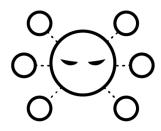
FROM KNOWN-BAD SOURCES



AVOID DANGEROUS NETWORK NEIGHBORHOODS

- Block access to or from known-bad IP addresses
- Block access to or from known-bad domains
- Block access to or from known-bad URLs
- Other URL filtering features





Learning Objectives

After you complete this module, you should be able to:



- Configure the firewall to block traffic from known-malicious
 IP addresses
- Configure the firewall to block traffic from known-malicious domains
- Configure the firewall to block traffic from known-malicious URLs
- Describe other URL filtering operations and options



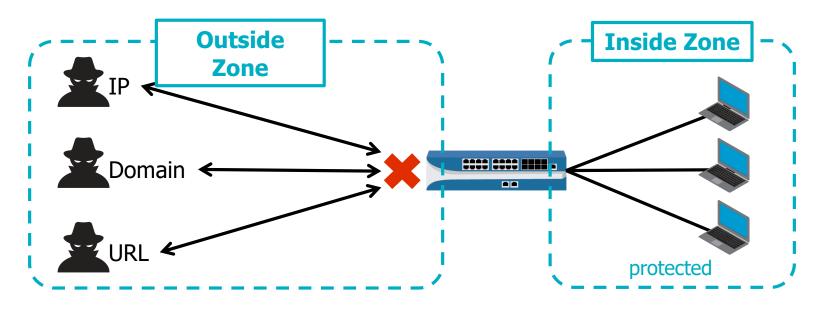
Block access to or from known-bad IP addresses

Block access to or from known-bad domains
Block access to or from known-bad URLs
Other URL filtering features





Block Threats from Known-Bad Sources

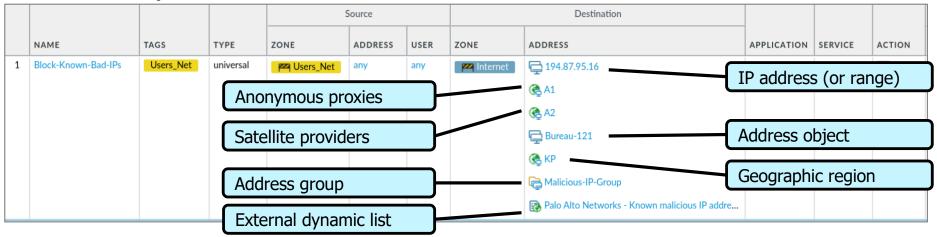


- The firewall can block connections to known-bad sources.
- Useful for blocking the Delivery or Command-and-Control stage of the cyberattack lifecycle

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Block Known-Bad IP Addresses

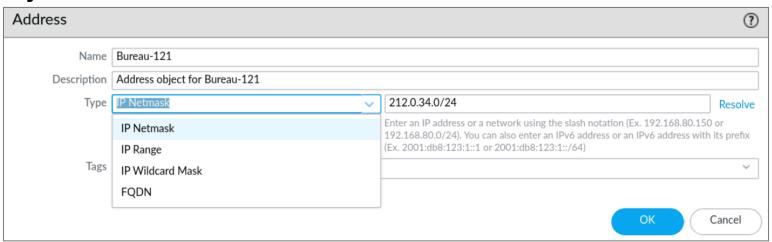
Policies > Security



- Use the Security policy Address fields.
- Destination IP address: Block connections to a malicious IP address.
- Source IP address: Block connections from a malicious IP address.

Create an Address Object

Objects > Addresses > Add

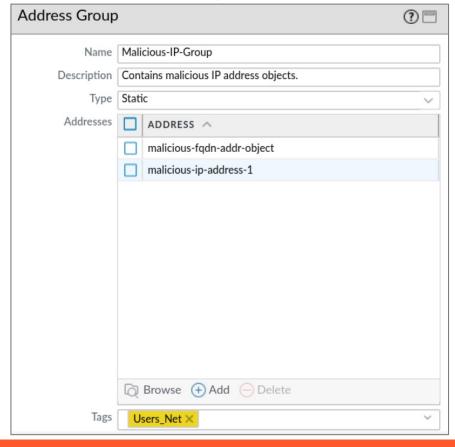


- Add malicious IP addresses to an address object:
 - The list of known-bad IP addresses can change quickly.
- Address objects can be used in Security policy rules:
 - In source or destination address fields

- Address objects can represent:
 - A single IP address
 - An IP netmask
 - An IP address range
 - A specific set of addresses
 - An FQDN

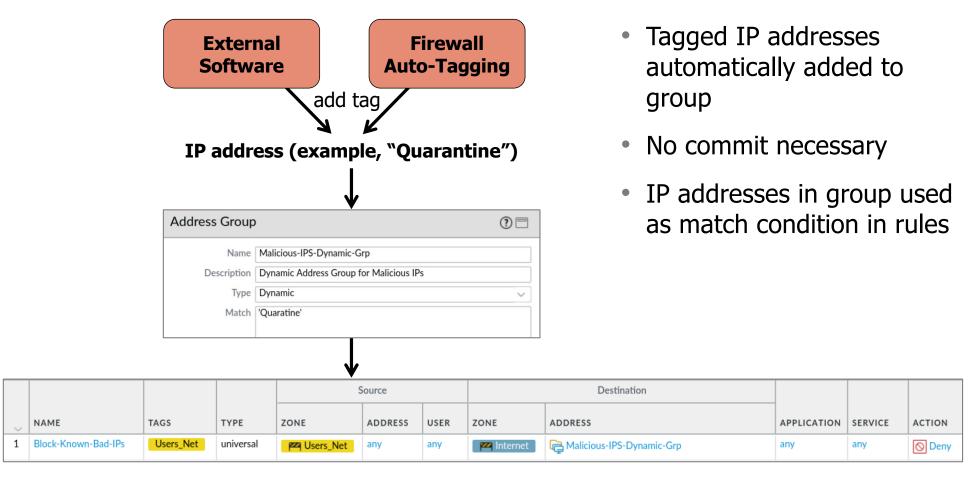
Create a Static Address Group

Objects > Address Groups > Add

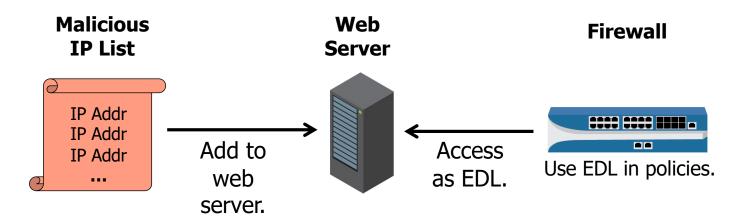


- Use to shorten and simplify a policy rule
- Membership must be manually updated
- Updates require a commit operation
- Can contain:
 - Address objects
 - Other address groups

Create a Dynamic Address Group



Use External Malicious IP Lists



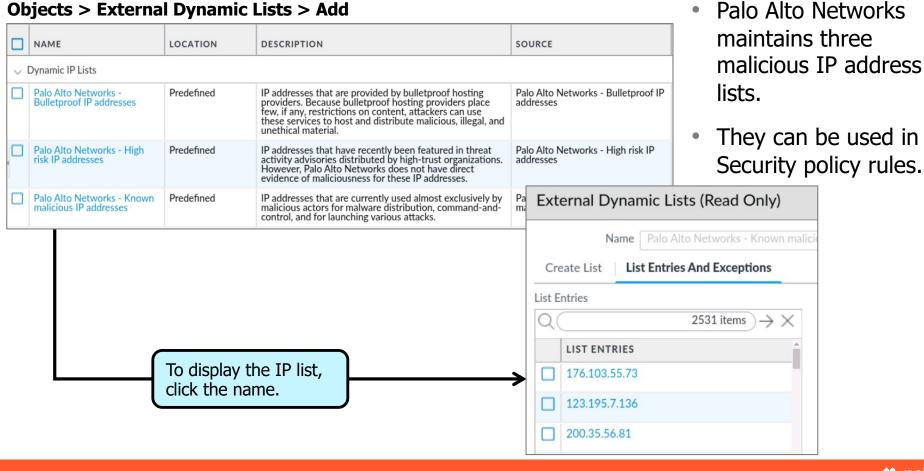
- All firewall models:
 - Support up to 30 EDLs
 - Feature different list capacities

Objects > External Dynamic Lists > List Capacities

Capacities			?
LIST TYPE	CURRENTLY USED IN POLICY	TOTAL CAPACITY	
IPs	0	50000	^
Predefined IPs	3697	50000	
Domains	4	50000	
URLs	10	50000	•

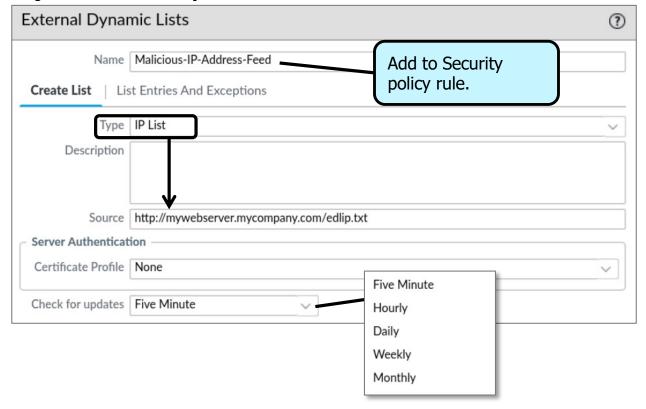
Use the Predefined Malicious IP Lists





Configure Other Malicious IP Lists

Objects > External Dynamic Lists > Add



- An EDL:
 - Is maintained on a web server
 - Is periodically read by a firewall
- Use EDLs of type IP List in Security policy rules:
 - In source or destination address fields

External Dynamic List Monitoring

- Identify traffic that matches an EDL.
- New log fields identify which EDL is associated with each rule.
- Monitor only IP address, URL, or domain EDLs.

External Dynamic List Type	Firewall Log	Log Fields
IP address	TrafficThreatDecryptionTunnel InspectionUnified	SOURCE EDLDESTINATION EDL
URL	TrafficURL CategoryTunnel Inspection	 URL CATEGORY URL CATEGORY LIST
Domain	• Threat	• NAME

Block access to or from known-bad IP addresses



Block access to or from known-bad domains

Block access to or from known-bad URLs

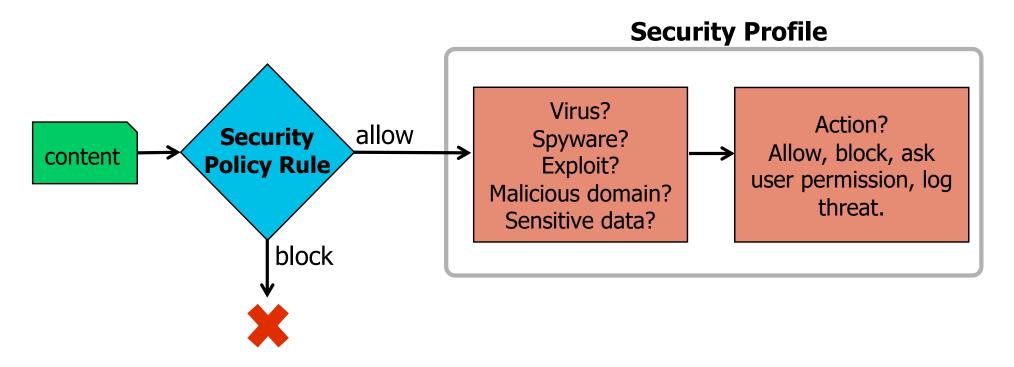
Other URL filtering features





Security Policy with Security Profiles

- Security Profiles are attached to Security policy allow rules.
- Security Profiles implement additional security checks on allowed traffic.



Security Profile Types

Policies > Security





Antivirus



Anti-Spyware



Vulnerability Protection



URL Filtering





File Blocking



Data Filtering



WildFire Analysis



Security Profile Group

Anti-Spyware Security Profiles

- Palo Alto Networks distributes malicious domain signatures.
- Malicious domain signatures are detected using Anti-Spyware Profiles.
- A profile contains a ruleset to detect and process threats.

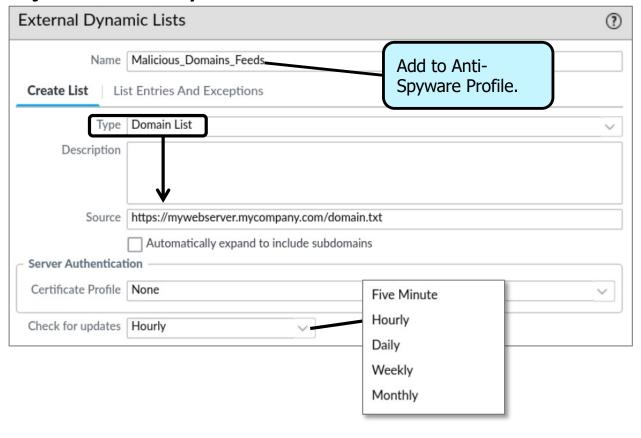
Objects > Security Profiles > Anti-Spyware

	•											
Outbound-AS	Policies: 2	Block-Critical-High- Medium any critical,high,medi		critical,high,medium	reset-both	single-packet						
		Default-Low-Info	any	informational,low	default	disable						
 Attach an Anti-Spyware Profile to a Security policy rule. 												
Policies > Security												

					Source		Destina	tion				
	NAME	TAGS	TYPE	ZONE	ADDRESS	USER	ZONE	ADDRESS	APPLICATION	SERVICE	ACTION	PROFILE
1	Allow_Trusted_Apps 🗸	Users_Net	universal	✓ Users_Net	any	any	Internet	any	Trusted-Apps	🎇 application-default		8

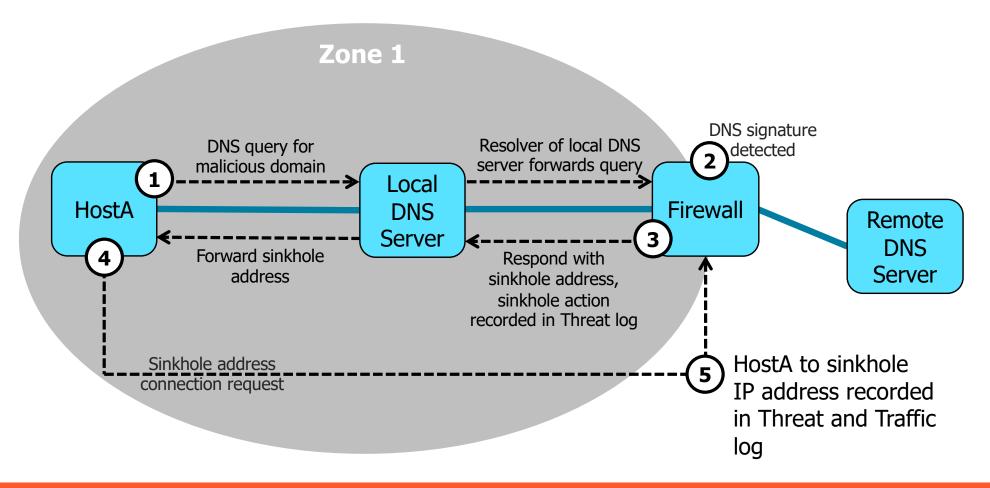
Configure Other Malicious Domain Lists

Objects > External Dynamic Lists > Add



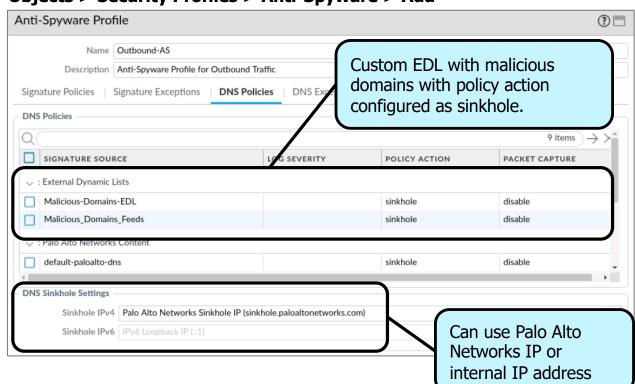
- Malicious domain lists are available from many sources.
- Malicious domain lists are accessed as EDLs.
- EDL must be of typeDomain List.

DNS Sinkhole Operation



Configure DNS Signature Match Protection

- Third-party malicious domain lists are made available as EDLs.
- Best practice is to enable sinkhole.
- Can use the Palo Alto Networks IP address or, optionally, your own internal address.



Objects > Security Profiles > Anti-Spyware > Add

View Malicious Domains in the Threat Log

Monitor > **Logs** > **Threat**

	RECEIVE TIME	ТҮРЕ	THREAT ID/NAME	FROM ZONE	TO ZONE	SOURCE ADDRESS	DESTINATION ADDRESS	TO PORT	APPLICATI	ACTION	SEVERITY	URL
S	07/20 22:01:59	spyware	malicious-domains-edl	Users_Net	Internet	192.168.1.20	4.2.2.2	53	dns	sinkhole	medium	quora.com
\(\Omega\)	07/20 22:01:44	spyware	malicious-domains-edl	Users_Net	Internet	192.168.1.20	4.2.2.2	53	dns	sinkhole	medium	quora.com
1	07/20 22:01:28	spyware	malicious-domains-edl	Users_Net	Internet	192.168.1.20	4.2.2.2	53	dns	sinkhole	medium	producthunt.com
\(\sigma\)	07/20 22:00:49	spyware	malicious-domains-edl	Users_Net	Internet	192.168.1.20	4.2.2.2	53	dns	sinkhole	medium	quora.com
Internal DNS server or infected host Typically an external DNS server												

- If you see a sinkhole in the Threat log:
 - Filter the Traffic log to see who is attempting to connect to the sinkhole IP address.
 - Hosts attempting to connect to the sinkhole address could be infected.
- Check logs daily or run a daily report.

Block access to or from known-bad IP addresses

Block access to or from known-bad domains



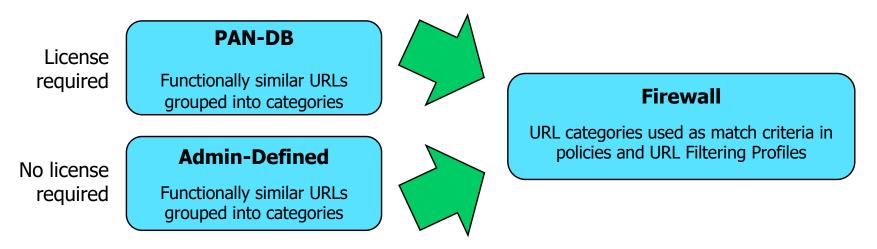
Block access to or from known-bad URLs

Other URL filtering features





URL Filtering Features

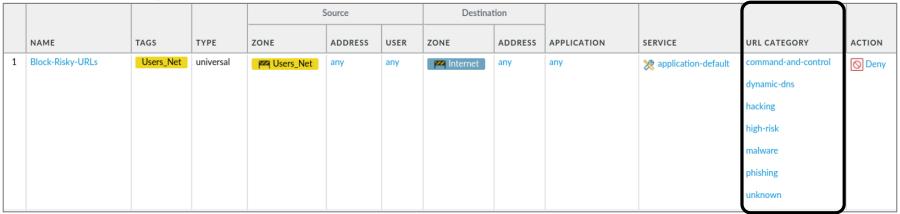


- Use URL filtering to reduce the attack surface:
 - Disrupts the Delivery or Command-and-Control stage of the cyberattack lifecycle
- Two methods:
 - Use URL categories as a match condition in a Security policy deny rule.
 - Block access to a URL category in a URL Filtering Profile.

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Use a Security Policy Deny Rule

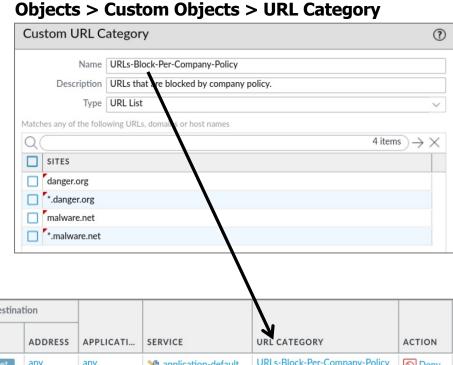
Policies > Security



- Block access for most employees to risky URL categories:
 - Recommend blocking command-and-control, dynamic-dns, hacking, high-risk, malware, phishing, unknown
 - Other categories to consider blocking include adult, extremism, new-registered-domain, parked, proxy-avoidance-and-anonymizers, questionable
- Deny rules typically are added to the top portion of a Security policy.

Block Access to Specific URLs

- Cannot add specific URLs to a policy rule
- To block specific URLs:
 - 1. Add specific URLs to a custom URL category.
 - 2. Add a custom URL category to a policy rule.

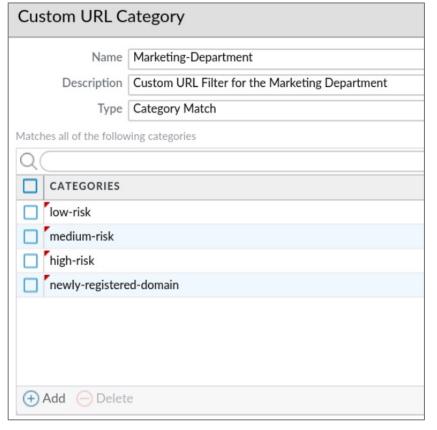


Policies > Security

				Source		Destination				\		
	NAME	TAGS	TYPE	ZONE	ADDRESS	USER	ZONE	ADDRESS	APPLICATI	SERVICE	URL CATEGORY	ACTION
1	Block-Per-Company-Policy	Users_Net	universal	Users_Net	any	any	Internet	any	any	2 application-default	URLs-Block-Per-Company-Policy	O Deny

Multi-Category and Risk-Based URL Filtering

Objects > Custom Objects > URL Category



- PAN-DB URL filtering assigns websites to multiple categories.
- Categories indicate:
 - The site's risk
 - The site's content
 - The site's purpose or function
- The security-related risk categories demonstrate levels of suspicious activity.
- Websites registered for fewer than 32 days are assigned to new-registereddomain.

Control URL Access for Specific Users

- Enable User-ID on source zone.
- Add users or groups to policy rules controlling URL access.



- Enable logging on a policy rule:
 - Recommended if the URLs are risky.
 - Logging information also helps to improve or refine policy rules.

Use a URL Filtering Profile

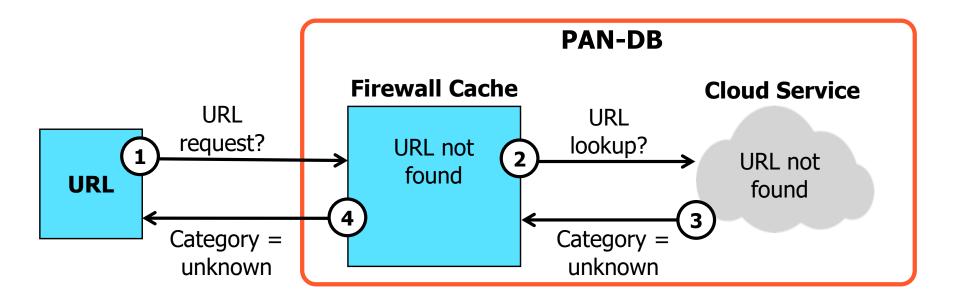
Attach the URL Filtering Profile to a Security policy allow rule.



- Profile can individually block, allow, or log access to URL categories:
 - Block: command-and-control, dynamic-dns, hacking, high-risk, malware, phishing, unknown.
 - Consider blocking: adult, extremism, new-registered-domain, parked, proxy-avoidanceand-anonymizers, questionable.
- Enable logging for better visibility in logs and reports.

When Encountering Unknown URLs

Category column in URL Filtering log lists unknown.

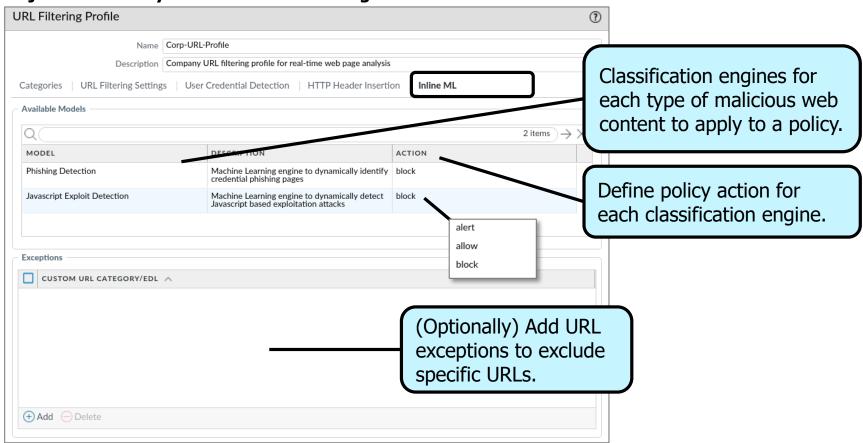


Recommendation: Set unknown URL category action to support your security requirements.

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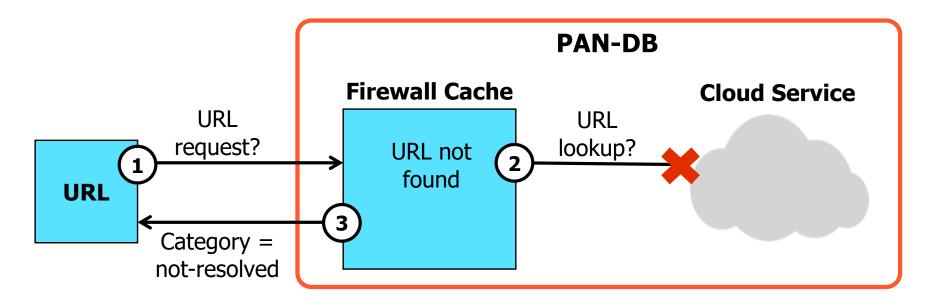
Real-Time Webpage Analysis

Objects > Security Profiles > URL Filtering



When Encountering Not-Resolved URLs

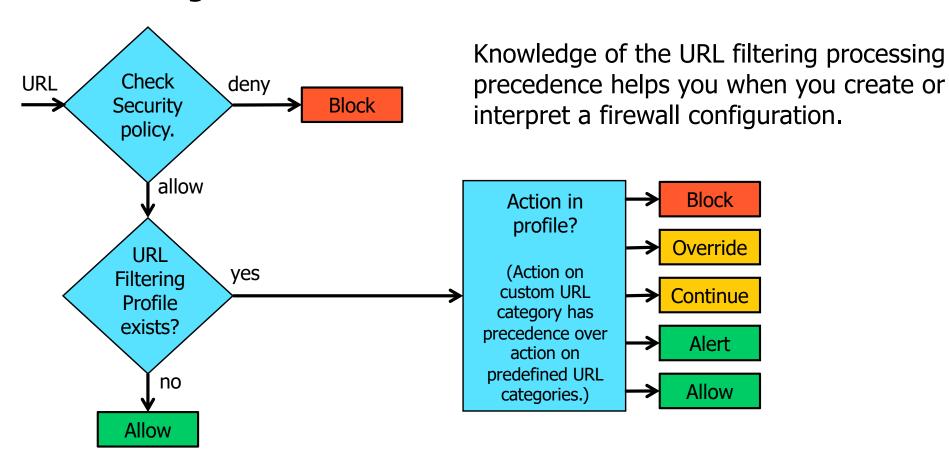
Category column in URL Filtering log lists *not-resolved*.



Recommendation: Set *not-resolved* URL category match action to "alert."

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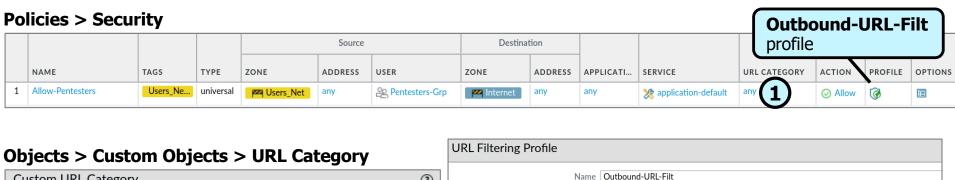
URL Filtering Action Precedence

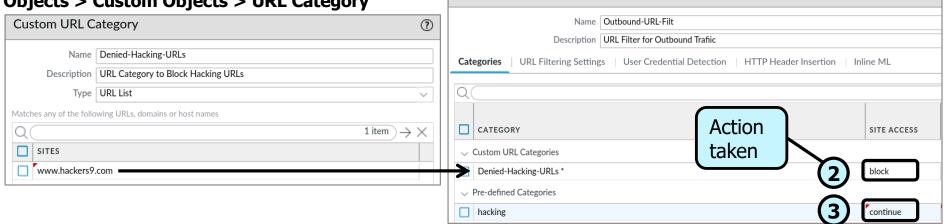


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URL Filtering Precedence Example

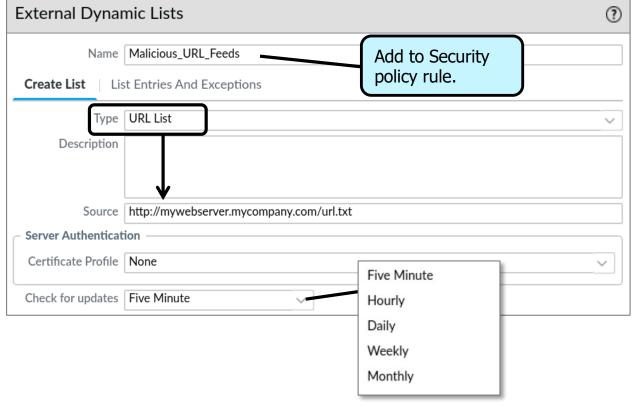
Allow **Pentesters-Grp** to access all **hacking** category URLs except www.hackers9.com.





Configure Other Malicious URL Lists

Objects > External Dynamic Lists > Add



- Malicious URL lists are available from third parties.
- Lists can be used in firewall policy rules and URL Filtering Profiles.
- Lists are accessed as EDLs.
- EDL must be of type
 URL List.

Block access to or from known-bad IP addresses

Block access to or from known-bad domains

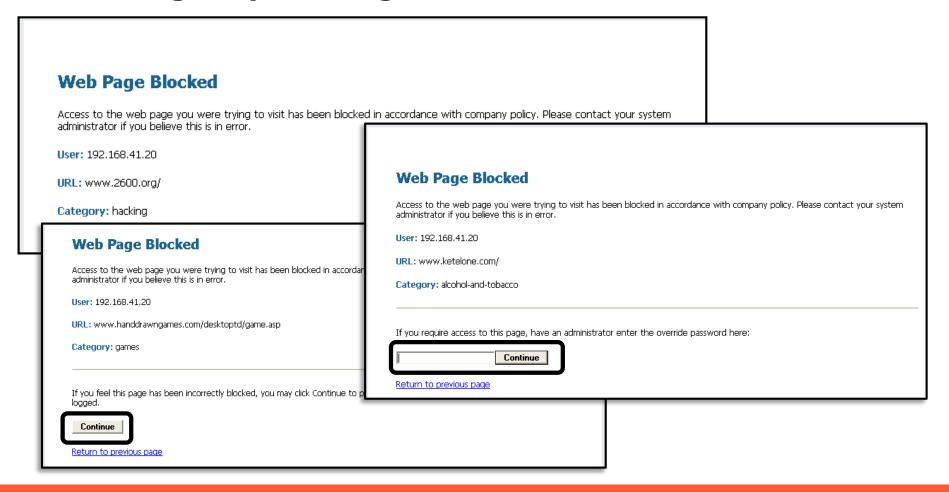
Block access to or from known-bad URLs

Other URL filtering features



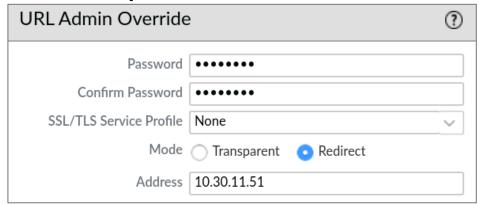


URL Filtering Response Pages



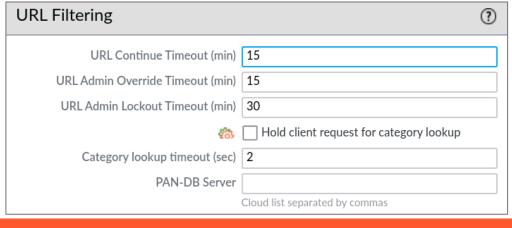
URL Admin Settings

Device > Setup > Content-ID > URL Admin Override > Add



Configure URL Admin Override password.

Device > Setup > Content-ID > URL Filtering



Configure URL Admin Override password timeout period.

HTTP Header Insertion and Modification

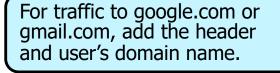
- Limit access to only enterprise versions of SaaS applications.
- Four predefined SaaS applications:
 - Dropbox
 - Google
 - Office 365
 - YouTube
- Inserts HTTP header if missing or overwrites existing header.
- Dynamic Fields inserts X-Authenticated-User header to specify user's name and domain to secondary devices:
 - To enforce additional user-based policy controls

Objects > Security Profiles > URL
Filtering > Add

HTTP Header Insertion

Name Outbound-GoogleURL-HTTP-Header
Type Google Apps Access Control

Domains DOMAINS
*.google.com



gmail.com

(+) Add (-) Delete



Custom

Dynamic Fields

Youtube Safe Search

Dropbox Network Control

Google Apps Access Control

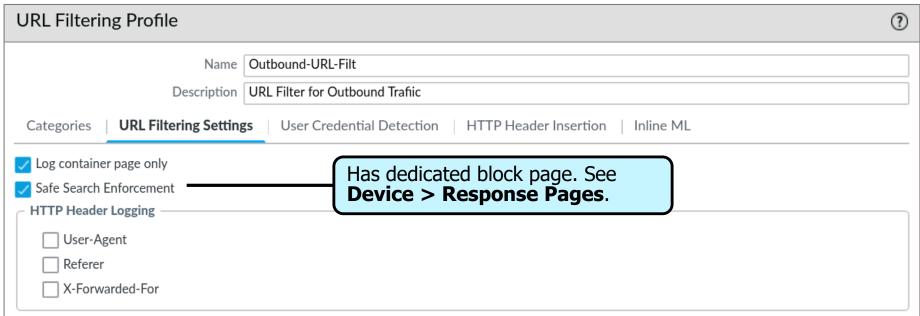
Microsoft Office365 Tenant Restrictions



?

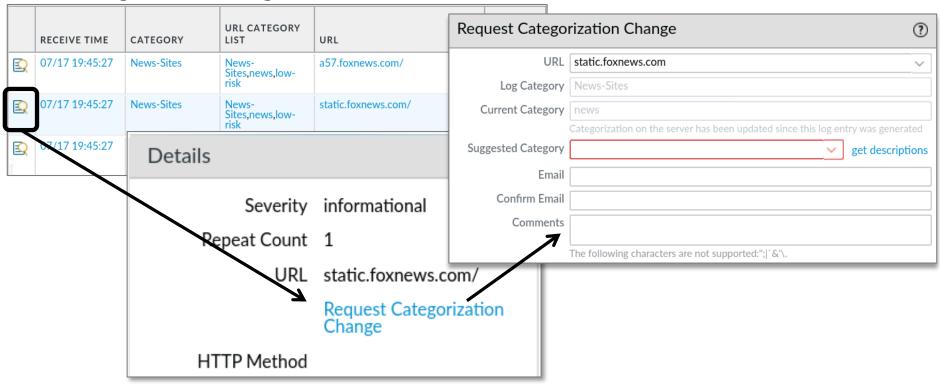
Configure Safe Search and Logging Options

Objects > Security Profiles > URL Filtering > Add

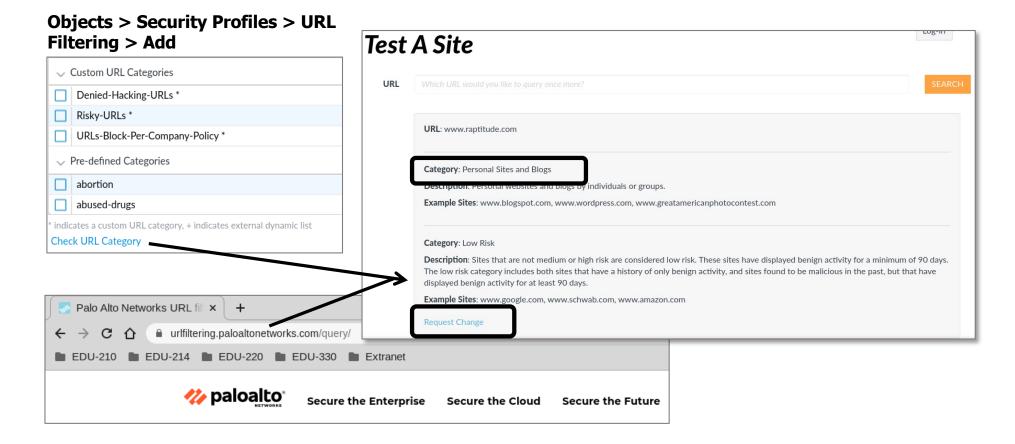


Recategorization Request: Via Log Entries

Monitor > **Logs** > **URL Filtering**



Recategorization Requests: Via Webpage



Module Summary

Now that you have completed this module, you should be able to:



- Configure the firewall to block traffic from known-malicious
 IP addresses
- Configure the firewall to block traffic from known-malicious domains
- Configure the firewall to block traffic from known-malicious URLs
- Describe other URL filtering operations and options

Questions



Lab 9: Blocking Threats from Known-Bad Sources

- Test Access to Known Malicious IP Addresses
- Block Access to Malicious IP Addresses Using Address Objects and Groups
- Block Access to Malicious IP Addresses by Geographic Region
- Block Access to Malicious IP Addresses Using an EDL
- Test Access to Malicious Domains
- Block Access to Malicious Domains Using an EDL in an Anti-Spyware Profile
- Add the Anti-Spyware Profile to a Security Policy Rule
- Block Access to Malicious URLs Using the Security Policy
- Create a Custom URL Category
- Use a Custom URL Category to Block Access to Malicious URLs
- Block Access to a Malicious URL Using a URL Filtering Profile

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