

MaxAudit – Real-Time Heatmap & Deviation Gradient Engine

Version: 1.1

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License: MaxOneOpen License v2.2 – Structurally Enforced

1. Purpose

This module defines the structure, semantics, and rendering logic of the real-time heatmap visualization component used in MaxAudit-compatible environments. It now includes system-level specifications on latency tolerance and fault-resilience for uninterrupted operation.

2. Display Architecture

- Fully self-contained browser module or embedded display interface
- Operates offline or airgapped
- Consumes JSON outputs (Verifier/Dongle)
- Maps deviation to MaxInstance or Twin graph layout

3. Color Gradient Logic

- Green = structurally intact
- Yellow = deviation present, within policy
- Orange = borderline or compound deviation
- Red = critical fault
- Grey = unknown/inactive state

4. Rendering & Realtime Requirements

- Input refresh rate: $\geq 1\text{Hz}$ (1 update/sec minimum)
- Max visualization latency: 250 ms (JSON parse + render)
- System must buffer 3 last audit snapshots for fallback continuity
- Component resumes from last valid state on data stream loss

5. Input Format Specification

Each update must include:

- Node UID
- Timestamp
- Audit severity class
- Status code
- Fork ID and profile hash (if present)

6. Fallback & Resilience

- If live feed is lost, fallback to snapshot buffer
- If buffer exceeds age threshold (10 min), grey state rendered
- System does not overwrite red-state nodes unless explicitly re-audited

7. Security Considerations

- Input is signed, immutable, and hash-anchored
- Visualization engine is sandboxed and read-only
- Does not initiate or trigger any system actions