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VS Code Implements 2-Hour Extension Auto-Update Delay to Counter Supply Chain Risk

SECURITY ANALYSIS | MEDIUM

SCC Item ID	SCC-STY-2026-0173
Type	Security Analysis
Severity	MEDIUM
Affected Products	Microsoft Visual Studio Code (VS Code), all versions receiving the auto-update delay feature; extensions from non-exempt publishers on Visual Studio Marketplace
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Executive Summary

Microsoft has added a two-hour delay to automatic extension updates in Visual Studio Code, creating a revocation window before potentially compromised updates reach developer endpoints. The change responds to a documented pattern of malicious extensions accumulating millions of installs through the Visual Studio Marketplace, including a February 2026 report identifying critical flaws in four extensions with over 125,000 combined installs. The measure signals that platform operators are accepting responsibility for supply chain integrity at the distribution layer, a meaningful shift, but one that leaves trust in verified publishers as a critical, unaudited dependency.

Technical Analysis

Microsoft's two-hour auto-update delay is a platform-level control targeting the distribution phase of a well-understood supply chain attack pattern: MITRE T1195.002 (Compromise Software Supply Chain) and T1554 (Compromise Client Software Binary), executed via the extension update mechanism mapped to T1072 (Software Deployment Tools). The attack surface is straightforward. A threat actor compromises a legitimate extension publisher's account or submits a new extension that passes initial review, then pushes a malicious update. Without a delay, that update propagates automatically to every user with the extension installed, in some documented cases, millions of endpoints, before any detection is possible. The two-hour window gives Microsoft's Marketplace security team time to identify anomalous update behavior, receive abuse reports, and revoke the update before it reaches end users. The February 2026 Hacker News report on four VS Code extensions with critical flaws and over 125,000 combined installs illustrates the scale: extensions are trusted implicitly by developers, execute in a privileged context within the IDE, and have access to filesystem paths, environment variables, and authentication tokens present in developer workstations. Aikido Security has

documented supply chain compromise scenarios via poisoned extensions; the attack is supported by real-world cases, and publisher account compromise is a documented initial access vector. The trusted-publisher exemption introduces the primary defensive gap in this control. Microsoft, GitHub, and OpenAI extensions bypass the delay entirely. While this reduces friction for high-volume, high-trust publishers, it also creates a tiered trust model where the highest-impact targets, major platform extensions with the largest install bases, receive no delay protection. An adversary who compromises a verified publisher's signing or deployment pipeline bypasses the control entirely. The delay is best understood as a detection window, not a prevention control. Its effectiveness depends entirely on Microsoft's capacity to detect malicious updates within two hours, a bar that has not been publicly benchmarked. Organizations relying solely on this platform control without layered endpoint and behavioral detection carry residual risk that the delay alone does not address.

Action Checklist

1. Step 1: Assess exposure, audit which VS Code extensions are installed across developer workstations and CI/CD build environments; document publisher names and install counts for each extension in use
2. Step 2: Review controls, verify that developer endpoints have EDR coverage with behavioral detection enabled (NIST SI-4, CIS 8.2); confirm that extension installs and updates generate audit log events that feed your SIEM
3. Step 3: Restrict extension installs, enforce an allowlist of approved extensions through VS Code's workspace or policy settings, preventing installation of unapproved or unreviewed extensions (NIST AC-3, NIST AC-6, CIS 2.3, D3FEND D3-UAP); apply particular scrutiny to non-verified publishers
4. Step 4: Update threat model, incorporate T1195.002, T1554, and T1072 into your supply chain threat register (or develop a register if one does not exist) with developer tooling as a specific attack surface; note that verified-publisher exemptions mean the delay control does not uniformly apply across all installed extensions
5. Step 5: Monitor and communicate, brief development leads and AppSec on the tiered trust model Microsoft has implemented, ensure they understand that verified-publisher extensions receive no delay, and establish a process for monitoring Microsoft Security Response Center and Marketplace security advisories for extension revocations

IR / Forensic Enrichment

Triage Priority	STANDARD
Escalation Criteria	Escalate to urgent if any VS Code extension on the allowlist audit is found to have been silently updated outside a scheduled maintenance window, if EDR or Sysmon detects VS Code extension host processes spawning shells or establishing outbound connections to non-Microsoft infrastructure, or if Microsoft revokes a Marketplace extension installed in CI/CD build environments where compromised build artifacts could propagate malicious code into production deployments.

Recovery Notes	After enforcing the extension allowlist and removing any non-approved extensions, re-run `code --list-extensions --show-versions` across all developer workstations and CI/CD runners to confirm no unauthorized extensions remain, and verify that CI/CD pipeline scripts pin extension versions explicitly. Monitor Sysmon Event ID 1 and Event ID 3 logs for VS Code extension host child process spawning and outbound network connections for a minimum of 30 days post-remediation, given that malicious extensions may include delayed execution logic. Validate that any extension removed during remediation did not modify user environment files (`~/.bashrc`, `~/.zshrc`, `$PROFILE` on PowerShell, or CI/CD environment variable stores) which are common persistence targets for supply chain implants executing under the developer's user context.
Forensic Artifacts	VS Code extension directory file system timestamps: `%USERPROFILE%\.vscode\extensions\` (Windows) or `~/.vscode/extensions/` (Linux/macOS) — modification timestamps on extension subdirectories indicate when an update was applied; cross-reference against VS Code auto-update logs to identify updates applied outside the expected 2-hour delay window or outside approved maintenance periods | VS Code extension host process tree captured via Sysmon Event ID 1 (Process Creation): parent-child relationships where `code.exe` or the extension host spawns `node.exe`, `powershell.exe`, `cmd.exe`, `bash`, or `curl` are anomalous and consistent with a malicious extension executing a payload delivered via T1195.002 or T1554 | Network connection logs (Sysmon Event ID 3 or EDR telemetry) for outbound connections originating from VS Code extension host processes: legitimate VS Code extension traffic resolves to `*.gallerycdn.vsassets.io`, `*.marketplace.visualstudio.com`, or publisher-specific CDNs; connections to unrecognized IPs or domains from extension processes indicate C2 or data exfiltration consistent with T1072 | CI/CD pipeline execution logs from GitHub Actions, GitLab CI, or Jenkins showing `code --install-extension` commands with extension IDs and versions at the time of each pipeline run — these establish a historical baseline to identify when a malicious or unexpected extension version first entered the build environment, which is critical for determining blast radius across build artifacts | Extension `package.json` files located at `~/.vscode/extensions//package.json` — the `main` entrypoint field and `contributes` section reveal what code the extension executes and what VS Code APIs it accesses; for the four extensions flagged in the February 2026 report with 125,000+ combined installs, preservation of these files before removal is required to support forensic analysis of what capabilities a malicious update may have exercised

Per-Action IR Details

Step 1: Assess exposure — audit which VS Code extensions are installed across developer workstations and CI/CD build environments; document publisher names and install counts for each extension in use

NIST Phase: Preparation

Reference: NIST 800-61r3 §2 — Preparation: Establishing IR capability and asset visibility before an incident occurs

Controls: CIS 1.1 (Establish and Maintain Detailed Enterprise Asset Inventory), CIS 2.1 (Establish and Maintain a Software Inventory), CIS 2.2 (Ensure Authorized Software is Currently Supported)

Compensating: On Windows developer endpoints, enumerate installed VS Code extensions with: `code --list-extensions --show-versions > extensions_inventory.txt` run via a PowerShell loop across all workstations using `Invoke-Command`. For CI/CD runners (GitHub Actions, GitLab CI, Jenkins agents), grep Dockerfiles and pipeline YAML for `code --install-extension` directives. Consolidate output into a CSV with columns: hostname, extension_id, publisher, version, verified_publisher_status. Cross-reference publisher names against the VS Code Marketplace manually to flag non-verified publishers.

Evidence: Before remediating, preserve the current extension state: capture `%USERPROFILE%\.vscode\extensions\` directory listing (Windows) or `~/.vscode/extensions/` (Linux/macOS)

including file timestamps to establish a baseline; export VS Code settings sync data if enabled; on CI/CD runners, capture the contents of any `.vscode/extensions.json` workspace recommendation files and pipeline scripts that automate extension installation.

Step 2: Review controls — verify that developer endpoints have EDR coverage with behavioral detection enabled (NIST SI-4, CIS 8.2); confirm that extension installs and updates generate audit log events that feed your SIEM

NIST Phase: Detection Analysis

Reference: NIST 800-61r3 §3.2 — Detection & Analysis: Monitoring systems and correlating events to identify potentially adverse activity

Controls: AU-2 (Event Logging), AU-6 (Audit Record Review, Analysis, And Reporting), AU-12 (Audit Record Generation), CIS 8.2 (Collect Audit Logs)

Compensating: Deploy Sysmon with a configuration that captures process creation (Event ID 1) filtering on `code.exe` spawning child processes (e.g., `node.exe`, `powershell.exe`, `cmd.exe`) as these would indicate a malicious VS Code extension executing a payload post-update. Use the SwiftOnSecurity Sysmon config as a baseline and add rules for file creation events (Event ID 11) under `%USERPROFILE%\.vscode\extensions\` to detect new or modified extension files. For SIEM-less environments, ship Sysmon logs to a central syslog server using Winlogbeat (free, Elastic). On Linux CI runners, use `auditd` with a watch on `~/.vscode/extensions/` via `auditctl -w ~/.vscode/extensions/ -p wra -k vscode_ext_change`.

Evidence: Capture Windows Security Event Log Event ID 4688 (Process Creation) for processes spawned by `code.exe` or its extension host process `extensionHost.js`; capture Sysmon Event ID 1 for child process creation under VS Code; review network connection logs (Sysmon Event ID 3) for outbound connections initiated by VS Code extension processes to non-Microsoft infrastructure, which would indicate a compromised extension phoning home post-update.

Step 3: Restrict extension installs — enforce an allowlist of approved extensions through VS Code's workspace or policy settings, preventing installation of unapproved or unreviewed extensions (NIST AC-3, NIST AC-6, CIS 2.3, D3-UAP); apply particular scrutiny to non-verified publishers

NIST Phase: Containment

Reference: NIST 800-61r3 §3.3 — Containment: Implementing controls to prevent further exposure while maintaining operational continuity

Controls: AC-3 (Access Enforcement), AC-6 (Least Privilege), CIS 2.3 (Address Unauthorized Software), CIS 4.6 (Securely Manage Enterprise Assets and Software)

Compensating: Enforce an extension allowlist via VS Code's `settings.json` policy deployment using `extensions.allowed` (available in VS Code 1.87+, deployed via Group Policy or MDM on Windows, or a managed `settings.json` pushed via Ansible/Puppet on Linux). For CI/CD pipelines, pin extension versions explicitly in pipeline scripts (`code --install-extension ms-python.python@2024.x.x`) and validate the extension `.vsix` SHA-256 hash against a known-good baseline before installation. Use a YARA rule scanning `~/.vscode/extensions/*/package.json` for anomalous `contributes.commands` entries or obfuscated `main` JavaScript entry points as a compensating detection control.

Evidence: Before enforcing the allowlist, snapshot all currently installed extension IDs, versions, and their `package.json` `publisher` fields across all developer workstations; document any extensions from non-verified publishers (identifiable by absence of the blue verified checkmark in Marketplace metadata) as these fall outside Microsoft's 2-hour delay revocation window bypass and represent the highest residual risk.

Step 4: Update threat model — incorporate T1195.002, T1554, and T1072 into your supply chain threat register with developer tooling as a specific attack surface; note that verified-publisher exemptions mean the delay control does not uniformly apply across all installed extensions

NIST Phase: Post Incident

Reference: NIST 800-61r3 §4 — Post-Incident Activity: Lessons learned and threat model updates to improve detection and prevention posture

Controls: AU-6 (Audit Record Review, Analysis, And Reporting)

Compensating: Document MITRE ATT&CK T1195.002 (Compromise Software Supply Chain), T1554 (Compromise Host Software Binary), and T1072 (Software Deployment Tools) in a threat register spreadsheet with VS Code Marketplace as the specific supply chain node. Note explicitly that verified-publisher extensions bypass the 2-hour delay, meaning a compromised verified publisher (e.g., a large extension with 125,000+ installs) would deliver a malicious update to developer endpoints within the normal update cycle. Write a Sigma rule detecting VS Code extension host spawning network-capable child processes to operationalize T1072 detection without a commercial SIEM — Sigma rules can be converted to Elastic, Splunk, or native Windows Event Log queries.

Evidence: Review historical Sysmon and Windows Event logs for any past instances of VS Code extension processes (`extensionHost`) establishing outbound connections to non-Microsoft CDN infrastructure (non-`*.gallerycdn.vsassets.io` or `*.marketplace.visualstudio.com` domains) — this would be retroactive evidence of a T1195.002 or T1072 compromise predating this threat model update.

Step 5: Monitor and communicate — brief development leads and AppSec on the tiered trust model Microsoft has implemented, ensure they understand that verified-publisher extensions receive no delay, and establish a process for monitoring Microsoft Security Response Center and Marketplace security advisories for extension revocations

NIST Phase: Preparation

Reference: NIST 800-61r3 §2 — Preparation: Establishing communication channels, awareness programs, and monitoring processes before an incident

Controls: AU-13 (Monitoring For Information Disclosure), CIS 7.1 (Establish and Maintain a Vulnerability Management Process), CIS 7.2 (Establish and Maintain a Remediation Process)

Compensating: Subscribe to the Microsoft Security Response Center (MSRC) RSS feed (`https://msrc.microsoft.com/blog/feed`) and configure a free RSS-to-email or RSS-to-Slack bridge (e.g., IFTTT, RSS.app) to alert the AppSec team on new advisories referencing VS Code or Marketplace extensions. Establish a monthly manual review of installed extensions against the VS Code Marketplace revocation list by running `code --list-extensions` and cross-referencing against any extensions flagged in the MSRC advisories. Brief development leads with a one-page threat summary explaining that verified-publisher extensions (which bypass the 2-hour delay) carry residual supply chain risk if the publisher account is compromised — referencing the February 2026 incident of four extensions with 125,000+ combined installs as a concrete example.

Evidence: Before establishing ongoing monitoring, document current extension versions as a baseline so that any unauthorized update applied outside the 2-hour window (e.g., to a verified-publisher extension) can be detected by comparing `%USERPROFILE%\.vscode\extensions\` directory modification timestamps against expected VS Code update cycles; retain this baseline in version control alongside the allowlist policy.

Detection Guidance

Hunt for extension-related artifacts in developer endpoint logs. Key behavioral indicators include: VS Code extension processes (extensionHost) spawning unexpected child processes, accessing credential stores, reading .env files or CI/CD configuration files outside the project workspace, or making outbound network connections to domains not associated with the extension's declared functionality. On Windows endpoints, monitor for the VS Code extension host process reading from LOCALAPPDATA paths associated with browser credential storage or SSH key directories. Review audit logs for extension update events (AU-2, AU-3) correlated with timing, an extension update followed immediately by anomalous process or network activity is a high-fidelity signal. Apply D3FEND D3-SFA (System File Analysis) to monitor extension directories under user profiles for unauthorized modification. For CI/CD environments where VS Code extensions or similar marketplace packages are consumed during builds, instrument the build pipeline to log all package fetch events and alert on unexpected version changes. Microsoft's Marketplace publishes revocation notices; subscribe to these feeds and build a detection rule that alerts if an installed extension matches a revoked identifier. Establish

a baseline of normal outbound domains for your most-used extensions and alert on deviations, a useful application of D3FEND D3-LAM (Local Account Monitoring) principles extended to process-level network behavior.

Indicators of Compromise

Type	Value	Context	Confidence
URL	`Pending — refer to The Hacker News (February 2026) and Aikido Security blog for published indicators`	Critical flaw disclosures in four VS Code extensions (125,000+ combined installs) and supply chain compromise research may include extension identifiers, malicious publisher names, or payload hashes not reproduced in the source summaries provided	LOW

Framework Mappings

MITRE-ATTACK

- **T1195.002** — Compromise Software Supply Chain
- **T1554** — Compromise Host Software Binary
- **T1072** — Software Deployment Tools

NIST-800-53R5

- **CM-7** — Least Functionality
- **SA-9** — External System Services
- **SR-3** — Supply Chain Controls and Processes
- **SI-7** — Software, Firmware, and Information Integrity
- **CM-3** — Configuration Change Control
- **SR-2** — Supply Chain Risk Management Plan
- **SI-4** — System Monitoring

OWASP-TOP10-2021

- **A08:2021** — Software and Data Integrity Failures

CIS-V8

- **2.5** — Allowlist Authorized Software
- **2.6** — Allowlist Authorized Libraries
- **7.3** — Perform Automated Operating System Patch Management
- **7.4** — Perform Automated Application Patch Management
- **15.1** — Establish and Maintain an Inventory of Service Providers
- **8.2** — Collect Audit Logs

ISO-27001-2022

- **A.8.8** — Management of technical vulnerabilities
- **A.5.21** — Managing information security in the ICT supply chain
- **A.5.23** — Information security for use of cloud services

NIST-CSF-2

- **GV.SC-01** — Cybersecurity supply chain risk management program
- **DE.CM-01** — Networks and network services are monitored

SOC2-TSC

- **CC9.2** — Manages risks associated with vendors and business partners

MITRE ATT&CK Mapping

Technique ID	Technique Name	Tactic
T1195.002	Compromise Software Supply Chain	Initial-Access
T1554	Compromise Host Software Binary	Persistence
T1072	Software Deployment Tools	Execution

Sources

Source	URL	Tier
Critical Flaws Found in Four VS Code Extensions with Over 125 ...	https://thehackernews.com/2026/02/critical-flaws-found-in-four-vs-c...	T3
Malicious VSCode extensions with millions of installs discovered	https://www.reddit.com/r/programming/comments/1dcz9uj/malicious_vsc...	T3
The Wild West of VS Code extensions and how a poisoned ...	https://www.aikido.dev/blog/vs-code-extension-github-breach	T3
Security - Visual Studio Code	https://code.visualstudio.com/docs/agents/security	T3
Security and Trust in Visual Studio Marketplace - Microsoft Developer	https://developer.microsoft.com/blog/security-and-trust-in-visual-s...	T1

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