OWASP

The Open Web Application Security Project

whoami

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The Open Web Application Security Project

თემურ მაისურაძე სისტემური ადმინისტრატორი

თემა

modsecurity
Open Source Web Application Firewall

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Figure 1. Magic Quadrant for Web Application Firewalls

Source: Gartner (August 2018)

რა არის WAF

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- What is ModSecurity
- History
  - first version: November 2002
  - ModSecurity 2.0 – 2006
  - ModSecurity from GPLv2 to Apache Software License (ASLv2) - 2011
- Web Server Support
  - Apache
  - LiteSpeed (LSWS)
  - Nginx
  - IIS

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- How ModSecurity works
- What Can ModSecurity Do?
  - Real-time application security monitoring and access control
  - Virtual patching
  - Full HTTP traffic logging
  - Continuous passive security assessment
  - Web application hardening
- Working Modes, SecRuleEngine
  - Off
  - DetectionOnly
  - On

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- Deployment Options
  - Embedded
  - Reverse proxy
- Main Areas of Functionality
  - Parsing
  - Buffering
  - Logging
  - Rule engine

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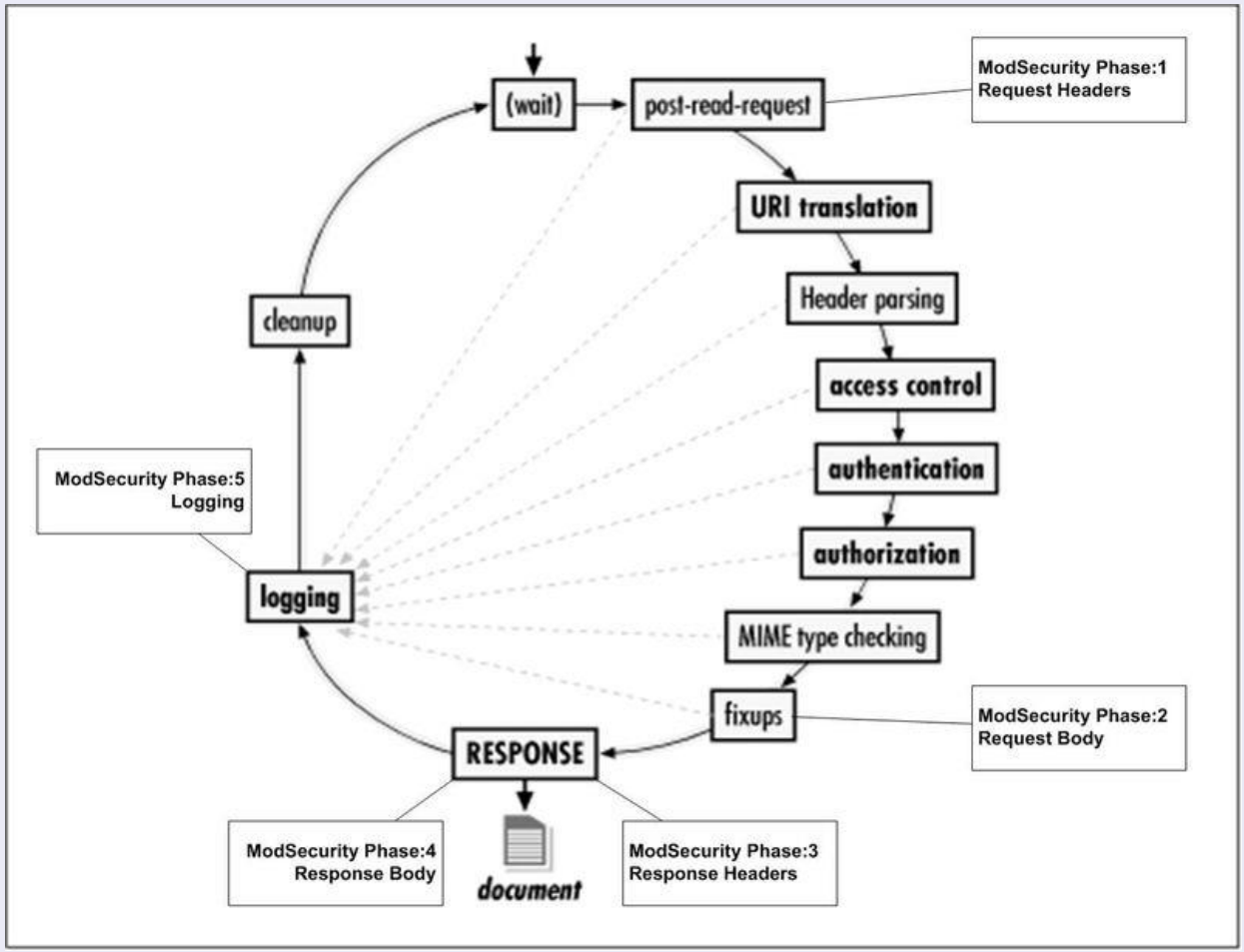
- ModSecurity Phases
  - Phase 1
  - Phase 2
  - Phase 3
  - Phase 4
  - Phase 5



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- Rules
  - Vendor specific rules
  - OWASP Core rule set
  - Aplication specific rules
  - Custom rules
  - SecRemoteRules

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•OWASP Core rule set

Core Rules Content

In order to provide generic web applications protection, the Core Rules use the following techniques:

- **HTTP Protection** - detecting violations of the HTTP protocol and a locally defined usage policy.
- **Real-time Blacklist Lookups** - utilizes 3rd Party IP Reputation
- **Web-based Malware Detection** - identifies malicious web content by check against the Google Safe Browsing API.
- **HTTP Denial of Service Protections** - defense against HTTP Flooding and Slow HTTP DoS Attacks.
- **Common Web Attacks Protection** - detecting common web application security attack.
- **Automation Detection** - Detecting bots, crawlers, scanners and other surface malicious activity.
- **Integration with AV Scanning for File Uploads** - detects malicious files uploaded through the web application.
- **Tracking Sensitive Data** - Tracks Credit Card usage and blocks leakages.
- **Trojan Protection** - Detecting access to Trojans horses.
- **Identification of Application Defects** - alerts on application misconfigurations.
- **Error Detection and Hiding** - Disguising error messages sent by the server.

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- Rule Example 1

```
SecRule REQUEST_HEADERS|!REQUEST_HEADERS:User-Agent|!REQUEST_HEADERS:Referer|!REQUEST_HEADERS:Cookie \
  "@validateByteRange 32,34,38,42-59,61,65-90,95,97-122" \
  "phase:request,\
   rev:'2',\
   ver:'OWASP_CRS/3.0.0',\
   maturity:'9',\
   accuracy:'9',\
   block,\
   msg:'Invalid character in request headers (outside of very strict set)',\
   id:920274,\
   severity:'CRITICAL',\
   t:none,t:urlDecodeUni,\
   tag:'application-multi',\
   tag:'language-multi',\
   tag:'platform-multi',\
   tag:'attack-protocol',\
   tag:'OWASP_CRS/PROTOCOL_VIOLATION/EVASION',\
   tag:'paranoia-level/4',\
   setvar:'tx.msg=%{rule.msg}',\
   setvar:tx.anomaly_score=+%{tx.critical_anomaly_score},\
   setvar:tx.%{rule.id}-OWASP_CRS/PROTOCOL_VIOLATION/EVASION-%{matched_var_name}=%{matched_var}"
```

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1	49	a	97	'	145	Á	193
2	50	b	98	'	146	Â	194
3	51	c	99	"	147	Ã	195
4	52	d	100	"	148	Ä	196
5	53	e	101	•	149	Å	197
6	54	f	102	–	150	Æ	198
7	55	g	103	—	151	Ç	199
8	56	h	104	˜	152	È	200
9	57	i	105	™	153	É	201
:	58	j	106	š	154	Ê	202
;	59	k	107	›	155	Ë	203
<	60	l	108	œ	156	Ì	204
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- Rule Example 2

```
SecRule REQUEST_URI|ARGS \
        "\/etc\/(passwd|group|gshadow|shadow|motd|shells|hosts|issue|ba
sh|profile|pam|sudoers|rsyslog.conf|syslog.conf|sysctl.conf|inetd.conf|
xinetd.conf)" \
        "id:1111,log,deny,auditlog,logdata:%{matched_var},phase:1,statu
s:403,severity:2,tag:'PATH_TRAVERSAL/ATTACK',msg:'Someone tries to read
 passwd or shadow'"
```

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•Exeptions

–SecRuleRemoveById

–SecRuleUpdateTargetById 11111 !ARGS:key

–SecRuleUpdateTargetByTag "OWASP_CRS/WEB_ATTACK/SQL_INJECTION" !ARGS:key

–SecRuleUpdateTargetByMsg "Meta-Character Anomaly Detection Alert - Repetative Non-Word Characters" !ARGS:key

–SecRule REMOTE_ADDR "^1\.1\.1\.1$" phase:1,nolog,id:1,allow,ctl:ruleEngine=Off,ctl:auditEngine=Off

–SecRule REMOTE_HOST "@ipmatch 1.1.1.1,2.2.2.2" \

–"id:12345,phase:2,t:none,pass,nolog,noauditlog,ctl:ruleRemovebyID=11111,ctl:ruleRemovebyID=22222,ctl:ruleRemovebyID=33333"

–SecRule REQUEST_URI "^/index\.php "id:10,phase:2,t:none,pass,nolog,noauditlog,ctl:ruleRemovebyID=11111,ctl:ruleRemoveByTag=event-correlation"

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- Scan uploaded files with external script (antivirus)

–SecRule FILES_TMPNAMES "@inspectFile /usr/local/bin/modsec-clamscan.pl" "id:351000,rev:1,severity:2,msg:'Malicious File upload attempt',log,deny,auditlog,status:403,t:none"

- Run external program after rule mutch

–SecRule REQUEST_HEADERS:User-Agent "@pmFromFile modsecurity_35_scanners.data" \

–"phase:2,rev:'2.2.5',t:none,t:lowercase,deny,msg:'Request Indicates a Security Scanner Scanned the Site',id:'990002',tag:'AUTOMATION/SECURITY_SCANNER',tag:'WASCTC/WASC-21',tag:'OWASP_TOP_10/A7',tag:'PCI/6.5.10',severity:'4',setvar:'tx.msg=%{rule.msg}',setvar:tx.anomaly_score=+%{tx.warning_anomaly_score},setvar:tx.automation_score=+%{tx.warning_anomaly_score},setvar:tx.%{rule.id}-AUTOMATION/SECURITY_SCANNER-%{matched_var_name}=%{matched_var},exec:/usr/local/bin/modsec2iptables"

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მადლობა ყურადღებისთვის!

კითხვები?

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