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Cisco Bets on Identity as the New Perimeter: Astrix and WideField Acquisitions Target the NHI Gap

SECURITY ANALYSIS | MEDIUM | CVSS 5.0

SCC Item ID	SCC-STY-2026-0284
Type	Security Analysis
Severity	MEDIUM
CVSS Base Score	5.0
Affected Products	Cisco Security Platform; Astrix Security (NHI management tooling); WideField (AI agent identity monitoring)
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Executive Summary

Cisco has announced intent to acquire Astrix Security and WideField, two vendors specializing in Non-Human Identity (NHI) security, a domain covering service accounts, API keys, OAuth tokens, machine credentials, and AI agent identities. The move signals broad industry recognition that enterprise identity programs have a structural gap: human identity governance is relatively mature, but NHI lifecycle management, least-privilege enforcement, and credential exposure detection remain underdeveloped in most organizations. For CISOs, this acquisition validates NHI as a board-level risk category and signals that the market is consolidating around platforms that can govern both human and machine identities at scale.

Technical Analysis

Cisco's dual acquisition of Astrix Security and WideField addresses a well-documented asymmetry in enterprise identity programs. IAM and PAM tooling has matured significantly over the past decade, with robust controls around human account provisioning, MFA enforcement, and privileged session management. NHI governance has not kept pace. Service accounts, API keys, OAuth tokens, and machine credentials proliferate across SaaS and cloud environments with minimal lifecycle oversight, they are rarely rotated, often over-privileged, and seldom monitored for anomalous use.

Astrix Security's value proposition was discovery and governance of NHI relationships across SaaS and cloud environments, mapping which non-human identities exist, what permissions they hold, and what data they can

access. WideField extended this into the emerging agentic AI space, where autonomous AI agents operate with their own identity contexts, make API calls on behalf of users or systems, and can accumulate permissions that no single human approved explicitly.

The MITRE ATT&CK techniques most directly associated with NHI abuse are well-represented in real-world breach data. T1528 (Steal Application Access Token) and T1550.001 (Use Alternate Authentication Material: Application Access Token) describe how adversaries target OAuth tokens and API keys to bypass MFA and move laterally through cloud and SaaS environments without triggering traditional authentication alerts. T1078 and T1078.004 (Valid Accounts: Cloud Accounts) cover adversary use of legitimate machine credentials to masquerade as authorized service identities. T1098 and T1098.001 (Account Manipulation) cover post-compromise persistence through credential modification.

The CWE patterns mapped to this domain, CWE-272 (Least Privilege Violation), CWE-284 (Improper Access Control), CWE-522 (Insufficiently Protected Credentials), and CWE-732 (Incorrect Permission Assignment for Critical Resource), are not novel weaknesses. They are perennial gaps that NHI sprawl amplifies at scale. A single OAuth integration granted broad read/write access across a SaaS tenant, left unmonitored and never rotated, represents all four CWEs simultaneously.

The agentic AI dimension adds urgency. As organizations deploy AI agents that autonomously call APIs, access data stores, and chain actions across systems, each agent requires an identity. Those identities inherit the same governance deficits that plague traditional service accounts, except the blast radius of a compromised agent identity can include actions taken autonomously across multiple integrated systems before any human is alerted.

Cisco's acquisition strategy reflects a platform play: integrating NHI discovery, governance, and monitoring into its broader security portfolio positions Cisco to offer unified identity coverage across human, machine, and agent identities. For security teams, the near-term implication is that purpose-built NHI tooling is becoming a standard expectation, and that organizations without visibility into their NHI estate are operating with a known, exploitable blind spot.

Action Checklist

1. Step 1: Inventory NHI exposure, enumerate all service accounts, API keys, OAuth tokens, and machine credentials across your cloud and SaaS environments; prioritize credentials with broad permissions or no documented owner (supports CIS 1.1: Establish and Maintain Detailed Enterprise Asset Inventory)
2. Step 2: Enforce least privilege on non-human identities, audit permission scopes for all service accounts and API integrations; revoke access exceeding documented need (NIST AC-6: Least Privilege; CIS 5.4: Restrict Administrator Privileges to Dedicated Administrator Accounts)
3. Step 3: Implement credential rotation and hardening, establish rotation schedules for API keys and service account passwords; remove long-lived static credentials where short-lived tokens are supported (NIST AC-2: Account Management; D3FEND D3-CRO: Credential Rotation; D3-CH: Credential Hardening)
4. Step 4: Enable monitoring for NHI anomalies, configure logging and alerting on service account authentication patterns, OAuth token usage, and API call volumes; flag deviations from baseline (NIST AU-2: Event Logging; AU-6: Audit Record Review, Analysis, and Reporting; CIS 8.2: Collect Audit Logs; D3-LAM: Local Account Monitoring)

5. Step 5: Govern AI agent identities, if your organization is deploying or piloting agentic AI workflows, define identity governance requirements for each agent before production deployment; apply the same least-privilege and monitoring controls used for service accounts (NIST AC-6: Least Privilege; AC-3: Access Enforcement)

6. Step 6: Evaluate your NHI tooling gap, assess whether existing IAM/PAM tooling provides visibility into NHI relationships and lifecycle; identify gaps that purpose-built NHI tooling or updated platform capabilities would address (CIS 7.1: Establish and Maintain a Vulnerability Management Process)

7. Step 7: Brief leadership on NHI as a board-level risk, use the Cisco acquisition as a reference point to contextualize the NHI gap for executives; frame it as a structural identity program deficiency, not a single-vendor issue

IR / Forensic Enrichment

Triage Priority	STANDARD
Escalation Criteria	Escalate to urgent if internal NHI discovery (Step 1) reveals active credentials with no documented owner that have authenticated within the past 30 days, credentials with administrative scope exposed in code repositories, or evidence that an OAuth token or service account key has been used from an IP address outside your known cloud provider ranges — any of these conditions suggests active exploitation of the NHI gap rather than latent structural risk.
Recovery Notes	Post-remediation, re-run the NHI inventory query (Step 1 tooling) weekly for the first 30 days to detect credential re-creation or drift from the hardened baseline — NHI sprawl tends to regenerate quickly in active development environments. Monitor CloudTrail and IdP audit logs for the specific service account ARNs and OAuth client IDs that were modified during Steps 2–3 for a minimum of 90 days, alerting on any permission scope expansion or new resource access that was not explicitly authorized post-remediation. If any NHI was found to have been compromised or misused during the inventory, treat the affected cloud account or SaaS tenant as partially untrusted until a full privilege audit and credential rotation cycle is verified complete.
Forensic Artifacts	AWS IAM credential report (CSV) — captures all access key IDs, creation timestamps, last-used timestamps, and last-used service/region; essential for identifying dormant or orphaned keys that are prime targets for NHI-based lateral movement | Cloud provider audit logs scoped to service principal and role assumption events — AWS CloudTrail `AssumeRole` and `GetSessionToken` events, Entra ID service principal sign-in logs, GCP Cloud Audit Logs `google.iam.credentials.v1.GenerateAccessToken` — these reveal which non-human identities were active, from where, and what they accessed | OAuth token grant and usage logs from SaaS IdP admin consoles (Google Workspace Token Audit, Entra ID Unified Audit Log `Add OAuth2PermissionGrant` events) — document which third-party applications hold OAuth delegated access and what scopes were granted, critical for identifying over-permissioned integrations of the type Astrix Security was built to surface | Secrets scanning results from code repository history (truffleHog or git-secrets output against full commit history) — NHI credential exposure most commonly occurs through accidental secret commits; this scan reveals whether API keys or service account credentials were ever exposed in version-controlled code | PAM/IAM tool session logs for service accounts — if a PAM solution (CyberArk, BeyondTrust) is in use, export session recordings and checkout logs for service account credentials in the 90 days prior to the assessment; gaps in PAM coverage (NHIs not enrolled) are themselves artifacts indicating unmanaged credential surface

Per-Action IR Details

Step 1: Inventory NHI exposure — enumerate all service accounts, API keys, OAuth tokens, and machine credentials across your cloud and SaaS environments; prioritize credentials with broad permissions or no documented owner (supports CIS 1.1: Establish and Maintain Detailed Enterprise Asset Inventory)

NIST Phase: Preparation

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

Controls: CIS 1.1 (Establish and Maintain Detailed Enterprise Asset Inventory)

Compensating: Run `az ad sp list --all` (Azure) or `gcloud iam service-accounts list` (GCP) to enumerate service principals and service accounts. For AWS, use `aws iam list-users` and `aws iam list-roles` combined with `aws iam generate-credential-report` to export all access keys and their last-used timestamps. Cross-reference OAuth app grants in your IdP admin console (Google Workspace: Admin > Security > API controls; Entra ID: Enterprise Applications > All Applications). Build a spreadsheet mapping each credential to owner, scope, and last-used date — flag any entry with no owner or last-used > 90 days.

Evidence: Before any remediation action, export a point-in-time snapshot of all active credentials: (1) AWS IAM credential report (CSV) capturing key IDs, creation date, and last-used date; (2) Azure AD service principal list with assigned API permissions; (3) OAuth token grant lists from each SaaS platform (e.g., Workspace Admin SDK, Salesforce Connected Apps). These snapshots establish a pre-intervention baseline — NHI credential inventories are mutable and will change the moment rotation or revocation begins.

Step 2: Enforce least privilege on non-human identities — audit permission scopes for all service accounts and API integrations; revoke access exceeding documented need (NIST AC-6: Least Privilege; CIS 5.4: Restrict Administrator Privileges to Dedicated Administrator Accounts)

NIST Phase: Preparation

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

Controls: NIST AC-6 (Least Privilege), NIST AC-3 (Access Enforcement), CIS 5.4 (Restrict Administrator Privileges to Dedicated Administrator Accounts)

Compensating: In AWS, use `aws iam get-account-authorization-details` and pipe output through a Python script or `jq` to identify any service role with `*:*` or administrative policy attachments. In Entra ID, use `Get-AzureADServicePrincipalAppRoleAssignment` (Azure AD PowerShell module) to list all app role assignments for service principals. For each OAuth integration, manually compare granted scopes against documented integration requirements — any scope not in the integration spec is excess. Revoke using platform-native tooling; document each revocation with a justification ticket before executing.

Evidence: Before revoking any permission scope, capture the full current permission set for each affected NHI: export the IAM policy document (AWS: `aws iam get-policy-version`), Azure role assignment JSON, or OAuth scope grant list. If a service account has been actively abused, active API call logs showing the specific permissions exercised in the prior 30–90 days must be preserved — these establish whether excess permissions were actually exploited. In AWS, this means exporting CloudTrail `AssumeRole` and service API call events for the specific principal ARN before scope reduction.

Step 3: Implement credential rotation and hardening — establish rotation schedules for API keys and service account passwords; remove long-lived static credentials where short-lived tokens are supported (NIST AC-2: Account Management; D3FEND D3-CRO: Credential Rotation; D3-CH: Credential Hardening)

NIST Phase: Eradication

Reference: NIST 800-61r3 §3.4 — Eradication: Removing Threat Artifacts and Closing Attack Vectors

Controls: NIST AC-2 (Account Management), NIST AC-12 (Session Termination)

Compensating: For AWS, disable long-lived IAM access keys via `aws iam update-access-key --status Inactive` before deletion; replace with IAM roles and instance profiles wherever EC2/Lambda is the consumer. For service account passwords in Active Directory, use `Set-ADAccountPassword` with `-Reset` flag and a randomized 32-character value, then document in a password manager. Configure AWS Secrets Manager or HashiCorp Vault (free

OSS tier) to automate rotation for RDS credentials and API keys — Vault's dynamic secrets engine eliminates static credentials entirely for supported backends.

Evidence: Volatile capture REQUIRED before rotating or invalidating any credential: (1) Export all active sessions and API calls associated with the credential being rotated — in AWS, run `aws cloudtrail lookup-events --lookup-attributes AttributeKey=Username,AttributeValue=` for the prior 72 hours to capture any in-progress malicious activity using the key before it is invalidated; (2) Record the exact key ID, creation timestamp, and last-used timestamp from the IAM credential report; (3) If the credential is an OAuth token, capture the token's issued-at, expiry, and scope claims from the IdP audit log before revocation, as these will not be retrievable post-rotation.

Step 4: Enable monitoring for NHI anomalies — configure logging and alerting on service account authentication patterns, OAuth token usage, and API call volumes; flag deviations from baseline (NIST AU-2: Event Logging; AU-6: Audit Record Review, Analysis, and Reporting; CIS 8.2: Collect Audit Logs; D3-LAM: Local Account Monitoring)

NIST Phase: Detection Analysis

Reference: NIST 800-61r3 §3.2 — Detection and Analysis: Monitoring and Anomaly Detection for Adverse Events

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

Compensating: Enable AWS CloudTrail (all regions, S3 data events) and AWS Config if not already active — both have free tiers with S3 storage costs only. For Entra ID, enable Unified Audit Log and configure Diagnostic Settings to stream to Log Analytics workspace (free 5GB/month tier). Write daily cron-driven queries using `aws logs filter-log-events` or the Entra ID PowerShell module (`Search-UnifiedAuditLog`) to flag: service accounts authenticating from new IP ranges, API keys generating >2x their 30-day average call volume, and OAuth tokens being used outside their registered application's normal hours. For on-prem service accounts, deploy Sysmon with SwiftOnSecurity config and monitor Event ID 4624 (logon) with LogonType 5 (service) for accounts authenticating to new hosts.

Evidence: To establish anomaly detection baselines, first collect and preserve 30–90 days of historical NHI authentication logs before tuning alert thresholds — these become your behavioral baseline. Specific artifacts to capture and retain: (1) AWS CloudTrail `AssumeRole` events scoped to service role ARNs; (2) Entra ID sign-in logs filtered on `servicePrincipalName` showing resource, IP, and timestamp; (3) OAuth token issuance events from the IdP showing scope, client_id, and grant type; (4) API Gateway access logs showing call rates per API key ID. Gaps in these logs are themselves forensic evidence of potential log tampering or coverage failures.

Step 5: Govern AI agent identities — if your organization is deploying or piloting agentic AI workflows, define identity governance requirements for each agent before production deployment; apply the same least-privilege and monitoring controls used for service accounts (NIST AC-6: Least Privilege; AC-3: Access Enforcement)

NIST Phase: Preparation

Reference: NIST 800-61r3 §2 — Preparation: Establishing Governance and Policy Before Deployment

Controls: NIST AC-6 (Least Privilege), NIST AC-3 (Access Enforcement), NIST AC-2 (Account Management), CIS 5.1 (Establish and Maintain an Inventory of Accounts)

Compensating: Before deploying any agentic AI workflow (e.g., LangChain agents, OpenAI Assistants API integrations, AWS Bedrock Agents), create a dedicated service identity for each agent — never share credentials across agents or with human-facing integrations. Document the identity in the NHI inventory established in Step 1. Use separate IAM roles with tightly scoped resource-level policies; for API integrations, issue scoped API keys with the minimum permission set the agent needs to complete its specific task. Apply the same Sysmon/CloudTrail monitoring configured in Step 4 to agent identity events — WideField's focus on AI agent identity monitoring reflects that agentic identities exhibit non-human behavioral patterns that deviate significantly from traditional service account baselines.

Evidence: Because AI agent identities are a nascent governance area, the most critical pre-deployment artifact is a documented baseline of expected agent behavior: which APIs the agent will call, what data it will access, what volume of calls is expected per task cycle, and what IP ranges or VPC endpoints it will operate from. This baseline, captured before production deployment, is your forensic reference point if the agent identity is later compromised or abused. Retain agent framework configuration files (e.g., LangChain agent executor config, Bedrock Agent action group

definitions) as static artifacts — these define the intended permission surface and are essential for post-incident comparison.

Step 6: Evaluate your NHI tooling gap — assess whether existing IAM/PAM tooling provides visibility into NHI relationships and lifecycle; identify gaps that purpose-built NHI tooling or updated platform capabilities would address (CIS 7.1: Establish and Maintain a Vulnerability Management Process)

NIST Phase: Post Incident

Reference: NIST 800-61r3 §4 — Post-Incident Activity: Lessons Learned and Program Improvement

Controls: CIS 7.1 (Establish and Maintain a Vulnerability Management Process), CIS 7.2 (Establish and Maintain a Remediation Process)

Compensating: Conduct a structured gap assessment using a two-column matrix: (1) NHI lifecycle capability required (discovery, permission scoping, rotation, anomaly detection, deprovisioning) vs. (2) what your current IAM/PAM tooling (e.g., CyberArk, BeyondTrust, native cloud IAM) actually covers for non-human identities specifically. Free tooling that partially fills gaps: `Steampipe` (open-source cloud asset query tool supporting AWS, Azure, GCP) for NHI discovery and permission analysis; `truffleHog` for detecting exposed secrets in code repositories that indicate NHI credential mismanagement. Document gaps formally and use the Cisco Astrix/WideField acquisition context to build a business case for purpose-built NHI tooling.

Evidence: The primary artifact for this step is your gap assessment document itself, but it must be grounded in evidence from prior steps: the NHI inventory from Step 1, the permission audit findings from Step 2, and the monitoring coverage map from Step 4. Gaps in monitoring coverage (services or credential types with no logging) are forensic blind spots — document them explicitly, as they represent unknown-unknown exposure. If your PAM tool's audit logs cannot answer 'which service account accessed which resource at what time last Tuesday,' that is a documented gap requiring remediation.

Step 7: Brief leadership on NHI as a board-level risk — use the Cisco acquisition as a reference point to contextualize the NHI gap for executives; frame it as a structural identity program deficiency, not a single-vendor issue

NIST Phase: Post Incident

Reference: NIST 800-61r3 §4 — Post-Incident Activity: Communicating Findings and Driving Program Improvement

Controls: NIST AC-1 (Policy and Procedures), NIST AU-6 (Audit Record Review, Analysis, and Reporting)

Compensating: Prepare a one-page executive brief using three data points drawn from your internal Steps 1–6 findings: (1) total count of undocumented or orphaned NHIs discovered, (2) percentage of NHIs with permissions exceeding documented need, and (3) number of NHI categories with no active monitoring coverage. Anchor the business risk narrative to publicly documented NHI breach cases (e.g., the CircleCI credential exposure incident, the Okta service account compromise) rather than the Cisco acquisition alone — acquisitions signal market recognition of risk but breaches communicate consequence. Present gap remediation as a phased program investment, not a point-in-time project.

Evidence: The evidence base for this briefing is the consolidated output of Steps 1–6: the NHI inventory, permission audit findings, monitoring gap map, and tooling gap assessment. Retain all supporting data in a versioned document — executive briefings based on undocumented or unretained underlying analysis cannot be reproduced for audit or regulatory inquiry. If your organization is subject to SOC 2, ISO 27001, or NIST CSF assessments, NHI governance gaps identified in this process are material findings that assessors may surface independently; briefing leadership now reduces the risk of audit-driven discovery.

Detection Guidance

Detection for NHI abuse focuses on behavioral anomalies rather than signatures, because adversaries operating through valid service accounts and tokens generate no malware artifacts.

Authentication and access logs: Monitor for service accounts authenticating from unexpected IP ranges, at unusual hours, or to resources outside their documented function. OAuth token use from new geographic locations or devices warrants investigation. Flag tokens accessing scopes beyond their original grant.

Token and credential telemetry: Alert on API key usage spikes, high call volume in short windows may indicate credential theft or automated exfiltration. Watch for application access tokens being used to access administrative endpoints they have not previously touched (MITRE T1550.001, T1528).

Account manipulation: Monitor for changes to service account permissions, group memberships, or credential attributes that were not initiated through change management workflows (MITRE T1098, T1098.001). Alert on new OAuth application registrations or permission scope expansions.

Cloud account activity: In cloud environments, review CloudTrail, Azure Monitor, or equivalent logs for service principal activity that deviates from baseline, particularly cross-account role assumptions, new resource creation, or data export operations under machine identities (MITRE T1078.004).

AI agent identity signals: For organizations running agentic workflows, monitor for agent identities making API calls to resources outside their defined task scope, or chaining calls across systems in patterns inconsistent with their documented function.

Control references: NIST SI-4 (System Monitoring) is the governing control for anomaly detection; AU-2 (Event Logging) and AU-6 (Audit Record Review, Analysis, and Reporting) underpin log collection and review cadence. D3FEND D3-UAP (User Account Permissions) and D3-LAM (Local Account Monitoring) map directly to the detection posture recommended here.

Audit gap to check: If your SIEM has no detection rules scoped to service account or API key behavior, only to human user accounts, that is a structural visibility gap consistent with the CWE-522 and CWE-284 patterns described in this story.

Framework Mappings

MITRE-ATTACK

- **T1550.001** — Application Access Token
- **T1528** — Steal Application Access Token
- **T1098** — Account Manipulation
- **T1078** — Valid Accounts
- **T1078.004** — Cloud Accounts
- **T1098.001** — Additional Cloud Credentials

NIST-800-53R5

- **AC-2** — Account Management
- **AC-6** — Least Privilege
- **IA-2** — Identification and Authentication (Organizational Users)
- **IA-5** — Authenticator Management
- **AC-3** — Access Enforcement
- **SI-4** — System Monitoring
- **IR-5** — Incident Monitoring

OWASP-TOP10-2021

- **A04:2021** — Insecure Design
- **A07:2021** — Identification and Authentication Failures
- **A01:2021** — Broken Access Control

CIS-V8

- **5.2** — Use Unique Passwords
- **3.3** — Configure Data Access Control Lists
- **6.1** — Establish an Access Granting Process
- **6.2** — Establish an Access Revoking Process
- **6.3** — Require MFA for Externally-Exposed Applications
- **8.2** — Collect Audit Logs

HIPAA-SECURITY

- **164.308(a)(5)(ii)(D)** — Password Management
- **164.312(a)(1)** — Access Control
- **164.312(d)** — Person or Entity Authentication

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

ISO-27001-2022

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

NIST-CSF-2

- **DE.CM-01** — Networks and network services are monitored
- **DE.AE-08** — Incidents are declared when adverse events meet the defined incident criteria

MITRE ATT&CK Mapping

Technique ID	Technique Name	Tactic
T1550.001	Application Access Token	Defense-Evasion
T1528	Steal Application Access Token	Credential-Access
T1098	Account Manipulation	Persistence
T1078	Valid Accounts	Defense-Evasion
T1078.004	Cloud Accounts	Defense-Evasion

Technique ID	Technique Name	Tactic
T1098.001	Additional Cloud Credentials	Persistence

Sources

Source	URL	Tier
Security News	https://www.darkreading.com/identity-access-management-security/cis...	T3
Cisco moves to acquire Astrix Security to strengthen control over AI ...	https://industrialcyber.co/ai/cisco-moves-to-acquire-astrix-securit...	T3
AI Agents Need New Security: Cisco Announces Intent to Acquire ...	https://blogs.cisco.com/news/cisco-announces-intent-to-acquire-wide...	T3
WideField Secures Identity Security with AI Agent Monitoring and ...	https://www.linkedin.com/posts/widefield_identitysecurity-aiagents-...	T3
What does Cisco acquiring Astrix Security mean for NHI tooling?	https://nhimg.org/community/nhi-product-announcements-forum/what-do...	T3

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