

Virtual CAC Setup Instructions

514 MSG / SCO - Joint Base McGuire-Dix-Lakehurst

Application version 3.1.0

Updated September 26, 2026

Overview

Virtual CAC watches the CAC smart card in this computer's reader and tells your Check-In site when a card is inserted or removed. It sends the card's identity certificate details and your browser pairing, so the site knows who is at the computer without anyone typing CAC details by hand.

What's New in 3.1.0

- **New layout.** An options bar on top, a larger Activity Log, and Start, Stop and Exit at the bottom.
- **Menu (≡).** Settings, Check for Updates, Export/Import Settings, Minimize to Tray, About and Exit.
- **Settings page** for connection details, profiles and updates, including the update URL.
- **Export and import settings** as a .json file to set up other computers. Browser IDs are never exported.
- **Automatic updates** (added in 3.0.0). Virtual CAC checks for new versions, installs them after you confirm, and restarts where it left off.
- **Blank Endpoint on new installations.** Copy it from your Check-In site (see First-Time Setup).
- **New version numbers.** Versions now read major.minor.patch (3.1.0) instead of dates (6.22.2026.0007).

Package Contents

File	Purpose
Virtual-CAC.exe	The application. Run it directly; no PowerShell or execution-policy changes are needed.
smartcard.ico	Window and tray icon. Keep it next to Virtual-CAC.exe.
Virtual CAC Setup Instructions.pdf	This guide.
Virtual-CAC.ps1	The PowerShell source that Virtual-CAC.exe is built from, included so it can be reviewed. It isn't needed to run Virtual CAC; always run the exe.

Start-Virtual-CAC.cmd and Virtual-CAC.lnk from older packages are no longer used and can be deleted.

Security Notes

- Virtual CAC never asks for, reads, stores or sends your CAC PIN.
- Private keys stay on the CAC and are never exported.
- Only the certificate and session details the Check-In workflow needs are sent, and only to the HTTPS endpoints you configure.
- Updates are installed only after the download matches the SHA-256 checksum published with the release and the new program reports the expected version.
- Settings exports never include Browser IDs.

- Debug Output can show personal identifiers, certificate details, Browser IDs, tokens and server responses. Turn it off after troubleshooting and redact screenshots before sharing them.

Installation

- 1 On the Check-In site, open **Tools** (or **Virtual CAC Pairing** in the site menu) and click **Download ZIP**.
- 2 Extract the **Virtual CAC** folder to a folder you can write to, for example C:\Util\Virtual CAC.
- 3 Optional: to pre-configure this computer, put a settings export named Virtual-CAC.settings.json in the same folder (see Import and Export).
- 4 Run **Virtual-CAC.exe**. To make a shortcut, point it directly at Virtual-CAC.exe.

Keep the install folder writable by the user. Automatic updates replace Virtual-CAC.exe in place. If it's installed somewhere users can't write to, such as Program Files, Virtual CAC will say it can't install the update, and an administrator must install new versions.

Upgrading from 6.22.2026.0007

Older versions can't update themselves. Download 3.1.0 once, exit the old copy, and replace Virtual-CAC.exe and smartcard.ico with the new files. Your profiles and options are kept, because they're stored separately in %APPDATA%\CACMonitor\settings.json. Future versions install automatically.

First-Time Setup

- 1 On the Check-In site, open the site menu and choose **Virtual CAC Pairing**. It shows the **API Endpoint**, the **Destroy Endpoint** and **Your Browser ID**, each with a Copy button. Use the browser you'll use for Check-In, because the Browser ID belongs to that browser.
- 2 In Virtual CAC, click the ☰ button and choose **Settings**.
- 3 Under **Connection**, paste the API Endpoint into **Endpoint**, the Destroy Endpoint into **Destroy Endpoint**, and your Browser ID into **Browser ID**. Leave Quick Check at 5 and Heartbeat at 30 unless told otherwise.
- 4 Click **Save Profile...** and give the profile a name, such as your site or unit.
- 5 Click **Save & Close**.
- 6 Click **Start Monitoring**. The light in the header turns green and the Activity Log shows "Monitoring started". Tick **Run When Started** to start monitoring automatically each time Virtual CAC opens.

If you click Start Monitoring before entering an Endpoint, the Activity Log shows "Enter the Endpoint from your Check-In site before starting monitoring" and nothing is sent.

The Main Window

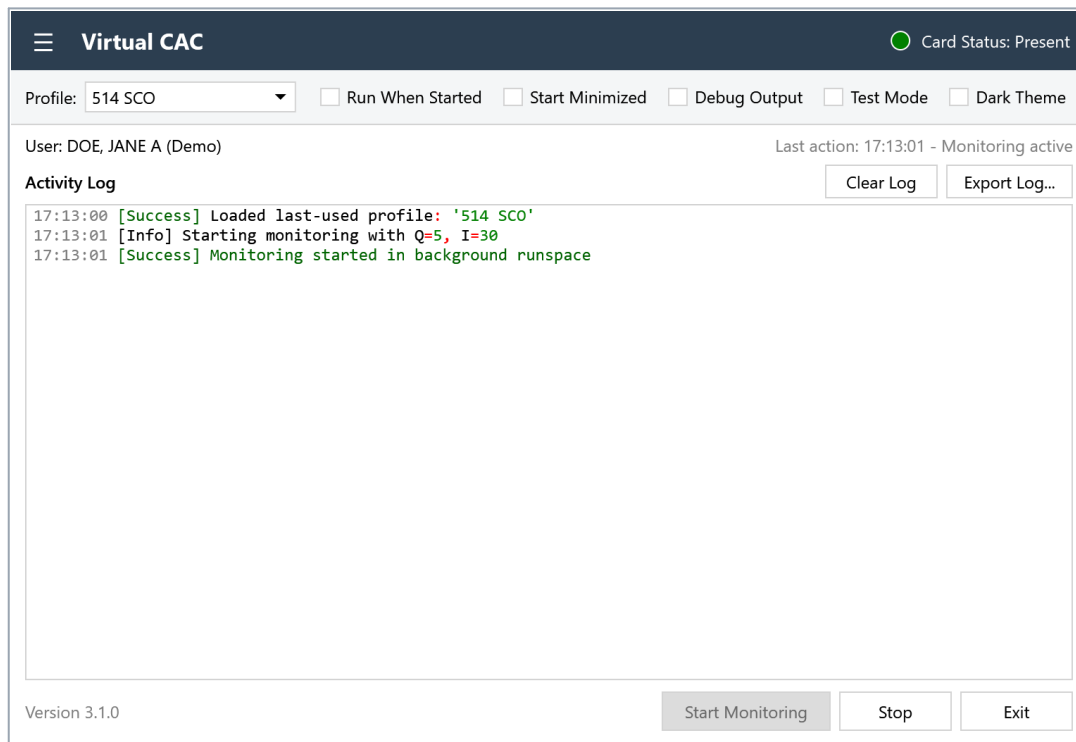


Figure 1 - Virtual CAC monitoring with the 514 SCO profile (demo data).

Area	What it does
Header	☰ opens the menu. On the right, the light and text show the card status: green when monitoring is active, gray when stopped.
Options bar	Choose the profile and turn options on or off (see Options).
Status line	The user on the inserted CAC and the time and result of the last action.
Activity Log	Everything Virtual CAC does. Clear Log empties it; Export Log... saves it to a file for troubleshooting.
Bottom bar	The installed version, and Start Monitoring , Stop and Exit .

Options

Option	Behavior
Profile	Switches between saved connection profiles. If monitoring is running, Virtual CAC asks whether to restart it with the new profile.
Run When Started	Starts monitoring automatically when Virtual CAC opens. Saved with the profile.
Start Minimized	Opens straight to the system tray.
Debug Output	Adds detailed entries to the Activity Log. For troubleshooting only; they can include sensitive session data.
Test Mode	Shows what would be sent without posting to the Check-In site.
Dark Theme	Switches between the light and dark appearance.

The Menu

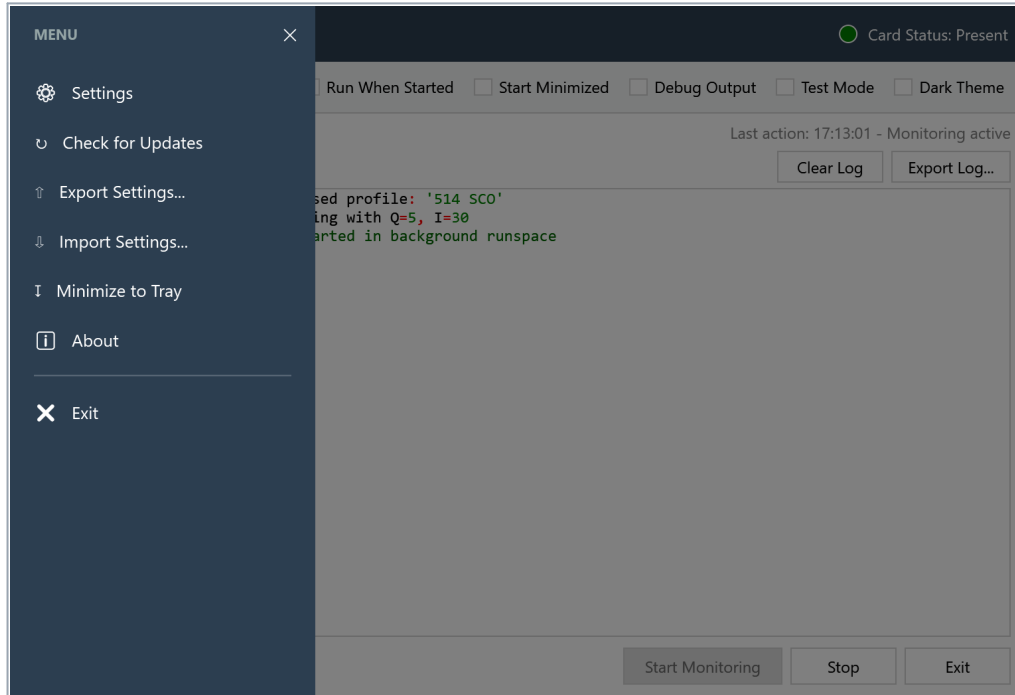


Figure 2 - The menu opened with the ≡ button.

Menu item	What it does
Settings	Opens the Settings page (connection, profiles, updates, import/export).
Check for Updates	Checks the update URL now and offers to install a newer version.
Export Settings...	Saves your profiles, options and update URL to a .json file.
Import Settings...	Loads a settings export (see Import and Export).
Minimize to Tray	Hides the window. Virtual CAC keeps running; click the tray icon to bring it back.
About	Shows the version and a short description.
Exit	Stops monitoring and closes Virtual CAC.

Click outside the menu or press **Esc** to close it. The tray icon's right-click menu also has Show Window, Check for Updates and Exit.

The Settings Page

The screenshot shows the 'Settings' page with a dark blue header containing a back arrow and the title 'Settings'. The page is divided into three main sections: 'Connection', 'Updates', and 'Import / Export'. The 'Connection' section includes fields for 'Quick Check (s)' (5), 'Heartbeat (s)' (30), 'Endpoint' (https://checkin.514sco.com/api/cac-auth), 'Browser ID' (3f2b9c1e-7a4d-4e8b-9c21-5d6e7f8a9b0c), and 'Destroy Endpoint' (https://checkin.514sco.com/api/cac-auth/destroy). Below these are 'Save Profile...' and 'Delete Profile' buttons. The 'Updates' section shows 'Installed version: 3.1.0', a checked 'Enable updates' checkbox, an unchecked 'Check for updates at startup' checkbox, an 'Update URL' field (https://checkin.514sco.com/downloads/virtual-cac), and 'Check Now' and 'Use Default URL' buttons. The 'Import / Export' section contains a text block explaining that profiles, endpoints, and options are saved to a .json file, while browser IDs are not. It includes 'Export Settings...' and 'Import Settings...' buttons. A 'Save & Close' button is located at the bottom right of the settings area.

Figure 3 - The Settings page (demo Browser ID).

Setting	Use
Quick Check (s)	How often, in seconds, the card reader is checked. 5 is recommended.
Heartbeat (s)	How often, in seconds, the session is refreshed while a card is in. 30 is recommended.
Endpoint	The API Endpoint from the Check-In site's Virtual CAC Pairing window. Required.
Browser ID	This computer's browser pairing ID from the same window. Treat it as sensitive.
Destroy Endpoint	Where Virtual CAC reports that the card was removed, from the same window.
Save Profile... / Delete Profile	Save the connection fields under a name, or remove the selected profile.
Enable updates	Allows Virtual CAC to check for and install updates.
Check for updates at startup	Checks a few seconds after Virtual CAC opens.
Update URL	Where releases are published. Default: https://checkin.514sco.com/downloads/virtual-cac. It can also be a network share or folder containing manifest.json.
Check Now / Use Default URL	Check the update URL immediately, or put the default URL back.

Save & Close (or the ← arrow, or **Esc**) saves your changes. If monitoring is running, stop and start it to use changed connection settings.

Updates

- About 5 seconds after Virtual CAC opens, it checks the update URL (when **Check for updates at startup** is on). Nothing is downloaded unless a newer version exists.
- If the window is open, Virtual CAC shows the new version and its release notes and asks **Install now?**. If it's minimized to the tray, a tray notification appears instead; click it to see the same prompt.
- When you click **Yes**, Virtual CAC downloads the release, checks its SHA-256 checksum and version, replaces its files, and restarts. If monitoring was running, it starts again automatically.
- If anything fails, the original files are put back and the Activity Log explains why.
- Choose **☰ > Check for Updates** at any time to check manually.

Import and Export

Use export and import to set up several computers the same way, or to share your configuration with another unit.

	Details
Exported	All profiles (Quick Check, Heartbeat, Endpoint, Destroy Endpoint, Run When Started), the theme, Start Minimized, the last-used profile, and the update settings including the Update URL.
Not exported	Browser IDs (each computer pairs with its own browser), window sizes, Debug Output and Test Mode.
Importing	A profile with the same name is replaced but keeps this computer's Browser ID. Your other profiles are kept. The theme and update settings are replaced. A file that isn't a Virtual CAC export is refused and nothing changes.
Pre-configure	Name an export <code>Virtual-CAC.settings.json</code> and place it next to <code>Virtual-CAC.exe</code> . The first time Virtual CAC runs on a computer, it loads those settings automatically.

After importing, open **Settings** and paste this computer's Browser ID before starting monitoring. The Activity Log reminds you if it's missing.

Dark Theme

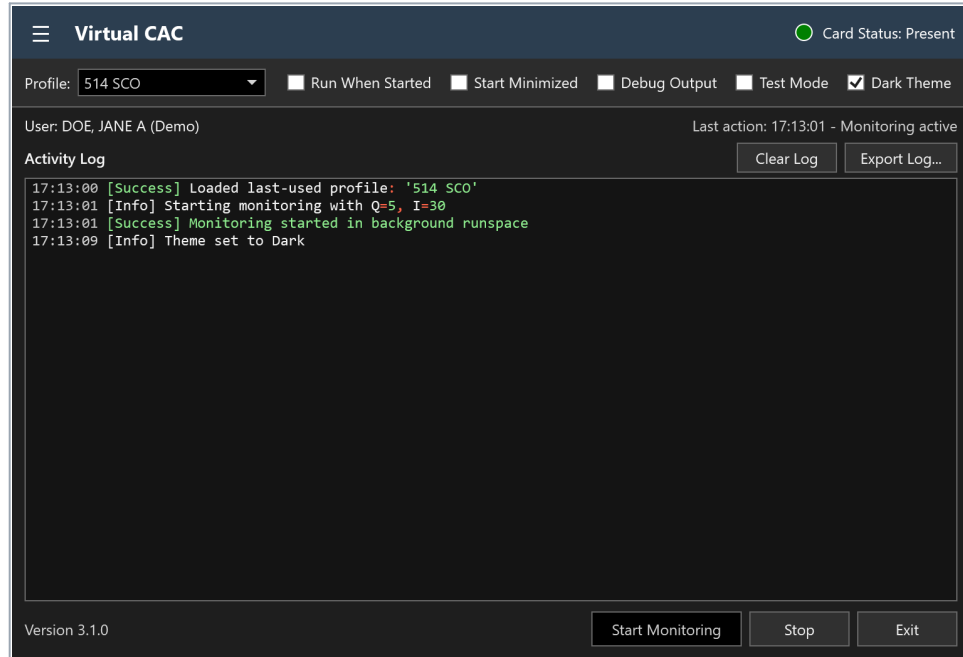


Figure 4 - The main window with Dark Theme turned on.

Troubleshooting

Problem	What to do
The status doesn't change when a CAC is inserted	Check that the reader works and Windows can see the CAC's certificates.
"Enter the Endpoint from your Check-In site..."	Open Settings and paste the API Endpoint from the Virtual CAC Pairing window.
Pairing fails	Copy a fresh Browser ID from the Check-In site into Settings, then stop and start monitoring.
Posts to the endpoint fail	Make sure the Endpoint and Destroy Endpoint match the selected profile's Check-In site.
"Virtual CAC is already running"	Only one copy can run. Look for the tray icon, or end Virtual-CAC.exe in Task Manager.
"Virtual CAC can't write to..." during an update	The install folder isn't writable. Move Virtual CAC to a folder you own, or ask an administrator to install the update.
"Update check failed"	Check the Update URL in Settings and your network connection. Monitoring is not affected.
No custom icon	Keep smartcard.ico next to Virtual-CAC.exe.

For Administrators: Publishing an Update

- 1 In Virtual-CAC.ps1, change `$global:AppVersion` (for example 3.1.0 to 3.1.1).
- 2 Add a `## 3.1.1` section to CHANGELOG.md. It becomes the release notes users see.
- 3 Run `.\Build-Release.ps1 -PublishTo <downloads\virtual-cac folder>`. It builds Virtual-CAC.exe with PS2EXE, creates VirtualCAC-<version>.zip, and writes manifest.json with the ZIP's SHA-256.
- 4 Deploy the site. Users are offered the update the next time Virtual CAC starts.

Units that host their own releases can publish to their own web folder or network share and set that location as the Update URL, then share it with an exported settings file.