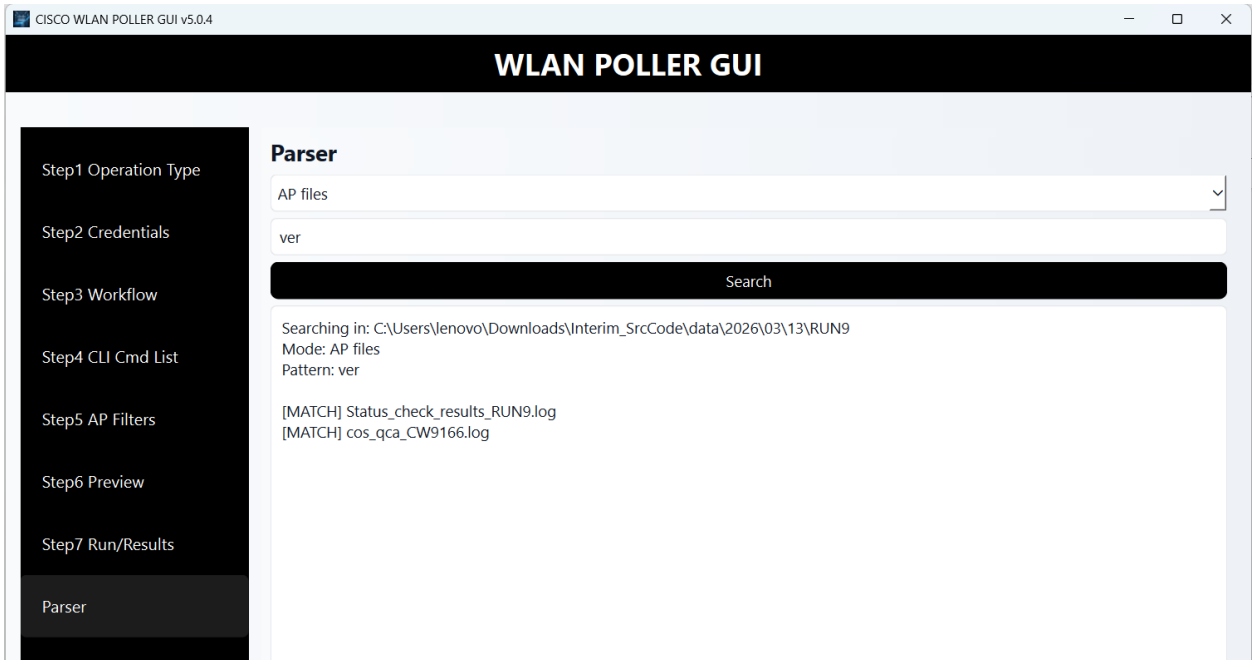
Prerequisites

- At least one WlanPoller run must have been completed to generate log files.
- Log files must exist in the data directory created during polling runs.
- A valid search keyword or regex pattern must be provided.

Step By Step Procedure

1	Open the Parser section from the WPGui sidebar.
2	Select the search mode depending on the type of logs to analyze (AP logs or WLC logs).
3	Enter a search keyword or regular expression pattern in the search field.
4	Click Search to start the parsing operation.
5	View the results in the Parser Output window, which lists all log files where the pattern was found.





Appendix A — Special Command Reference

Syntax	Example	Behaviour
sleep_N	sleep_30	Delay N seconds before next command. Max 3600s.
pause_N	pause_60	Identical to sleep_N.
%cmd%	%reload%	Send cmd + auto-inject 'y' confirmation after 3s.
sftp:// in cmd	archive download-sw ... sftp://...	Routed to interactive handler. Credentials auto-injected.
scp:// in cmd	copy scp://... flash:	Routed to interactive handler. Credentials auto-injected.
tftp:// in cmd	archive download-sw ... tftp://...	Normal CLI path. No credential injection. 3600s timeout.
http:// in cmd	archive download-sw ... http://...	Normal CLI path. No credential injection. 3600s timeout.

Appendix B — Watchdog Timeout Reference

Condition	Timeout	Notes
Normal CLI run (no image download commands)	30 seconds	Watchdog fires warning if no log/progress seen.
Run contains archive download-sw, sftp://, or scp://	3600 seconds	Extended to allow for large image transfers.
ap send command normal commands	180 seconds	Standard per-command read timeout.
_ap_send_command with archive download-sw	3600 seconds	Extended timeout for TFTP/HTTP image downloads.
run_command_interactive safety timeout	3600 seconds	Absolute fallback if no completion string detected.

Support Channel: You can reach out to wlanpollercisco.com mailer alias for any queries/questions related to this tool.