

Adaptive AI Defense

Multi-Layered Preemptive Ransomware Protection for the AI Era

Challenge

As organizations rapidly adopt AI tools - from coding assistants to autonomous agents - a new and largely invisible attack surface has emerged.

Attackers are now leveraging AI to:

- Craft **evasive, self mutating malware**
- Weaponize **autonomous agents** to launch ransomware **in seconds**
- Exploit **“shadow AI” tools** installed without IT oversight

Traditional **EDR, XDR, and AV solutions** - designed around signatures, behavior detection, or post-execution analysis - cannot see or stop machine-speed, AI-driven threats.

Organizations need a **preemptive, deterministic defense** that learns and adapts faster than AI threats evolve.

The Solution

Adaptive AI Defense extends Morphisec’s **Anti-Ransomware Assurance Suite**, powered by **Automated Moving Target Defense (AMTD)**, to preempt AI-driven ransomware and autonomous attack chains BEFORE execution to neutralize:

- AI-driven ransomware
- Rogue AI agents
- Autonomous attack chains **BEFORE execution**

By combining **deterministic runtime protection** with adaptive cyber resiliency, Morphisec neutralizes threats across the attack lifecycle - **before, during, and after execution**.

Unlike reactive detection tools, Adaptive AI Defense **blocks and disrupts AI agents** from installing, executing, or operating on endpoints, eliminating the attack surface they depend on.

Stops AI Threats Including:

- **Zero-days** and **in-memory exploits**
- **AI-mutated malware** and payloads
- **Rogue or compromised AI agents** (“shadow AI”)

Core capabilities

- ✓ **Behavior Prevention** - Stops attacks at machine speed through deterministic runtime protection.
- ✓ **AI-Guided Encryption Interception** - Blocks ransomware encryption attempts in real time.
- ✓ **Forensic AI Recovery** - Captures immutable evidence and auto-prioritizes restoration.
- ✓ **AMTD** - Combines constant memory randomization with AI-driven insight.
- ✓ **Explainable AI Telemetry** - Provides transparent attack context for SOC and compliance visibility.

Benefits

- + **Eliminate the Guesswork:** Prevention happens **before execution** - no signatures, no delays.
- + **Amplify Existing Tools:** Integrates seamlessly with major EDR and XDR platforms to close gaps left by behavior-based models.
- + **Reduce Analyst Fatigue:** Achieves **up to 90% fewer false positives** via deterministic AI validation of runtime events.
- + **Accelerate Response:** AI-driven forensic correlation reduces containment time by **65%**. Allowing Tier 1 Security Analysts to operate at Tier 3 skill and speed.
- + **Adapt Continuously:** Feedback loops update AMTD and AI models with each intercepted threat, **fortifying environments automatically**.

Morphisec Adaptive AI Defense

Prevent. Predict. Harden. Fortify. Continuously.

- **AI-Powered Threat Preemption:** Continuously analyzes runtime telemetry and AI signals to **anticipate and prevent new attack patterns** before execution occurs. Stops zero-days and AI-mutated payloads in real time.
- **Contextual Risk Scoring:** Combines **EPSS, CISA KEV**, and usage context with Adaptive Exposure Management to map true exploitability and prioritize remediation **where it matters most**.
- **Autonomous Attack Surface Hardening:** Driven by AMTD, randomizes system memory structures and runtime maps continuously, **eliminating the predictability AI agents require** to install or persist.
- **Adaptive Response Logic:** Learns from each blocked event to auto-adjust mitigation at runtime - **no manual tuning or signature updates required**.
- **Cross-EDR and XDR Integration:** Designed to integrate seamlessly with platforms like **Microsoft Defender, CrowdStrike**, and **SentinelOne**, closing detection and response gaps to create **true defense-in-depth**.
- **AI Incident Insights:** Delivers plain-language incident summaries linking prevented exploits to root causes and attack paths, **accelerating SOC understanding and forensic investigation**.

Adaptive AI vs. Traditional Detection

Morphisec enhances the Anti-Ransomware Suite with layered, proactive, predictive, and self-improving adaptive defense.

Capability	Traditional AI/EDR Detection	Morphisec Adaptive AI Defense
Threat Recognition	Reactive - after patterns appear	Preemptive, deterministic blocking and disruption before execution
Threat Surface	Static and predictable	Continuously randomized; no stable target
Learning Model	Global signatures/heuristics	Environment-specific, adaptive context
Response Latency	Seconds to minutes (human-paced)	Instant machine-speed prevention
Manual Tuning	High SOC burden	None. Hands off self-optimizing adaptive response.
False Positives	High	Up to 90% reduction through deterministic validation

The Morphisec Difference

Preemptive by Design. Adaptive by Nature.

Morphisec eliminates AI-driven ransomware and autonomous threats **before execution**, not after an alert.

As part of the **Anti-Ransomware Assurance Suite**, Adaptive AI Defense fortifies every endpoint and workload with:

- Deterministic runtime prevention.
- Zero reliance on signatures or cloud analysis.
- True future proof protection.

Key Capabilities and Benefits

Capability	Benefit
Behavior Prevention	Deterministically blocks AI-driven zero-days and fileless attacks.
AI-Guided Encryption Interception	Stops data loss and ransomware encryption attempts in real time.
Forensic AI Recovery	Captures immutable forensic evidence and prioritizes file restoration.
AMTD + AI Co-Engineered Determinism	Fuses runtime camouflage with AI insight for zero-knowledge prevention.
Explainable AI Telemetry	Provides transparent visibility for SOC and compliance reporting.

When attacks move in **seconds**, **prevention** is the only strategy that scales.

Ransomware-Free Guarantee

Peace of Mind, Proven in Practice

Morphisec offers an **industry-first Ransomware-Free Guarantee**:

- **100% Money-Back Assurance:** Full reimbursement of subscription fees if a ransomware breach occurs on a protected endpoint.
- **Expert Incident Support:** Dedicated Morphisec Incident Response team for rapid containment, forensic investigation, and remediation.

Stop AI-Driven Threats
Before They Start.

See Adaptive AI Defense
in action today.

[Get a Demo](#)

About Morphisec

Morphisec is the global leader in **prevention-first cyber defense** and **anti-ransomware protection**, delivering preemptive security that stops attacks **before execution**.

Powered by **Automated Moving Target Defense (AMTD)**, Morphisec protects millions of endpoints across **finance, healthcare, manufacturing, and technology industries worldwide**.

By integrating **Adaptive AI Defense** into its **multi-layer Anti-Ransomware Assurance Suite**, Morphisec empowers organizations to achieve ransomware-free resilience with **minimal overhead and few false positives**.

At Morphisec, we don't just respond - we prevent.

Because when AI accelerates the threat, preemption is peace of mind.