

# OCCT — OS Compliance Check Tool

---

## User Manual (Prototype)

**Document version:** 1.1 (Prototype)

**Product version:** OCCT Prototype (November 2025)

**Authors:** OCCT Capstone Team

**Client/Mentor:** Dr Imran Makhdoom (UTS)

# Table of Contents

Document Control .....	3
1. Introduction.....	3
2. System Requirements.....	4
3. Installation & Setup .....	4
3.1 Prepare the Windows Host .....	4
3.2 Install OCCT Backend & Frontend .....	4
4. Architecture Overview.....	5
4.1 Components .....	5
4.2 Data Flow.....	6
4.3 Modes (Live vs Sample) .....	6
5. Getting Started (Quick Start) .....	7
5.1 Launching OCCT.....	7
5.2 Running Your First Scan.....	7
6. Using OCCT .....	8
6.1 Dashboard (Overview).....	8
6.2 Controls & Compliance Views .....	9
6.3 Account Activity & Admin Group Monitoring .....	10
6.4 Event & Evidence Views .....	11
6.5 Reports & Exports.....	11
6.6 Settings .....	12
7. Controls Library & Framework Mapping .....	13
7.1 Control Card Template .....	13
7.2 Example Controls (Prototype) .....	14
8. Data Sources & Evidence .....	14
9. Troubleshooting .....	15
10. Security, Privacy & Known Limitations.....	15

# Document Control

Version	Date	Author	Summary of Changes
<b>1.0</b>	03 Nov 2025	OCCT Team	Initial user manual for prototype
<b>1.1</b>	06 Nov 2025	OCCT Team	Include screenshot integrated descriptions

## 1. Introduction

### 1.1 What is OCCT

OCCT (OS Compliance Check Tool) is a full-stack prototype that automates Windows OS security auditing. It checks configurations against security frameworks (Common Criteria) and presents dashboards with evidence and remediation hints.



### 1.2 Key Benefits

- Automated checks of high-impact settings (e.g., firewall defaults, local admin membership).
- Visibility into privileged accounts and account activity tied to security events.
- Evidence-driven findings with framework mapping and remediation hints.

### 1.3 In-Scope vs Out-of-Scope

In scope (prototype):

- Windows 11 local host checks, Live Mode collectors, and Sample Mode with seeded data
- YAML-driven controls library with mappings to CC
- Dashboard, controls, and evidence views

Out of scope (prototype):

- Fleet-wide remote scanning/agent deployment
- Auto-enforcement/patching
- Email/SIEM integrations
- Group policy/OS cross-compatibility

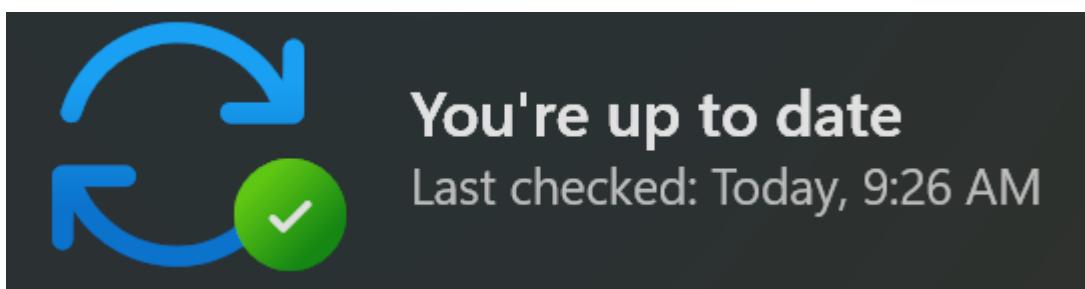
## 2. System Requirements

- **Operating System:** Windows 11, run as local administrator for full checks.
- **Software & Runtime:** PowerShell 5.1+, Python 3.9+, modern browser (e.g. Chrome).
- **Permissions:** Elevated PowerShell for querying firewall, local groups, and event logs.

## 3. Installation & Setup

### 3.1 Prepare the Windows Host

1. Ensure Windows is up to date
2. Confirm local admin access



### 3.2 Install OCCT Backend & Frontend

1. Use this [Download Link](#) to download a zip file containing the latest version of the application

2. Unzip the file and store it in the preferred location
3. Open a PowerShell terminal with Administrator privileges and find the location of the folder (occt-tool)

---

# In PowerShell

```
Set-ExecutionPolicy -Scope CurrentUser -ExecutionPolicy RemoteSigned -Force
python -m venv env
.\env\Scripts\activate

pip install -r requirements.txt

python -m backend.app
```

---

The above should start the application on localhost: <http://127.0.0.1:5000>

```
(env) PS C:\Users\    \occt-tool> python -m backend.app
[detections] start_live_poller_if_enabled called
[detections] live poller started (ids=(4625, 4728, 4732, 4624), every 15s, lookback=5m, dedupe=0s)
[detections] live poller started (ids=(4625, 4728, 4732, 4624), every 15s, lookback=5m, threshold=5)
[detections] +0 events, +0 alerts (published 0; sent_to 0 clients; clients_now=0 bus_id=1887699704848 pid=25256),
bookmark=897469
[OK] Ingested 25 audit, 7 events, 2 detections into C:\Users\    \occt-tool\backend\instance\occt.db
[auto-ingest] backend.ingest_samples completed
* Serving Flask app 'app'
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
```

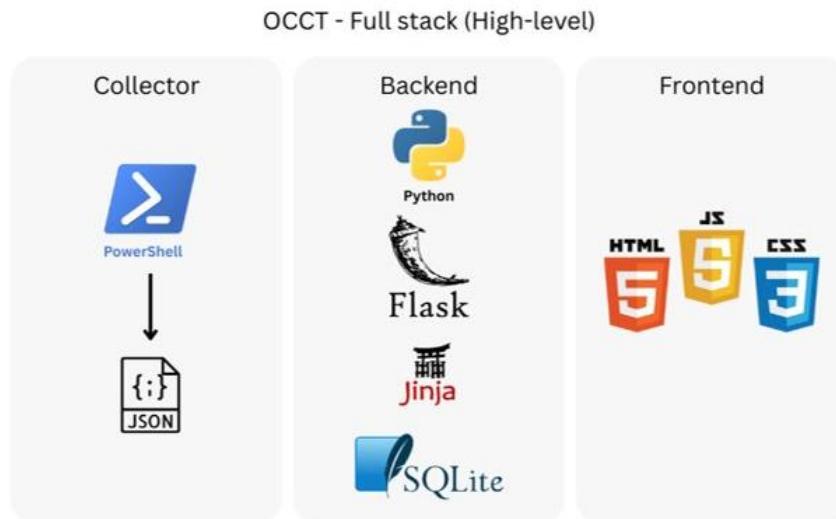
---

## 4. Architecture Overview

### 4.1 Components

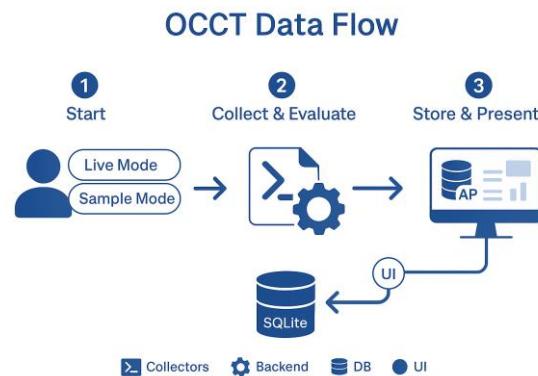
- **Collectors** (PowerShell): Query Windows configuration, groups, firewall, events.
- **Backend** (Python/Flask + SQLAlchemy): APIs, evidence processing, SQLite persistence.
- **Controls Library** (YAML): Control IDs, titles, mappings, severity, remediation.
- **Frontend** (Flask/JS/Jinja): Dashboard, controls pages, account activity, evidence views.

High-level architecture overview:



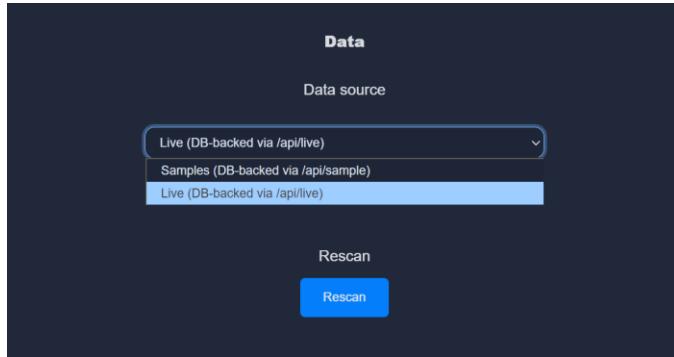
## 4.2 Data Flow

1. User triggers Scan (Live) or opens Sample Mode
2. Collectors gather facts/events → Backend evaluates against controls.yml
3. Results stored in SQLite → UI renders dashboards and evidence sent by API



## 4.3 Modes (Live vs Sample)

- **Live Mode:** Execute checks on the local Windows host.
- **Sample Mode:** Explore preloaded evidence without touching the host.

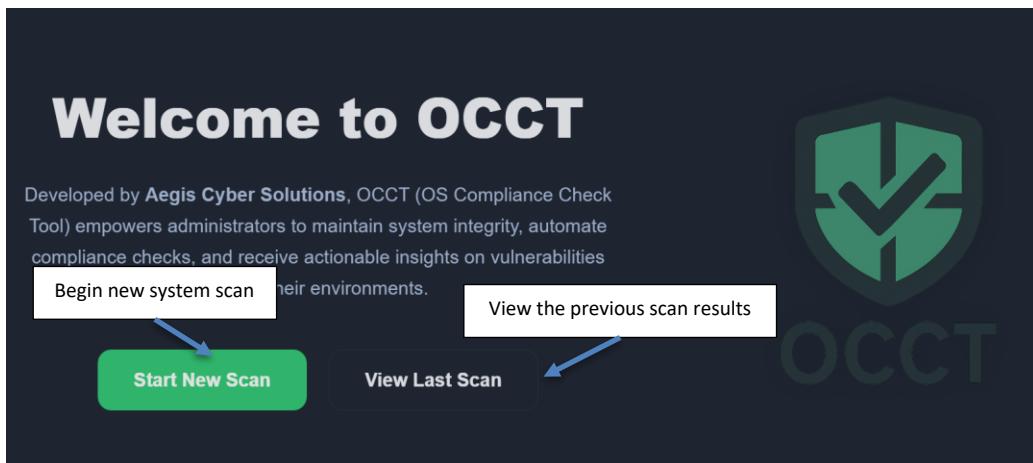


## 5. Getting Started (Quick Start)

### 5.1 Launching OCCT

```
.\env\Scripts\activate  
python -m backend.app
```

After logging in you will be greeted with a login page with a prefilled username and password for proof of concept. This is followed by the landing page:



### 5.2 Running Your First Scan

- Login
- Click Start New Scan

- Review Dashboard → Audit → Remediation

Buttons and data will be greyed out/unavailable until the first scan is run:

The screenshot shows the OCCT dashboard with the following elements:

- Header:** OCCT, Home, Dashboard (highlighted with a red box), Detections, Audit, Remediation, Settings, Last scan: —
- Welcome Section:** "Welcome to OCCT" in large white font, "Developed by Aegis Cyber Solutions, OCCT (OS Compliance Check Tool) empowers administrators to maintain system integrity, automate compliance checks, and receive actionable insights on vulnerabilities across their environments.", "Start New Scan" (green button), "View Last Scan" (button highlighted with a red box).
- OCCT Logo:** A green shield logo with a stylized 'Y' shape inside, followed by the text "OCCT".

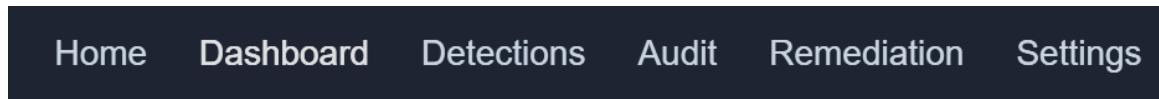
## 6. Using OCCT

### 6.1 Dashboard (Overview)

- Compliance Summary: pass/fail counts and severity distribution.
- Recent Findings: latest non-compliant or noteworthy events.
- Host & Mode: host label and Live/Sample indicator.



Navigate to the other pages using the navigation bar at the top of each page:



## 6.2 Controls & Compliance Views

Browse controls by category on the Audit page (Firewall, Account, etc.). Each control row shows Time, Category, Control, ID, CC ID, Severity, Outcome, Account/Host, Description:

The screenshot shows the 'Audit Trail' page with the following interface elements:

- Search bar:** Located at the top left, with an arrow pointing to it from the left side of the page.
- Export table to csv:** A button located at the top right of the table area.
- Clear search:** A button located to the right of the search bar.
- Table results:** The main data area, which is a table with columns: Time, Category, Control, ID, CC ID, Severity, Outcome, Account/Host, and Description. Each row represents an audit event with its details.

**Table Data (Approximate):**

Time	Category	Control	ID	CC ID	Severity	Outcome	Account/Host	Description
23/04/2025 00:05	Account	Administrators group members approved	AC-001	FDP_ACC.1	High	Failed	SRV-DC01	Unexpected account(s) are members of Administrators.
15/04/2025 14:20	Account	Administrators group: strict baseline	AC-002	FDP_ACC.1	High	Failed	SRV-DC01	Unexpected members in Administrators (strict policy).
15/04/2025 14:40	Security	Audit policy Account management (Success & Failure)	AU-021	FAU_GEN.1	High	Failed	SRV-DC01	One or both account management subcategories not set to Success & Failure.
23/04/2025 03:45	System	Firewall default inbound = Block (all profiles)	FW-001	FDP_ACC.2	High	Failed	SRV-WS01	One or more profiles have inbound default set to Allow.
16/04/2025 10:50	Account	Account lockout duration/reset	PW-006	FIA_AFL.1	Medium	Failed	SRV-DC01	Lockout duration too short or reset window too

The Remediation page is a counterpart to the above, displaying all controls listed with their remediation hint if failed = true:

**Remediation**

Suggestions are based on the latest audit results.

Category	Description	Type
Needs attention (Failed)	Administrators group members approved	Account
	Administrators group: strict baseline	Account
	Audit policy: Account management (Success & Failure)	Security
	Firewall default inbound = Block (all profiles)	System
Compliant (Informational)		
Advanced audit policy in use	Security	
Audit policy: Account Lockout (Success)	Security	
Audit policy: Logon events (Success & Failure)	Security	
Audit policy: Policy change (Success & Failure)	Security	
Audit shutdown if unable to log security audits	Security	
Built-in Administrator (RID 500) disabled	Account	

## 6.3 Account Activity & Admin Group Monitoring

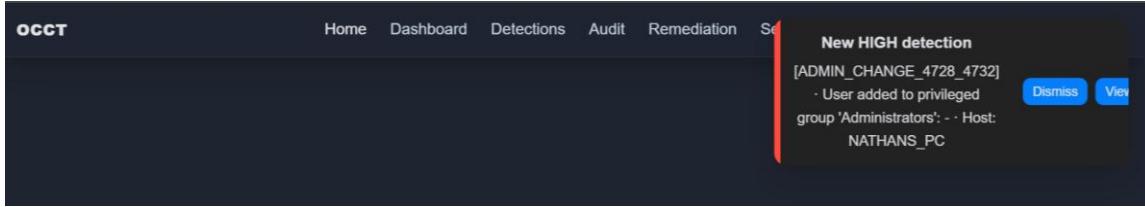
View recent account events and Administrators group changes (adds/removes). Windows Security Event IDs like 4732/4728 indicate changes to local admin group membership.

**Detections**

Events

Time	Severity	Rule	Summary	Account	IP	Status
16/10/2025 21:45	HIGH	BRUTE_4625	5 failed logons for 'svc_backup' in last 5 min	svc_backup	203.0.113.42	new
16/10/2025 21:44	HIGH	ADMIN_CHANGE_4728_4732	User added to privileged group 'Administrators': CONTOSO\jdoe	jdoe	N/A	new

NOTE: When a detection event occurs, an alert will pop up in the top right corner on any page of the site:



## 6.4 Event & Evidence Views

Inspect collected facts (registry/policies) and events (Security/System). Use filters (time, category, control) to locate relevant evidence.

This screenshot shows the 'Detections' page of OCCT. It includes a search bar, a table of detected events, and a detailed event view. Annotations highlight several UI elements:

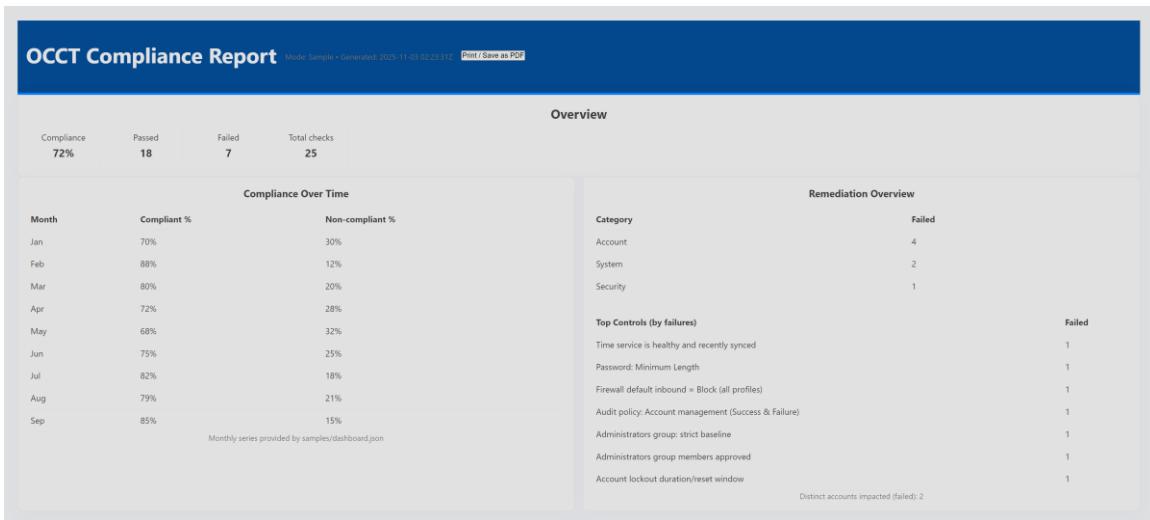
- Detections tab button:** Points to the 'Detections' tab button in the top navigation bar.
- Search bar:** Points to the search input field at the top of the page.
- Commit/clear search:** Points to the 'Search' and 'Clear' buttons at the top of the search bar.
- Table log of events:** Points to the table below the search bar, which lists detected events with columns for Time, Event ID, Account, IP, Message, and Host.

Time	Event ID	Account	IP	Message	Host
16/10/2025 21:44	4624	svc_backup	203.0.113.42	An account was successfully logged on. Account Name: svc_backup. Logon Type: 3. Source Network Address: 203.0.113.42	SRV-WS001
				<pre>{   "provider": "Microsoft-Windows-Security-Auditing",   "event_id": 4624,   "time": "2025-10-18T18:44:08Z",   "user": "NATHAN\\NATHAN",   "ip": "203.0.113.42",   "host": "SRV-WS001",   "message_full": "An account was successfully logged on. Account Name: svc_backup. Logon Type: 3. Source Network Address: 203.0.113.42" }</pre>	
16/10/2025 21:44	4728	Administrator	N/A	A member was added to a security-enabled global group. Group Name: Administrators Member Name: CONTOSO\\jdoe Member SID: S-1-5-21... Subject: Administrator	SRV-DC01

## 6.5 Reports & Exports

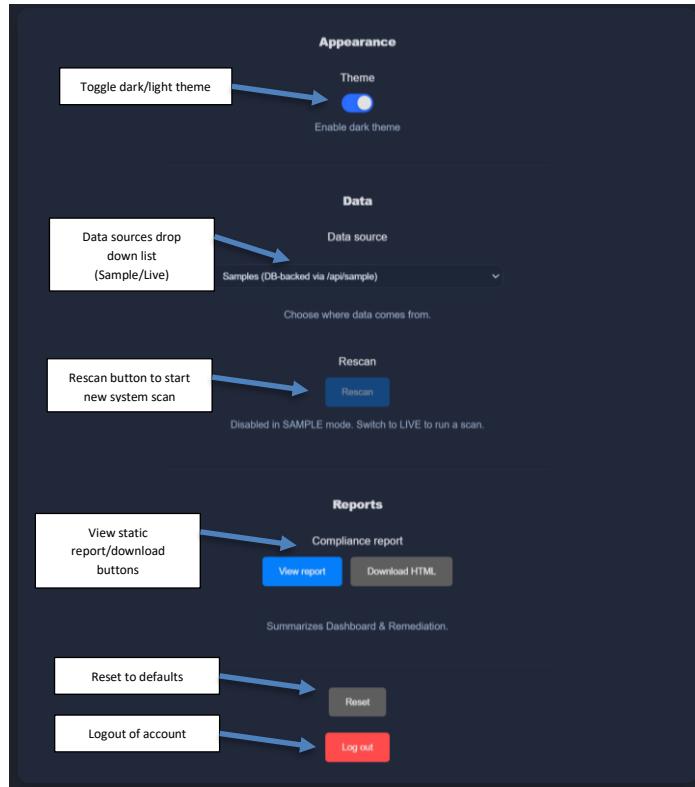
Export evidence lists for executive summaries in the following ways:

1. Export Audit Table to CSV on Audit Page
2. External Report Overview on Settings Page:



## 6.6 Settings

- Toggle Dark/Light Mode
- Switch Mode (Live/Sample)
- Rescan (Live)
- View Report (Opens external html formatted report)
- Download HTML (Downloads the report in HTML format)
- Reset (Resets the settings to default)
- Logout (Logs out of the application):



## 7. Controls Library & Framework Mapping

### 7.1 Control Card Template

- Control ID, Title, Category, Severity
- Framework Mapping (CC)
- Pass Condition
- Evidence fields and Remediation

```
- id: PW-001
  title: "Password: Minimum Length"
  category: Account
  severity: medium
  cc_sfr: FMT_MTD.1
  when: "win.password.min_length >= 14"
  pass: "Observed {{win.password.min_length}}, expected >=14"
  fail: "Observed {{win.password.min_length}}, expected >=14"
  remediation: "Increase 'Minimum password length' to 14 or more: Local Security Policy → Account Policies → Password Policy."
```

## 7.2 Example Controls (Prototype)

### FW-001 — Firewall default inbound = Block (all profiles)

- **Category:** Firewall | Severity: High
- **Observed:** One or more profiles have inbound default set to Allow.
- **Remediation (PowerShell):**

---

```
Get-NetFirewallProfile | Select-Object Name, DefaultInboundAction
Set-NetFirewallProfile -Profile Domain,Private,Public -DefaultInboundAction
Block
```

---

### AC-002 — Complete access control (Local Administrators membership hygiene)

- **Category:** Account | Severity: High
- **Detection:** Unexpected members in Administrators
- **Remediation (PowerShell):**

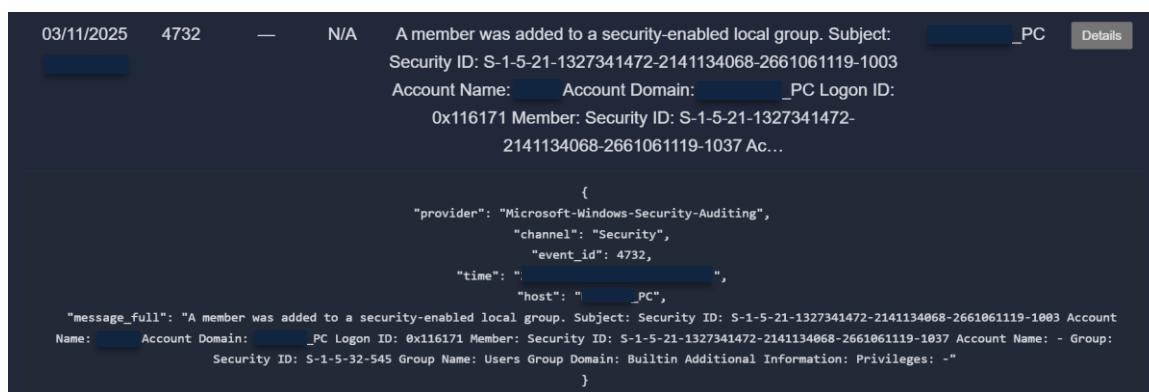
---

```
Get-LocalGroupMember -Group "Administrators"
Remove-LocalGroupMember -Group "Administrators" -Member {username} # replace with actual account
```

---

## 8. Data Sources & Evidence

- **Windows Configuration:** firewall profiles, local groups, password policy
- **Windows Event Logs:** e.g., Security 4732/4728 (admin group changes), 4720 (account creation), 4625 (logon)
- **OCCT Facts & Events:** stored in SQLite with timestamps, category, control, outcome, account, description, source, host
- **Controls Library (controls.yml):** metadata, mapping, and detection logic.



## 9. Troubleshooting

Symptom	Likely Cause	Fix
<b>“Running scripts is disabled on this system.”</b>	PowerShell execution policy	In the same PowerShell as Admin shell: Set-ExecutionPolicy -Scope Process -ExecutionPolicy Bypass
<b>Controls page shows No Evidence</b>	Scan not run (Live)	In Live Mode, return to Home or Settings, and click Run Scan
<b>Live Poller/Events not working</b>	Insufficient privileges to query local settings	Run OCCT with Administrator privileges
<b>SQLite “database is locked”</b>	Parallel runs or viewer open	Stop extra instances; close viewers; retry
<b>Remediation hint shows placeholders literally</b>	Placeholder not replaced	E.g. Replace {username} with real account name
<b>Failed to install greenlet after “pip install -r requirements.txt”</b>	Windows ARM machines are not compatible with the original requirements.txt	Use command: pip install -r requirements.winarm.txt

## 10. Security, Privacy & Known Limitations

- **Local Only:** Prototype runs locally; no data leaves the host.
- **Permissions:** Some checks require admin rights.
- **Scope:** Prototype controls cover key areas; not exhaustive CC coverage.
- **Integrations:** Email/SIEM integrations are not part of the prototype.