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# CISA and International Partners Release Guidance on Secure Adoption of Agentic AI

GOVERNANCE | HIGH

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| SCC Item ID | SCC-GOV-2026-0028 |
| Type | Governance |
| Severity | HIGH |
| Affected Products | Organizations adopting or operating agentic AI systems across all sectors |
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## Executive Summary

CISA and international cybersecurity partners have released formal guidance on the secure adoption of agentic AI systems, flagging systemic risks that most enterprise security programs are not yet equipped to address. Organizations deploying AI agents face expanded attack surfaces, privilege creep from over-permissioned agents, and prompt injection vulnerabilities that can be exploited to manipulate autonomous decision-making. The business risk is broad: any sector integrating agentic AI into workflows, data pipelines, or customer-facing systems should treat this guidance as a baseline requirement, not optional reading.

## Technical Analysis

The CISA guidance document 'Careful Adoption of Agentic AI Services' (released 2026, co-authored with international partners) identifies five primary risk categories in agentic AI deployments: (1) expanded attack surface from autonomous agent decision-making without continuous human oversight; (2) privilege creep from over-permissioned AI agents accumulating excessive access (CWE-269, CWE-284; maps to T1548, Abuse Elevation Control Mechanism, T1078, Valid Accounts); (3) prompt injection attacks that manipulate agent instructions to redirect actions (CWE-77, Command Injection, CWE-20, Improper Input Validation; maps to T1059, Command and Scripting Interpreter); (4) supply chain risks from third-party AI components and model providers (maps to T1195, Supply Chain Compromise); and (5) insufficient human oversight during automated workflows enabling unchecked lateral movement or data exfiltration. No CVE is associated, this is a governance and architectural risk advisory. The guidance calls for alignment with NIST AI RMF and NIST CSF as the baseline control frameworks. No CVSS score applies; severity is assessed qualitatively as high based on the breadth of affected deployment patterns and the systemic nature of the identified control gaps. Source: CISA (T1), https://www.cisa.gov/resources-tools/resources/careful-adoption-agentic-ai-services

## Action Checklist

1. Step 1: Inventory all agentic AI systems in production or pilot, including third-party AI agents integrated into internal workflows, SaaS platforms, and development pipelines. Document what permissions each agent holds and what systems it can access or modify.
2. Step 2: Privilege Audit, review agent permission scopes against least-privilege principles (NIST SP 800-53 AC-6). Identify agents with write, delete, or escalation permissions that exceed their documented operational need. Flag any agent with access to credential stores, code repositories, or production data systems.
3. Step 3: Prompt Injection Controls, implement input validation and output sanitization on all agent interfaces accepting external or user-supplied input (CWE-20, CWE-77). Where agents consume data from external sources (web, APIs, documents), treat that data as untrusted and enforce content filtering before it reaches the agent's instruction context.
4. Step 4: Human Oversight Gates, define and enforce human-in-the-loop checkpoints for high-impact agent actions (financial transactions, access changes, data deletion, external communications). Log all autonomous decisions with sufficient context to reconstruct the decision chain. Verify logging is active and querying correctly before removing manual review steps.
5. Step 5: Post-Deployment Review, map current agentic AI controls to NIST AI RMF (Govern, Map, Measure, Manage) and identify gaps. Assign control owners. Schedule a quarterly review cycle as agentic AI capabilities and your deployment footprint evolve. Document residual risk formally.

## IR / Forensic Enrichment

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| **Triage Priority** | URGENT |
| **Escalation Criteria** | Escalate to CISO and legal counsel immediately if audit evidence from Step 2 or Step 4 reveals that a currently deployed agent has already exercised write, delete, or escalation permissions against production data systems, credential stores, or financial transaction systems without a documented human approval record, as this constitutes a potential unauthorized access incident with regulatory notification obligations under GDPR Article 33, HIPAA §164.412, or applicable state breach notification laws depending on data classification. |
| **Recovery Notes** | Post-containment, do not restore full agent autonomy until least-privilege permission scopes are confirmed active in IAM and audit logging is verified end-to-end with a test decision captured in the log. Monitor agent decision logs daily for the first 30 days after controls are implemented, specifically watching for action_type entries involving credential access, code commits, or external communications that were not present in the pre-control baseline. Treat any prompt injection signature match in the YARA filter as an active incident requiring immediate session termination and forensic capture of the injected content and its source. |

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| **Forensic Artifacts** | Cloud IAM audit logs (AWS CloudTrail 'AssumeRole' and 'GetSecretValue' events, Azure Entra ID sign-in logs, GCP Cloud Audit Logs) filtered on agent service principal identities — these reveal whether over-permissioned agents accessed credential stores or took escalation actions prior to the privilege audit \| Agent framework debug logs (LangChain verbose output, AutoGPT activity.log, or equivalent) containing raw tool call sequences — these are the primary artifact for reconstructing a prompt injection attack chain, showing the injected instruction as received and the downstream tool calls it triggered \| Web proxy or DNS resolver logs for outbound agent requests — indirect prompt injection attacks require the agent to fetch attacker-controlled content; the fetch URL and response body are key evidence linking the injection payload to its source \| Secrets manager access logs (AWS Secrets Manager CloudTrail, Azure Key Vault diagnostic logs 'SecretGet' operation) — an agent manipulated via prompt injection targeting credential theft will produce anomalous 'GetSecretValue' or 'SecretGet' events outside of its normal operational pattern \| Cloud storage and database write logs (S3 server access logs, Azure Storage diagnostic logs, RDS/CloudSQL audit logs) attributed to agent service principal identities — exfiltration or data manipulation by a compromised agent will appear here as write or copy operations inconsistent with the agent's documented function |

### Per-Action IR Details

**Step 1: Inventory — enumerate all agentic AI systems in production or pilot, including third-party AI agents integrated into internal workflows, SaaS platforms, and development pipelines. Document what permissions each agent holds and what systems it can access or modify.**

**NIST Phase:** Preparation

**Reference:** NIST 800-61r3 §2 — Preparation: Establishing IR Capability and Asset Visibility

**Controls:** NIST IR-4 (Incident Handling) — capability requires knowing what systems are in scope, NIST IR-8 (Incident Response Plan) — plan must enumerate in-scope systems including AI agents, NIST SI-5 (Security Alerts, Advisories, and Directives) — CISA guidance triggers an inventory action, CIS 1.1 (Establish and Maintain Detailed Enterprise Asset Inventory) — AI agents and their integration points are enterprise assets, CIS 2.1 (Establish and Maintain a Software Inventory) — third-party AI agent software (e.g., AutoGPT, LangChain-based tools, vendor SaaS agents) must appear in software inventory

**Compensating:** Run a two-pass discovery: (1) query your cloud IAM console (AWS IAM, Azure Entra ID, GCP IAM) for service principals, app registrations, or API keys whose display name or description references 'agent', 'bot', 'copilot', 'assistant', or 'automation'; export with 'az ad sp list --all' or 'aws iam list-roles' and grep for those terms. (2) Search CI/CD pipeline configs (GitHub Actions YAML, GitLab CI, Jenkins jobs) for calls to OpenAI, Anthropic, Cohere, or LangChain endpoints using: grep -r 'openai\|anthropic\|langchain\|agent' ./.github/workflows/ --include='*.yml'. Populate a simple spreadsheet with agent name, owning team, API endpoint, credential reference, and systems it can write to.

**Evidence:** Before inventorying, capture a point-in-time snapshot of current agent activity to preserve pre-audit state: export all active API keys and OAuth tokens from your AI vendor consoles (OpenAI usage dashboard, Azure OpenAI resource logs, AWS Bedrock CloudTrail); pull cloud audit logs showing service principal authentications in the prior 30 days; capture current IAM policy documents attached to agent service accounts. This baseline will later reveal whether any agent's permission set changed after the inventory was conducted.

**Step 2: Privilege Audit — review agent permission scopes against least-privilege principles (NIST SP 800-53 AC-6). Identify agents with write, delete, or escalation permissions that exceed their documented operational need. Flag any agent with access to credential stores, code repositories, or production data systems.**

**NIST Phase:** Preparation

**Reference:** NIST 800-61r3 §2 — Preparation: Reducing Attack Surface Prior to Incident

**Controls:** NIST AC-6 (Least Privilege) — agent service accounts must operate at minimum necessary permission level, NIST IR-4 (Incident Handling) — over-permissioned agents expand blast radius during an incident, NIST AU-2

(Event Logging) — agent permission usage must be loggable; accounts with excessive scope may not be auditable, CIS 5.4 (Restrict Administrator Privileges to Dedicated Administrator Accounts) — agents with admin-equivalent API scopes violate this safeguard, CIS 6.1 (Establish an Access Granting Process) — agent API credentials should have been granted through a documented, need-based process

**Compensating:** For each agent service account or API key identified in Step 1, pull the effective permissions using cloud-native tools: AWS — 'aws iam simulate-principal-policy'; Azure — 'az role assignment list --assignee '; GCP — 'gcloud projects get-iam-policy '. Pipe output through jq and flag any assignment containing 'write', 'delete', 'admin', 'owner', or 'secrets'. For agents accessing GitHub, use 'gh api /repos/{owner}/{repo}/collaborators/{username}/permission' to check repo access level. Document findings in the inventory spreadsheet with a RED/AMBER/GREEN rating: RED = write access to secrets manager, code repo, or prod DB; AMBER = write access to non-production systems; GREEN = read-only.

**Evidence:** Before revoking any permissions, preserve evidence of the current over-permissioned state: export full IAM policy documents and role assignment exports (timestamped) for each flagged agent; pull cloud audit logs (AWS CloudTrail, Azure Monitor Activity Log, GCP Cloud Audit Logs) filtered on the agent service principal for the prior 90 days to identify what actions it actually performed — this reveals whether excessive permissions were already exploited; capture any secrets manager access logs (AWS Secrets Manager CloudTrail events 'GetSecretValue', Azure Key Vault diagnostic logs operation 'SecretGet') attributed to agent identities.

**Step 3: Prompt Injection Controls — implement input validation and output sanitization on all agent interfaces accepting external or user-supplied input (CWE-20, CWE-77). Where agents consume data from external sources (web, APIs, documents), treat that data as untrusted and enforce content filtering before it reaches the agent's instruction context.**

**NIST Phase:** Containment

**Reference:** NIST 800-61r3 §3.3 — Containment Strategy: Limiting Ongoing Damage from an Active Attack Vector

**Controls:** NIST SI-10 (Information Input Validation) — all inputs to agent instruction context from external sources must be validated, NIST SI-3 (Malicious Code Protection) — prompt injection payloads embedded in documents or web content function analogously to malicious code delivered via common attack vectors, NIST SI-7 (Software, Firmware, and Information Integrity) — agent instruction integrity must be verified; injected instructions corrupt this integrity, NIST SC-39 (Process Isolation) — agent execution environments processing untrusted input should be isolated, CIS 4.4 (Implement and Manage a Firewall on Servers) — agents consuming external web content should do so through a proxy with content inspection, not direct egress

**Compensating:** Deploy a YARA rule scanning all documents and API responses before they are passed to the agent instruction context, targeting common prompt injection patterns: rule strings include 'ignore previous instructions', 'disregard your system prompt', 'you are now', 'new objective', and Unicode homoglyph sequences used to obscure injection payloads. For Python-based LangChain or AutoGPT agents, insert a sanitization wrapper that strips or escapes angle brackets, backticks, and XML-like tags (common in indirect injection via web content) before content reaches the LLM call. Log all blocked inputs to a local file with timestamp, source URL or filename, and matched pattern. For web-browsing agents, route all external fetches through Squid proxy with a denylist of known prompt-injection-hosting domains and log all 200-OK responses for review.

**Evidence:** Before implementing filtering, capture the current unfiltered input stream to establish a baseline and identify whether injection attempts are already occurring: enable debug-level logging on your agent framework (LangChain verbose=True, AutoGPT debug mode) and capture raw tool call inputs and outputs for 24–48 hours; search existing agent logs for strings matching prompt injection signatures ('ignore', 'override', 'system:', 'assistant:' appearing in user or document content rather than system prompt position); if the agent accesses external URLs, pull web proxy or DNS logs for the agent's outbound requests and flag any fetch of a URL containing query parameters with encoded instruction text.

**Step 4: Human Oversight Gates — define and enforce human-in-the-loop checkpoints for high-impact agent actions (financial transactions, access changes, data deletion, external communications). Log all autonomous decisions with sufficient context to reconstruct the decision chain. Verify logging is active and querying correctly before removing manual review steps.**

**NIST Phase:** Detection Analysis

**Reference:** NIST 800-61r3 §3.2 — Detection and Analysis: Monitoring, Alerting, and Decision Audit Trail

**Controls:** NIST AU-3 (Content of Audit Records) — agent decision logs must capture what action was taken, when, by which agent, based on what input, and what the outcome was, NIST AU-6 (Audit Record Review, Analysis, and Reporting) — agent decision logs must be reviewed at defined frequency, not just collected, NIST AU-9 (Protection of Audit Information) — agent decision logs must be write-protected; an agent manipulated via prompt injection must not be able to overwrite its own audit trail, NIST IR-5 (Incident Monitoring) — autonomous agent actions that cross defined thresholds are incident candidates requiring tracking, NIST AU-10 (Non-Repudiation) — agent action logs must provide irrefutable evidence attributable to a specific agent identity and session, CIS 8.2 (Collect Audit Logs) — agent action logs are audit logs and must be collected under the enterprise's log management process

**Compensating:** Implement structured JSON logging for every agent action using a fixed schema: {timestamp_utc, agent_id, session_id, action_type, target_resource, input_summary_hash, output_summary, human_approved: true/false, approval_actor}. Ship logs to a write-once destination (S3 bucket with Object Lock, or a local append-only log file with immutable flag set via 'chattr +a agent_decisions.log' on Linux). For high-impact action gates without an enterprise workflow tool, implement a Slack or email webhook that posts the proposed action and requires a human reply of 'APPROVE ' or 'DENY ' before the agent proceeds — hold the agent in a blocking wait state. Use osquery's process_events table to correlate agent process activity against the decision log as a secondary verification source.

**Evidence:** Before activating oversight gates, establish what autonomous decisions have already been made without logging: search application logs for agent framework output (LangChain action logs, OpenAI API response logs) covering the period since each agent was deployed; query cloud audit logs for resource modifications (S3 PutObject, Azure Storage BlobWrite, database write operations) attributed to agent service principal identities to reconstruct a timeline of past autonomous actions; identify any gaps in that timeline where agent activity is implied by downstream effects but no decision log entry exists — these gaps are the highest-risk period for undetected prompt injection exploitation.

**Step 5: Post-Deployment Review — map current agentic AI controls to NIST AI RMF (Govern, Map, Measure, Manage) and identify gaps. Assign control owners. Schedule a quarterly review cycle as agentic AI capabilities and your deployment footprint evolve. Document residual risk formally.**

**NIST Phase:** Post Incident

**Reference:** NIST 800-61r3 §4 — Post-Incident Activity: Lessons Learned, Control Gap Identification, and Program Improvement

**Controls:** NIST IR-4 (Incident Handling) — post-deployment review updates the incident handling capability to incorporate agentic AI as a new asset class, NIST IR-8 (Incident Response Plan) — IR plan must be updated to include agentic AI-specific scenarios: prompt injection leading to data exfiltration, agent privilege abuse, autonomous lateral movement, NIST SI-2 (Flaw Remediation) — agentic AI systems require a flaw remediation process that accounts for model updates, plugin changes, and newly discovered prompt injection techniques, NIST RA-3 (Risk Assessment) — residual risk from agentic AI deployments must be formally documented after controls are applied, CIS 7.1 (Establish and Maintain a Vulnerability Management Process) — agentic AI systems must be included in the vulnerability management process, with prompt injection and privilege creep treated as vulnerability classes, CIS 7.2 (Establish and Maintain a Remediation Process) — identified control gaps from the AI RMF mapping must enter the remediation process with assigned owners and timelines

**Compensating:** Conduct the AI RMF gap assessment using a two-column spreadsheet: column one lists the NIST AI RMF functions (Govern, Map, Measure, Manage) with their subcategories from the published AI RMF 1.0 document (ai.nist.gov); column two documents current control status (implemented / partial / not implemented) with the owner and next review date. Publish the gap list to your team's ticketing system (Jira, GitHub Issues, or even a shared spreadsheet) with severity ratings. Schedule the quarterly review as a recurring calendar item tied to your existing change management or risk review meeting — do not create a separate process. For residual risk documentation, use a simple risk register entry: agent name, unmitigated risk description, current control, residual likelihood, residual impact, formal acceptance signature.

**Evidence:** Before closing the review cycle, preserve a post-control-implementation evidence package: re-export IAM policy documents for all agent service accounts to confirm least-privilege changes from Step 2 took effect; pull a 30-day sample of agent decision logs to verify the logging schema from Step 4 is capturing complete decision chains;

run the YARA prompt injection scan from Step 3 against a sample of recent agent inputs and document the results. This package serves as the baseline for the next quarterly review and as audit evidence demonstrating due diligence in response to the CISA agentic AI guidance.

## Detection Guidance

No network-based IOCs exist for this advisory, detection focus is behavioral and configuration-based. Monitor for: (1) Unusual privilege escalation events from service accounts or API keys associated with AI systems (Windows Event ID 4672, 4648; Linux sudo logs; cloud IAM audit logs for unexpected role assumption, maps to T1548, T1078). (2) Unexpected outbound connections or API calls initiated by AI agent processes, particularly to external domains not in an approved allowlist (maps to T1059, T1195). (3) Anomalous data access patterns from AI agent service accounts, large read volumes, access to sensitive directories, or access outside normal operating hours. (4) Changes to agent configuration files, system prompts, or instruction templates that were not initiated through an approved change management process (potential prompt injection persistence). (5) Third-party AI component updates or model changes that were not reviewed through your software supply chain process. SIEM correlation: create detection rules linking AI agent service account identifiers to privilege escalation and lateral movement TTPs. Where agents operate in cloud environments, enable CloudTrail (AWS), Unified Audit Log (Microsoft 365), or equivalent, and alert on agent identities performing actions outside their documented scope.

## Framework Mappings

### MITRE-ATTACK

- **T1078** — Valid Accounts
- **T1548** — Abuse Elevation Control Mechanism
- **T1195** — Supply Chain Compromise
- **T1059** — Command and Scripting Interpreter

### NIST-800-53R5

- **AC-2** — Account Management
- **AC-6** — Least Privilege
- **IA-2** — Identification and Authentication (Organizational Users)
- **IA-5** — Authenticator Management
- **CM-6** — Configuration Settings
- **SA-9** — External System Services
- **SR-2** — Supply Chain Risk Management Plan
- **SR-3** — Supply Chain Controls and Processes
- **SI-7** — Software, Firmware, and Information Integrity
- **CM-7** — Least Functionality
- **SI-3** — Malicious Code Protection
- **SI-4** — System Monitoring
- **AC-3** — Access Enforcement

- **SI-10** — Information Input Validation

**OWASP-TOP10-2021**

- **A01:2021** — Broken Access Control
- **A03:2021** — Injection

**CIS-V8**

- **5.4** — Restrict Administrator Privileges to Dedicated Administrator Accounts
- **6.8** — Define and Maintain Role-Based Access Control
- **6.1** — Establish an Access Granting Process
- **6.2** — Establish an Access Revoking Process
- **16.10** — Apply Secure Design Principles in Application Architectures
- **15.1** — Establish and Maintain an Inventory of Service Providers

**SOC2-TSC**

- **CC6.1** — The entity implements logical access security software, infrastructure, and architectures over protected information assets
- **CC9.2** — Manages risks associated with vendors and business partners

**HIPAA-SECURITY**

- **164.312(a)(1)** — Access Control

**ISO-27001-2022**

- **A.8.26** — Application security requirements
- **A.5.21** — Managing information security in the ICT supply chain

**NIST-CSF-2**

- **GV.SC-01** — Cybersecurity supply chain risk management program

## MITRE ATT&CK Mapping

| Technique ID | Technique Name | Tactic |
|---|---|---|
| T1078 | Valid Accounts | Defense-Evasion |
| T1548 | Abuse Elevation Control Mechanism | Privilege-Escalation |
| T1195 | Supply Chain Compromise | Initial-Access |
| T1059 | Command and Scripting Interpreter | Execution |

## Sources

| Source | URL | Tier |
|---|---|---|
| **Careful Adoption of Agentic AI Services - CISA** | https://www.cisa.gov/resources-tools/resources/careful-adoption-age... | T1 |
| **CISA, US and International Partners Release Guide to Secure ...** | https://www.cisa.gov/news-events/news/cisa-us-and-international-par... | T1 |
| **Agentic AI security: Risks & governance for enterprises \| McKinsey** | https://www.mckinsey.com/capabilities/risk-and-resilience/our-insig... | T2 |
| **Mastering agentic AI security through exposure management** | https://www.tenable.com/blog/mastering-agentic-ai-security-through-... | T3 |
| **6 Cybersecurity Risks of Agentic AI for Security Teams - Aembit** | https://aembit.io/blog/agentic-ai-cybersecurity-risks-security-guide/ | T3 |



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