使用Firepower管理中心阻止具有安全情报的DNS

目录

简介

本文档介绍将域名系统(DNS)列表添加到DNS策略以便您能将其应用于安全情报(SI)的过程。

先决条件

要求

Cisco 建议您了解以下主题：

- Cisco ASA55XX威胁防御配置
- 思科Firepower管理中心配置

使用的组件

- 思科ASA5506W-X威胁防御(75)版本6.2.3.4（内部版本42）
- 适用于VMWare的思科Firepower管理中心 软件版本:6.2.3.4（内部版本42）操作系统：思科Fire Linux OS 6.2.3(build13)

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

背景信息

安全情报的工作方式是阻止流入或流出IP地址、URL或域名的流量，这些流量具有已知的不良信誉。在本文档中，主要重点是域名黑名单。

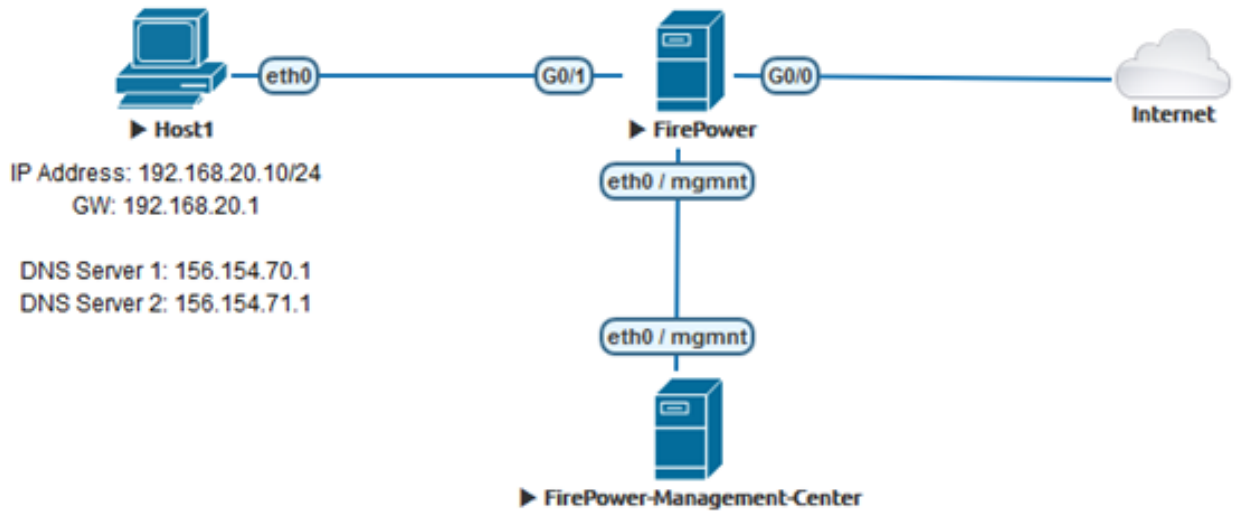
示例使用块1域：

- cisco.com

您可以使用URL过滤来阻止其中一些站点，但问题是URL必须完全匹配。另一方面，SI的DNS黑名单可以专注于“cisco.com”等域，而无需担心任何子域或URL更改。

本文档末尾还演示了可选的Sinkhole配置。

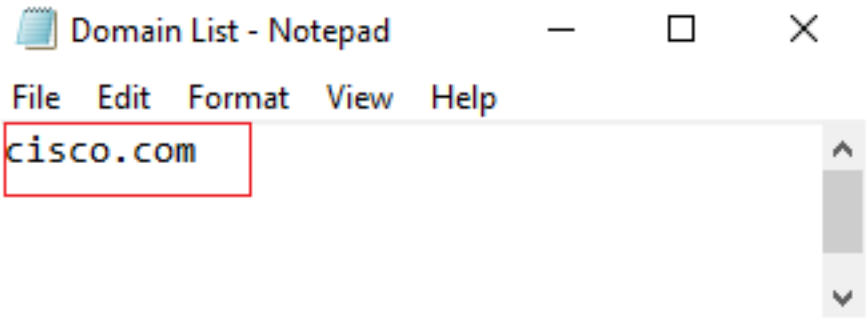
网络图



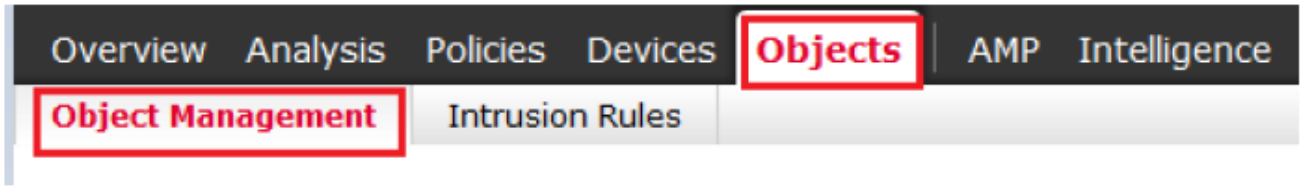
配置

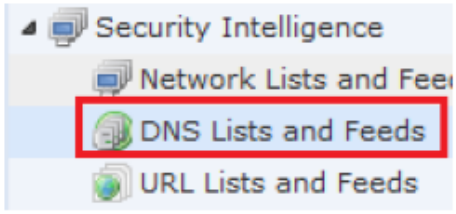
使用要阻止的域配置自定义DNS列表，并将列表上传到FMC

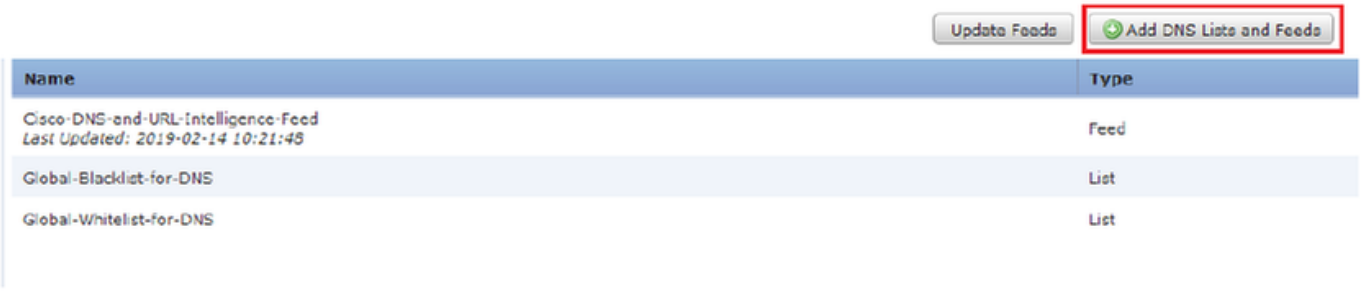
步骤1.使用要阻止的域创建.txt文件。将.txt文件保存在计算机上：



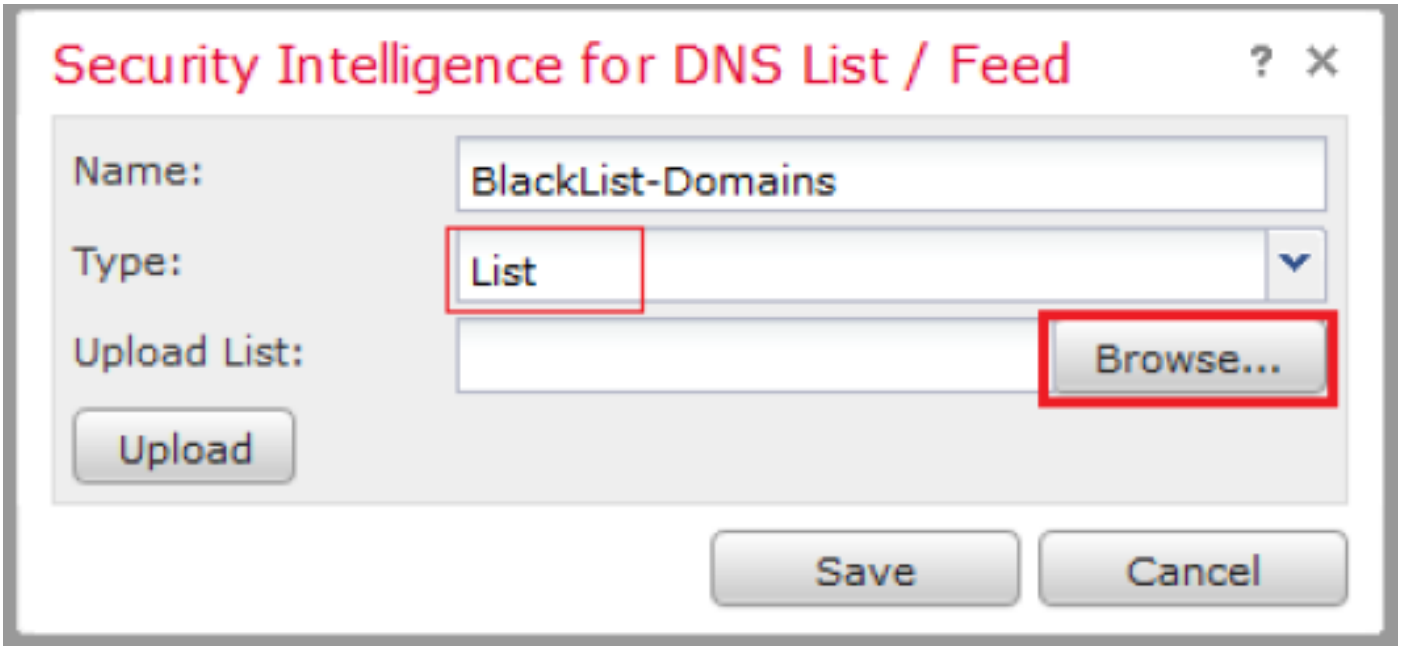
步骤2.在FMC中，导航至Object >> Object Management >> DNS Lists and Feeds >> Add DNS List and Feeds。

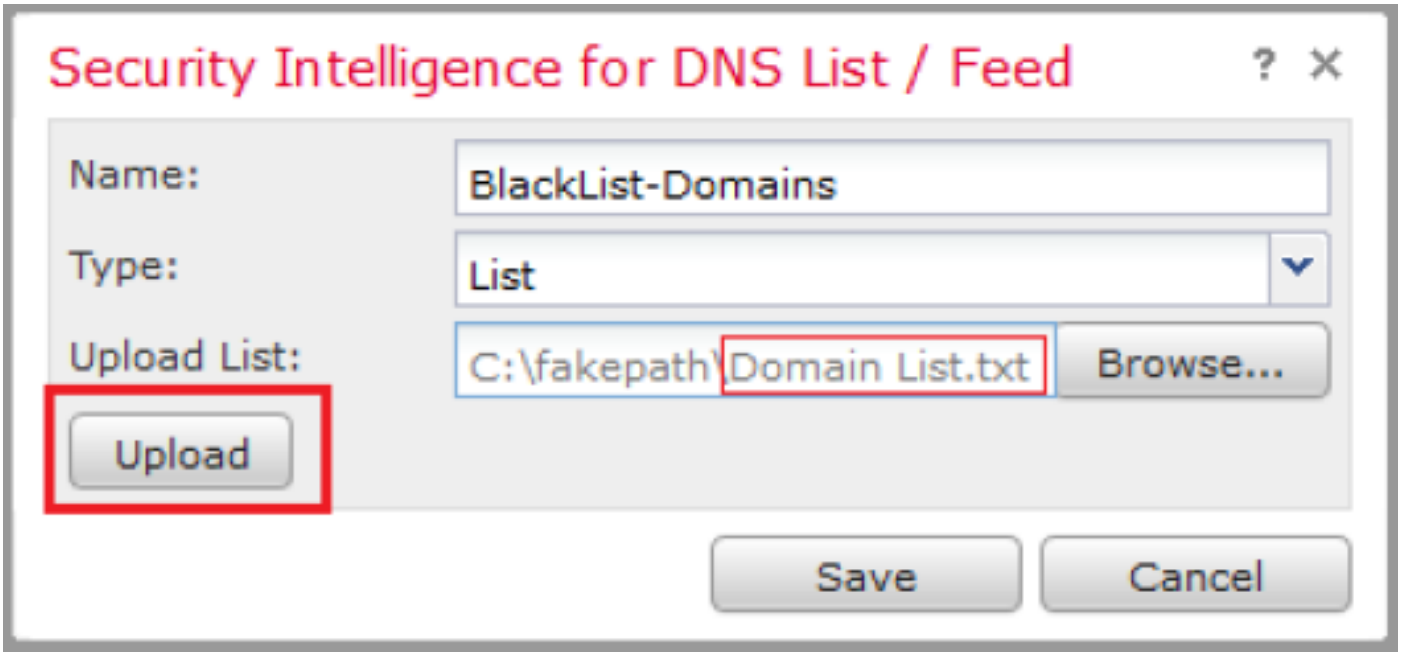




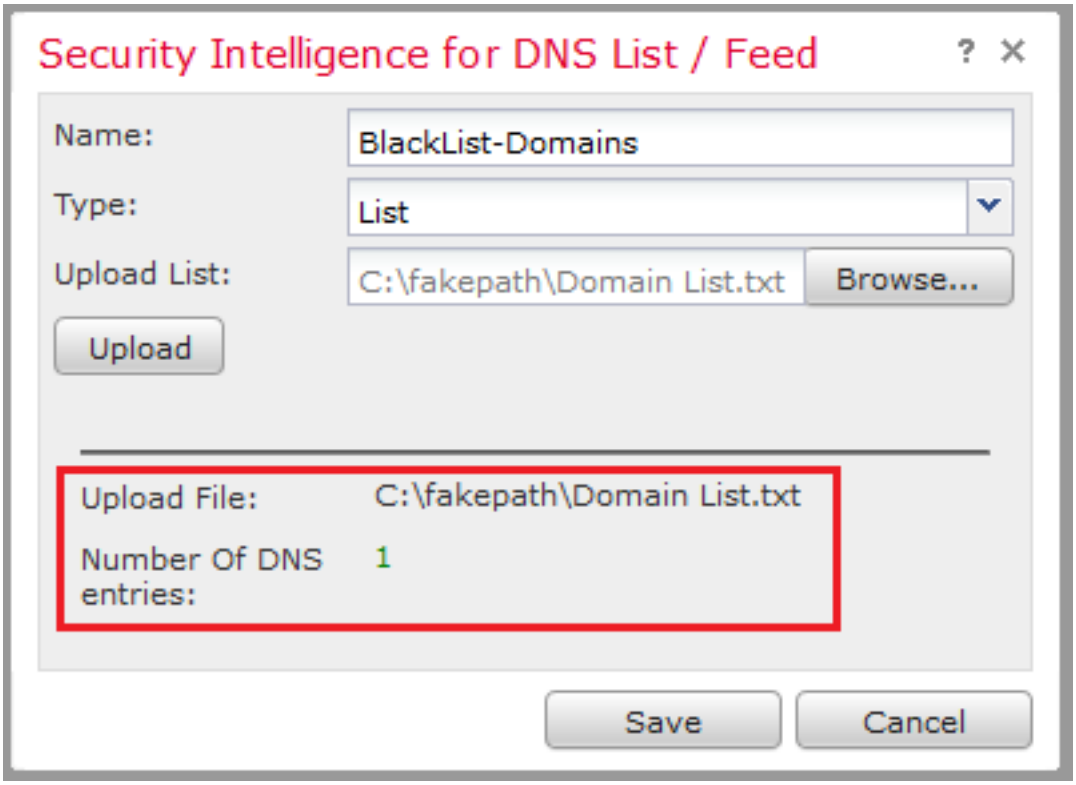


步骤3.创建名为“BlackList-Domains”的列表，该类型应为list，并且应上传包含相关域的.txt文件，如图所示：





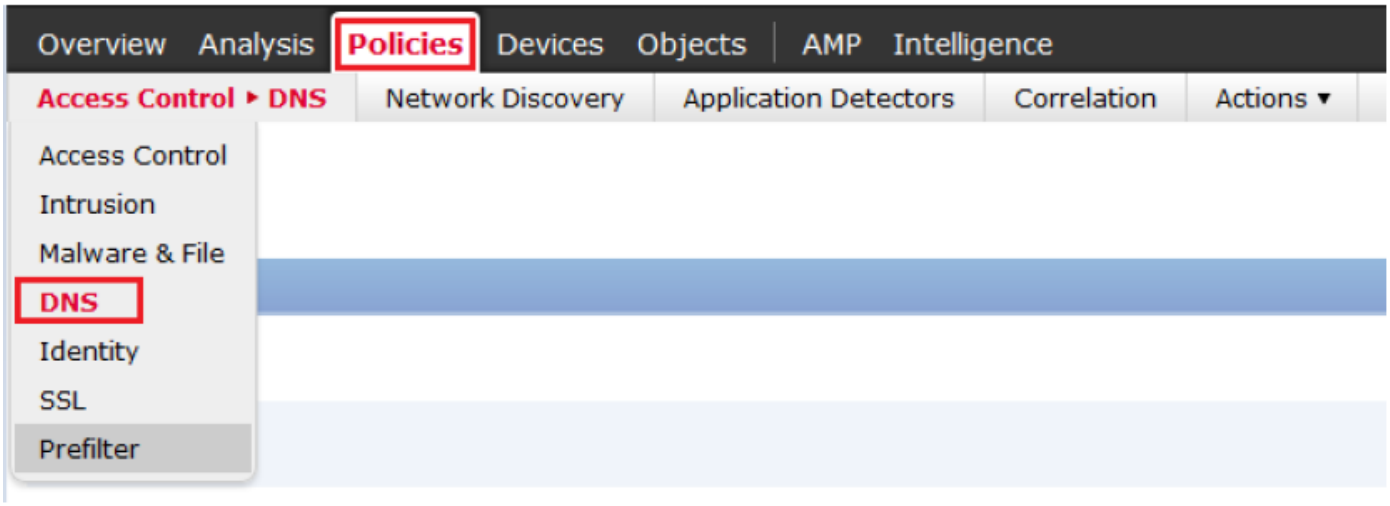
*请注意，上传.txt文件时，DNS条目数应读取所有域。在本例中，总数为1:

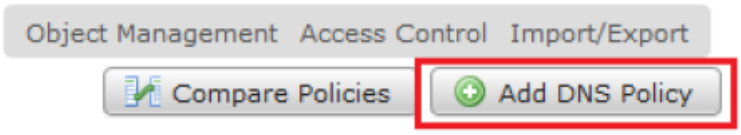


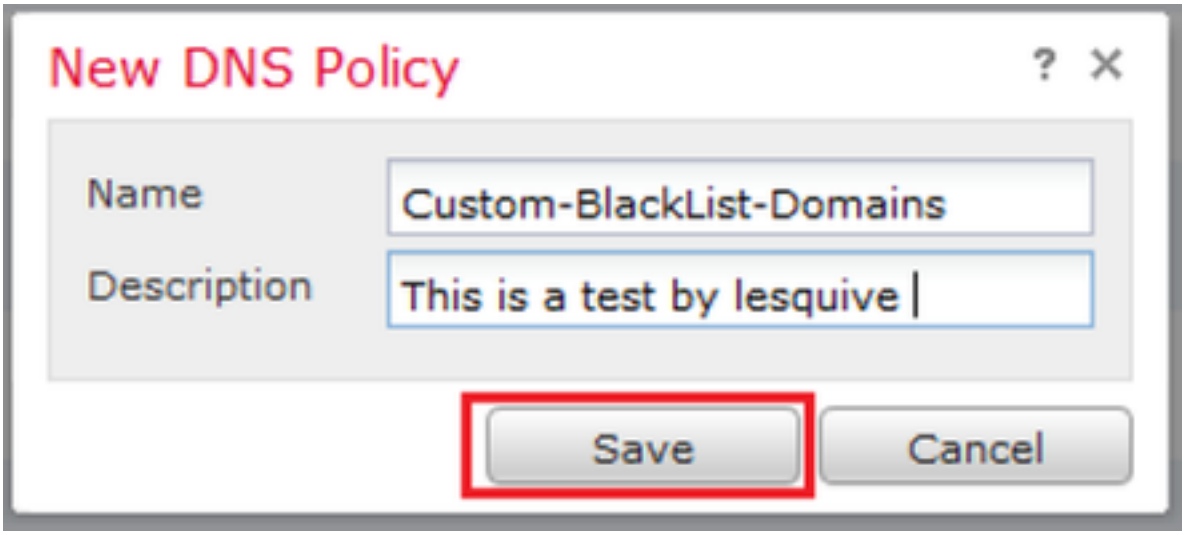
添加新的DNS策略，其中“action configured to 'domain not found'”

*确保添加源区域、源网络和DNS列表。

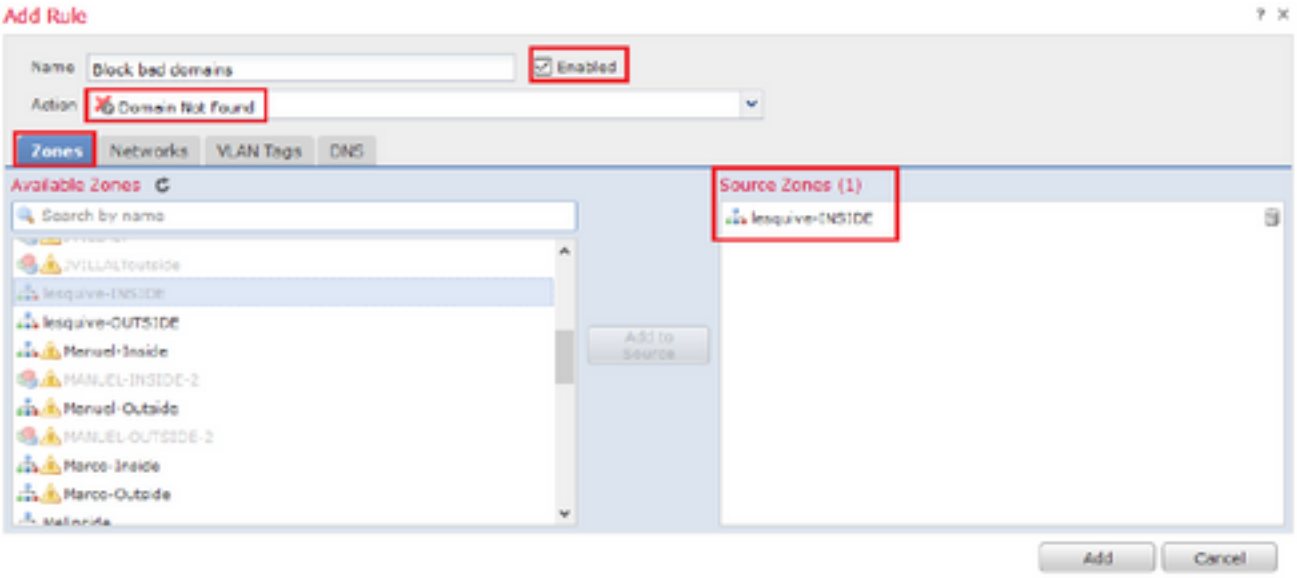
步骤1.导航至Policies >> Access Control >> DNS >> Add DNS Policy:

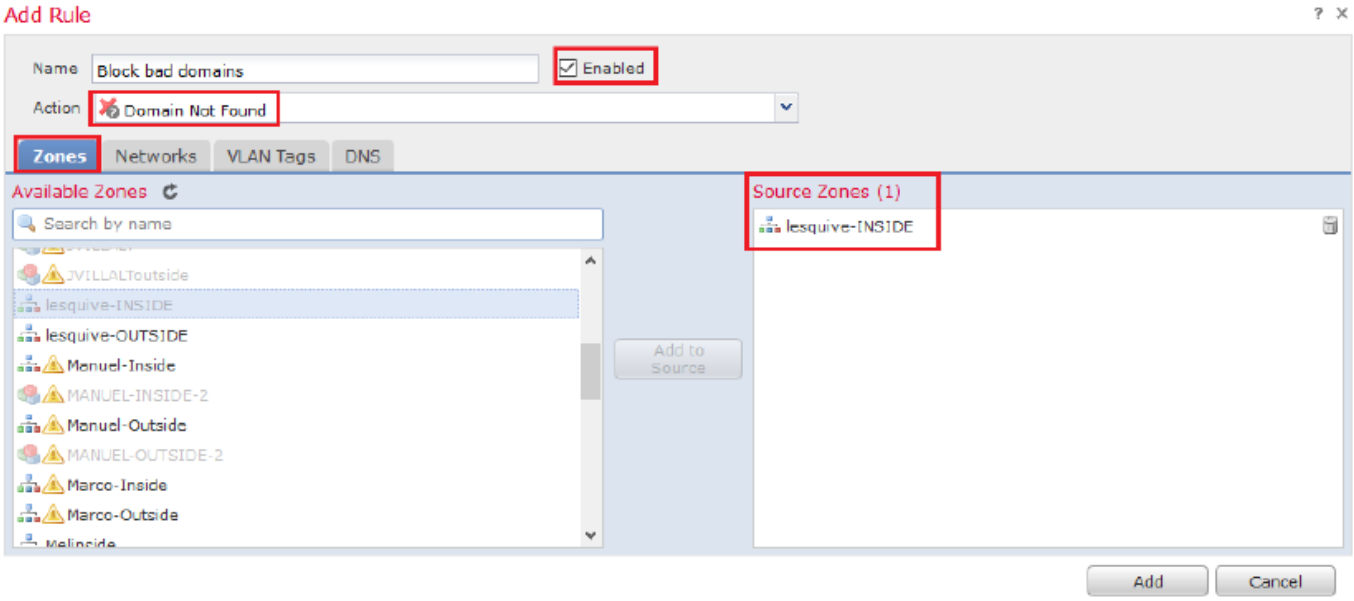


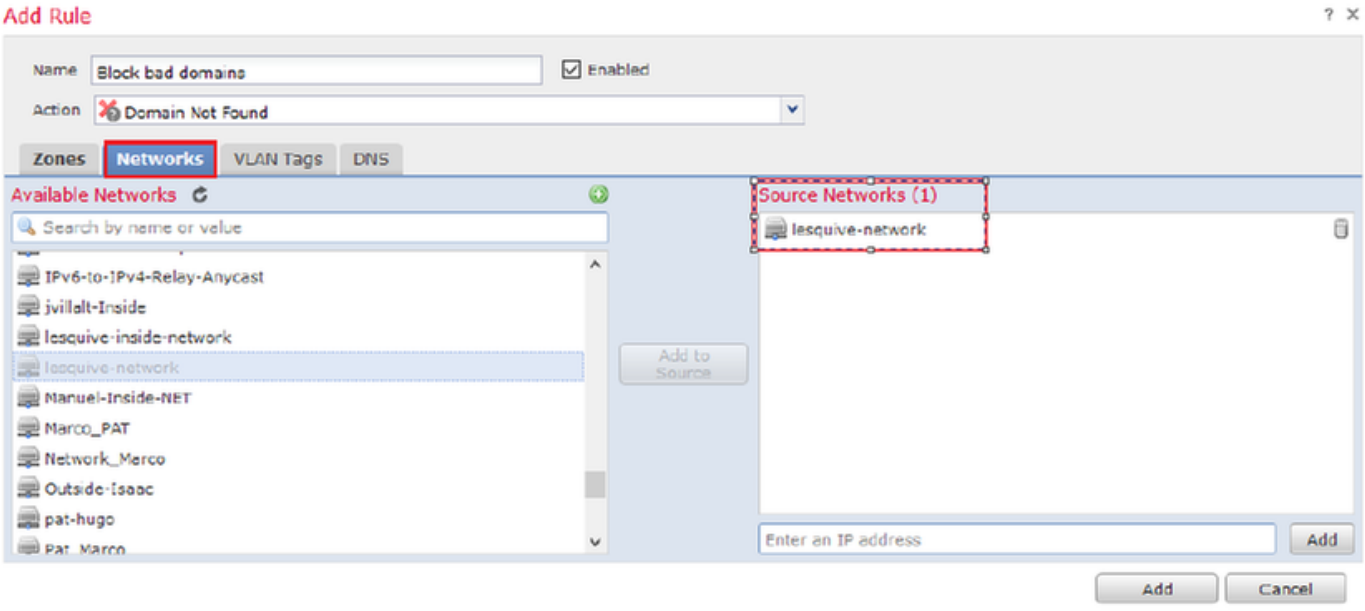


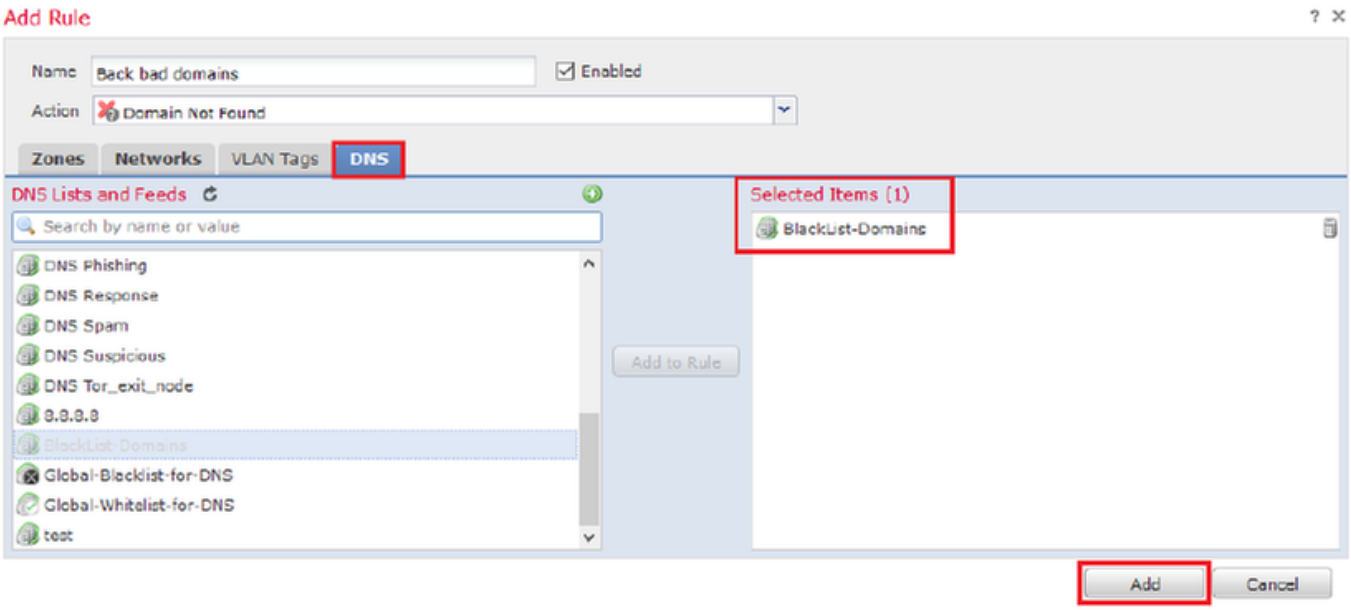


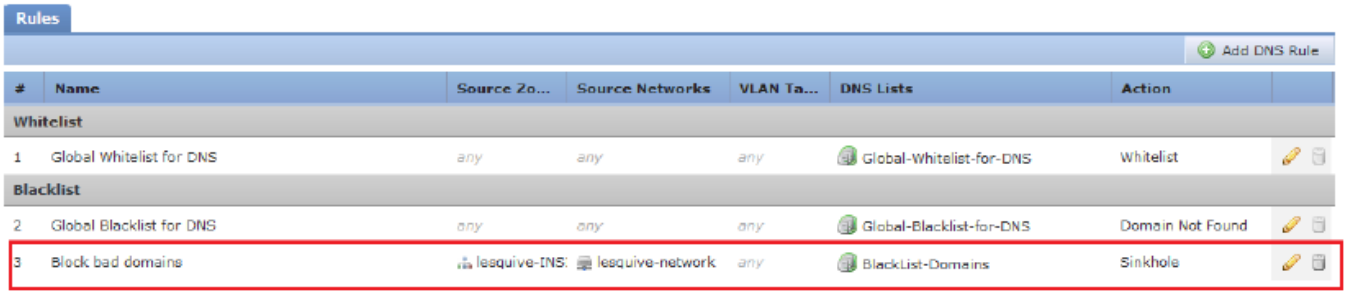
步骤2.添加DNS规则，如图所示：


Add Rule
Name
Block bad domains
Enabled
Action
Domain Not Found
Zones
Networks
VLAN Tags
DNS
Available Zones
Search by name
lesquive-OUTSIDE
Manuel-Inside
Manuel-Outside
Marco-Inside
Marco-Outside
Source Zones (1)
lesquive-INSIDE
Add to Source
Add
Cancel


Add Rule
Name
Block bad domains
Enabled
Action
Domain Not Found
Zones
Networks
VLAN Tags
DNS
Available Zones
Search by name
lesquive-INSIDE
lesquive-OUTSIDE
Manuel-Inside
MANUEL-INSIDE-2
Manuel-Outside
MANUEL-OUTSIDE-2
Marco-Inside
Marco-Outside
Source Zones (1)
lesquive-INSIDE
Add to Source
Add
Cancel


Add Rule
Name
Block bad domains
Enabled
Action
Domain Not Found
Zones
Networks
VLAN Tags
DNS
Available Networks
Search by name or value
IPv6-to-IPv4-Relay-Anycast
jvillalt-Inside
lesquive-inside-network
lesquive-network
Manuel-Inside-NET
Marco_PAT
Network_Marco
Outside-Isaac
pat-hugo
Source Networks (1)
lesquive-network
Add to Source
Enter an IP address
Add
Add
Cancel



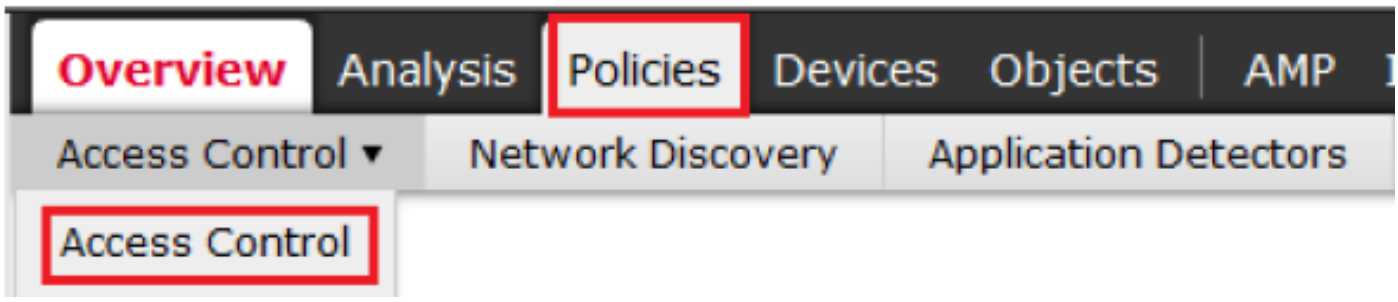


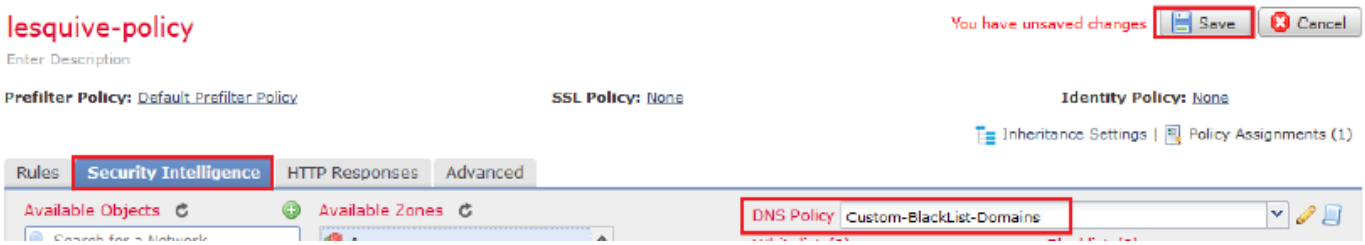
有关规则顺序的重要信息：

- 全局白名单始终优先于所有其他规则。
- 后代DNS白名单规则仅在非枝叶域的多域部署中显示。它始终是次要规则，优先于除全局白名单之外的所有其他规则。
- 白名单部分位于黑名单部分之前；白名单规则始终优先于其他规则。
- 全局黑名单始终在黑名单部分中处于首位，优先于所有其他监控和黑名单规则。
- 后代DNS黑名单规则仅在非枝叶域的多域部署中显示。它始终在黑名单部分中位列第二，优先于除全局黑名单之外的所有其他监控和黑名单规则。
- “黑名单”部分包含监控和黑名单规则。
- 首次创建DNS规则时，如果分配了白名单操作，则系统位置在白名单部分最后，如果分配了任何其他操作，则在黑名单部分最后

将DNS策略分配到访问控制策略

转至Policies >> Access Control >> The Policy for your FTD >> Security Intelligence >> DNS Policy，然后添加您创建的策略。



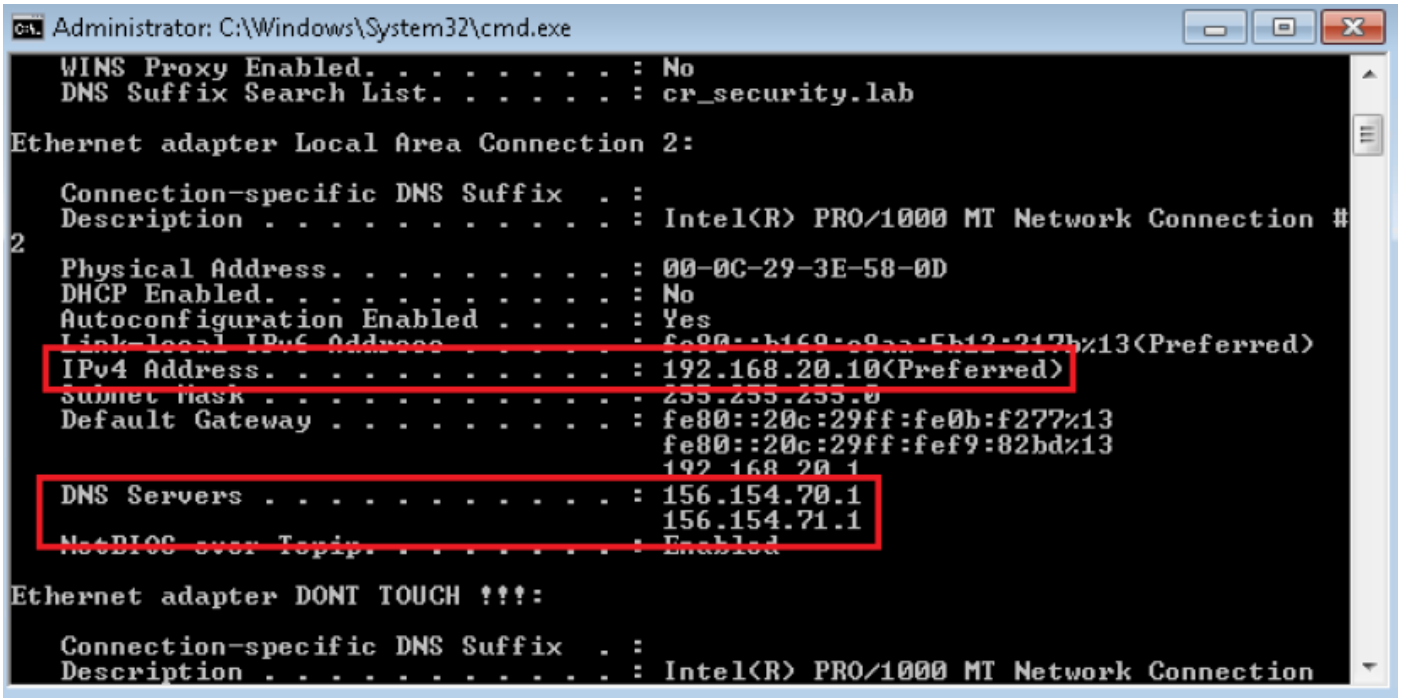


确保完成后部署所有更改。

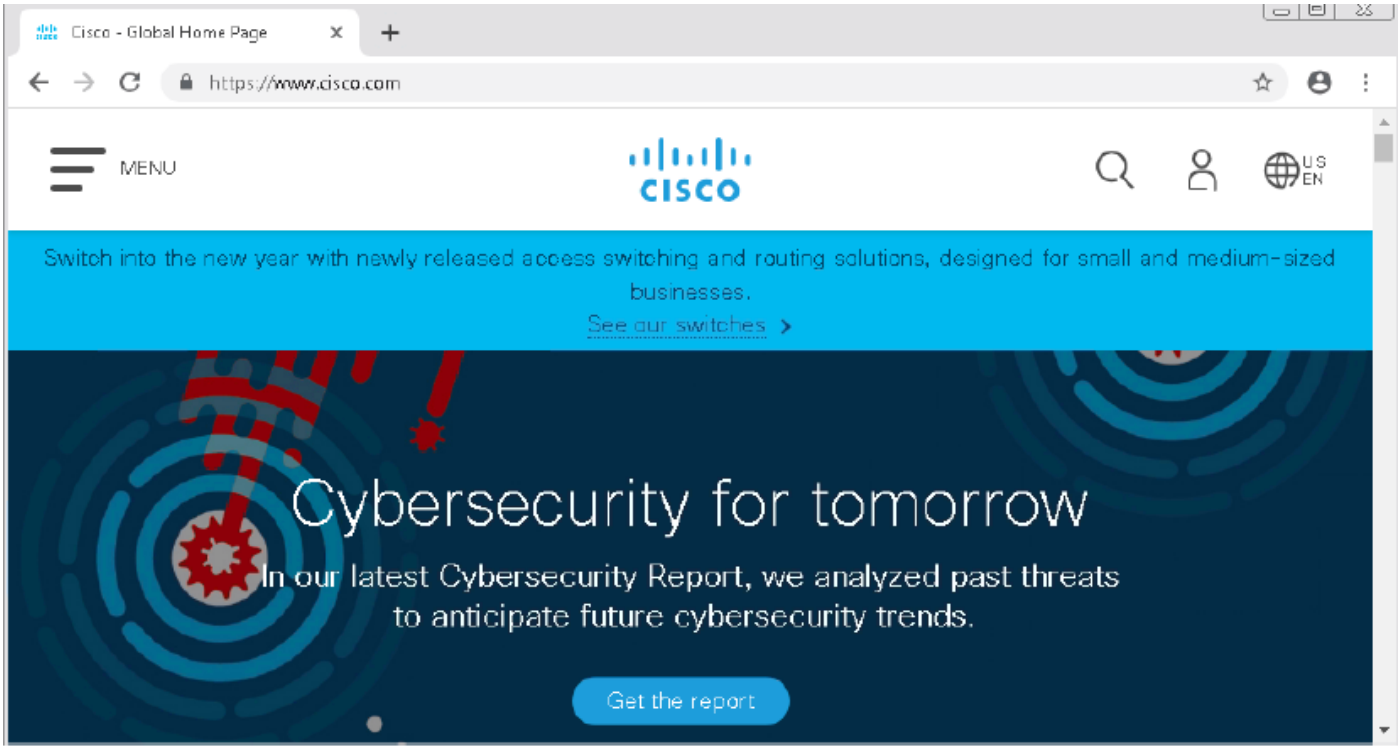
验证

应用DNS策略之前

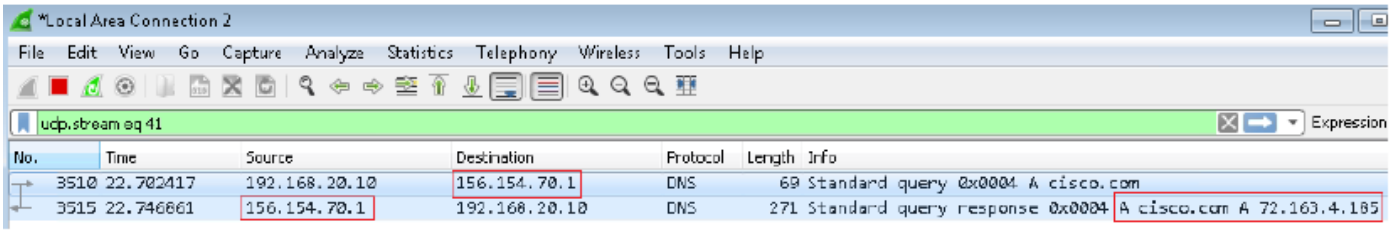
步骤1.检查主机上的DNS服务器和IP地址信息，如图所示：

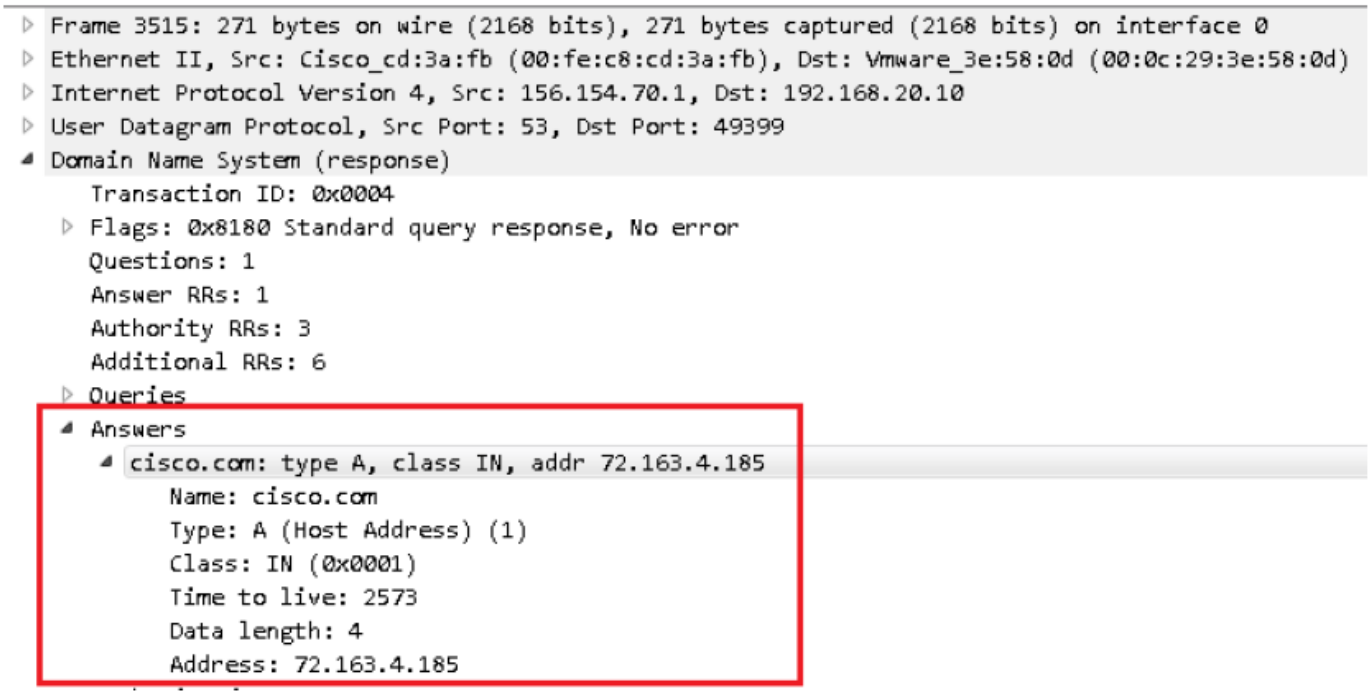


步骤2.确认您可以导航至cisco.com，如图所示：



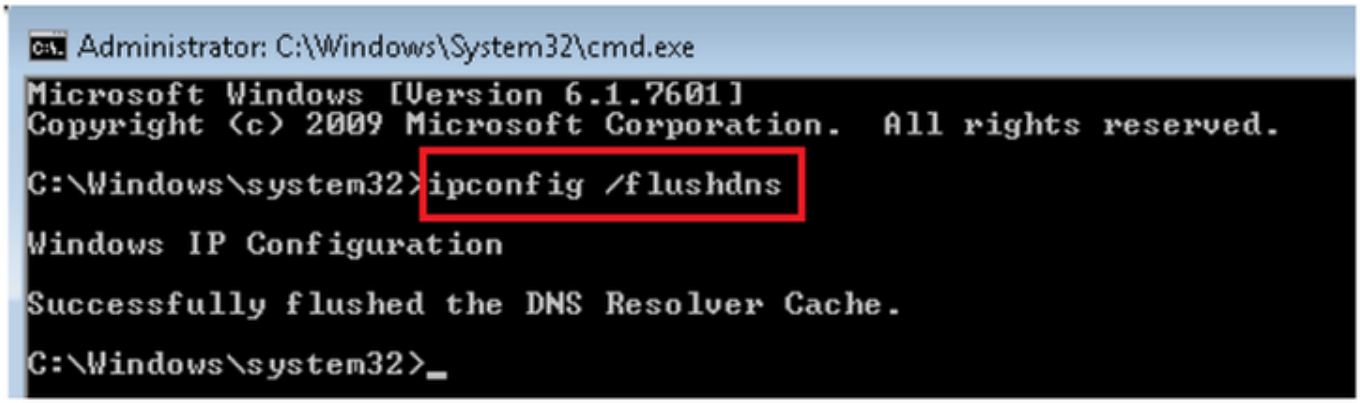
步骤3.使用数据包捕获确认DNS已正确解析：



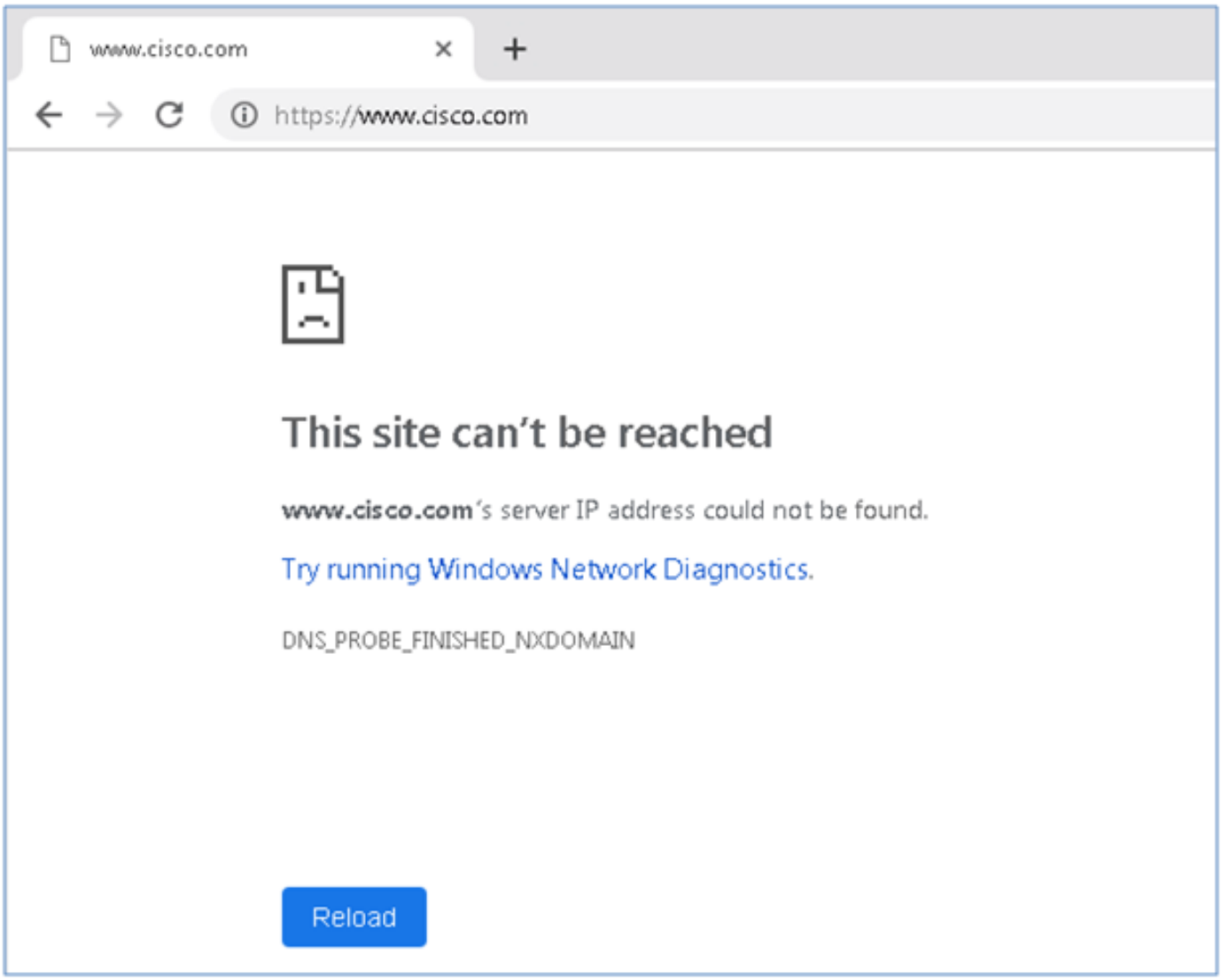


应用DNS策略后

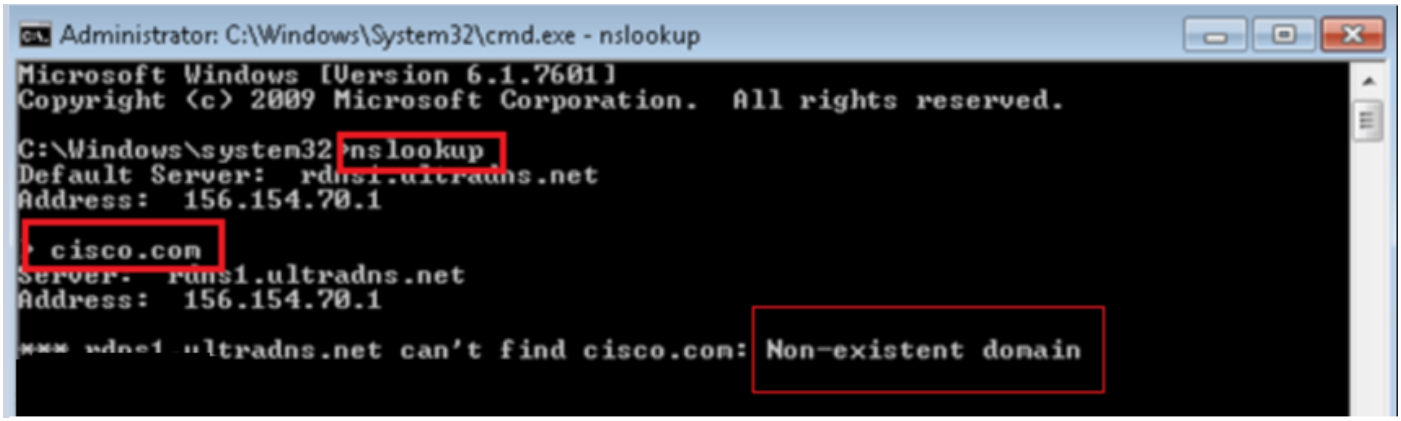
步骤1.使用命令ipconfig /flushdns清除主机上的DNS缓存。



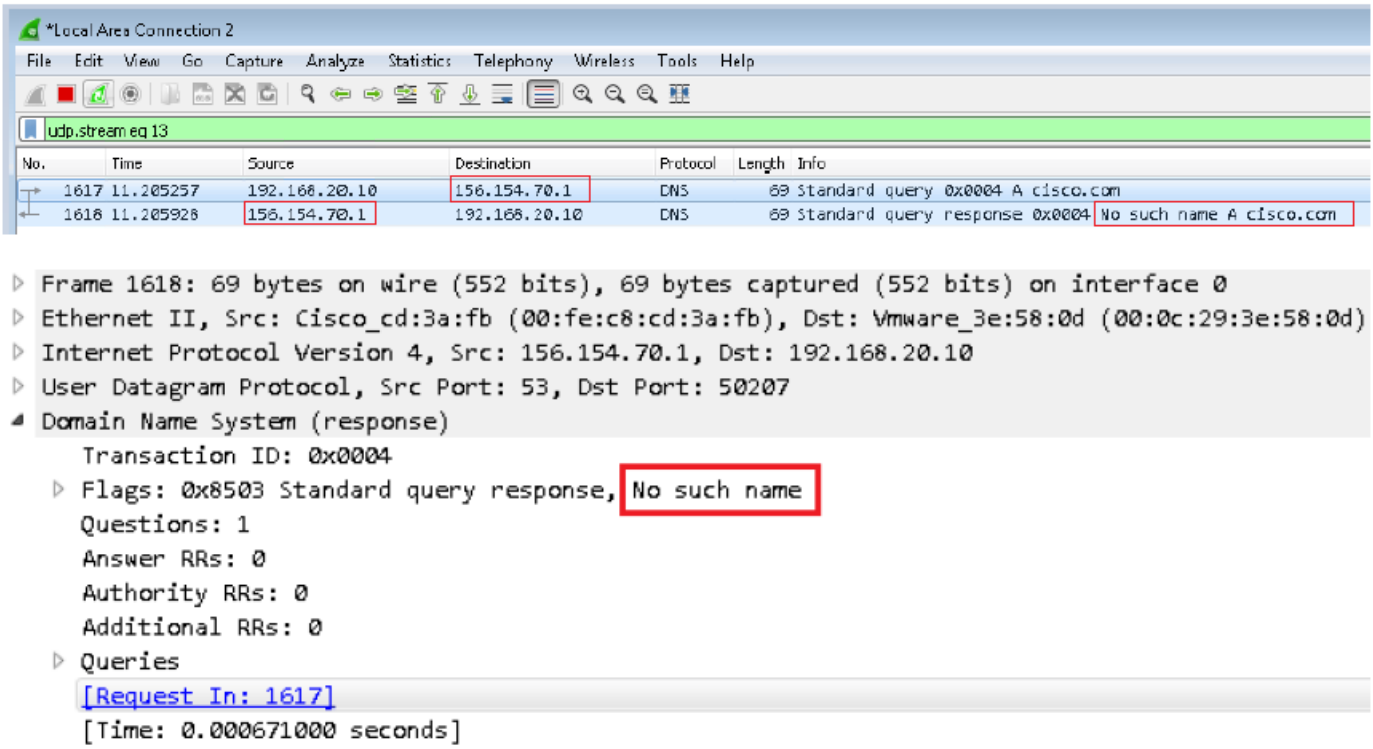
步骤2.使用Web浏览器导航至相关域。它应该不可达：



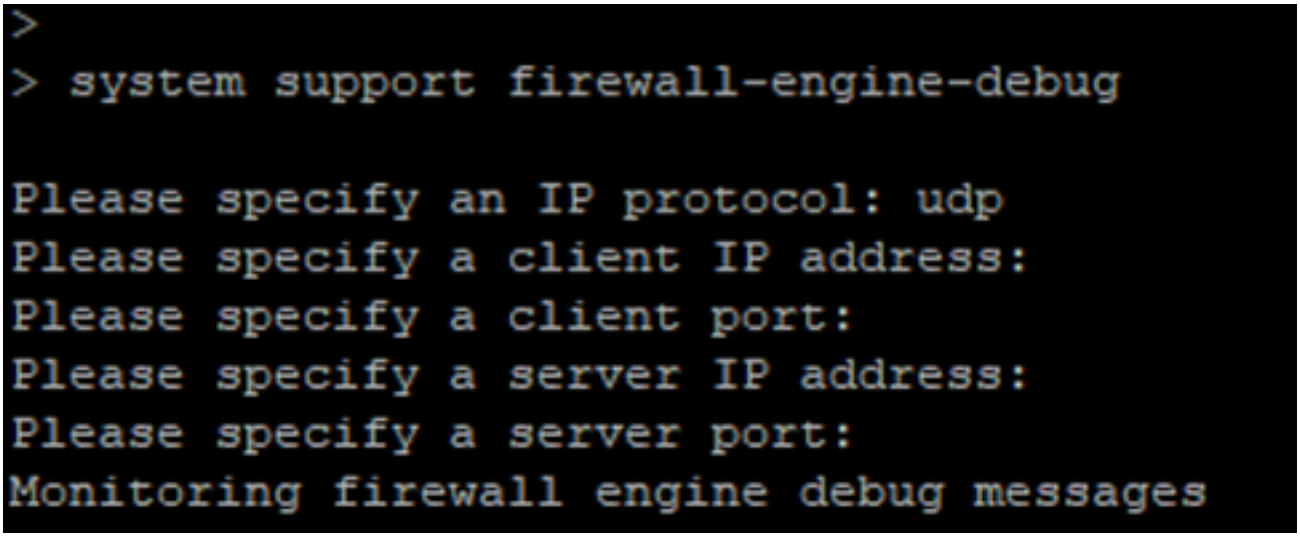
步骤3.尝试在域**cisco**.com上发出nslookup。名称解析失败。



步骤4.数据包捕获显示来自FTD的响应，而不是DNS服务器的响应。



步骤5.在FTD CLI中运行调试：系统支持firewall-engine-debug并指定UDP协议。



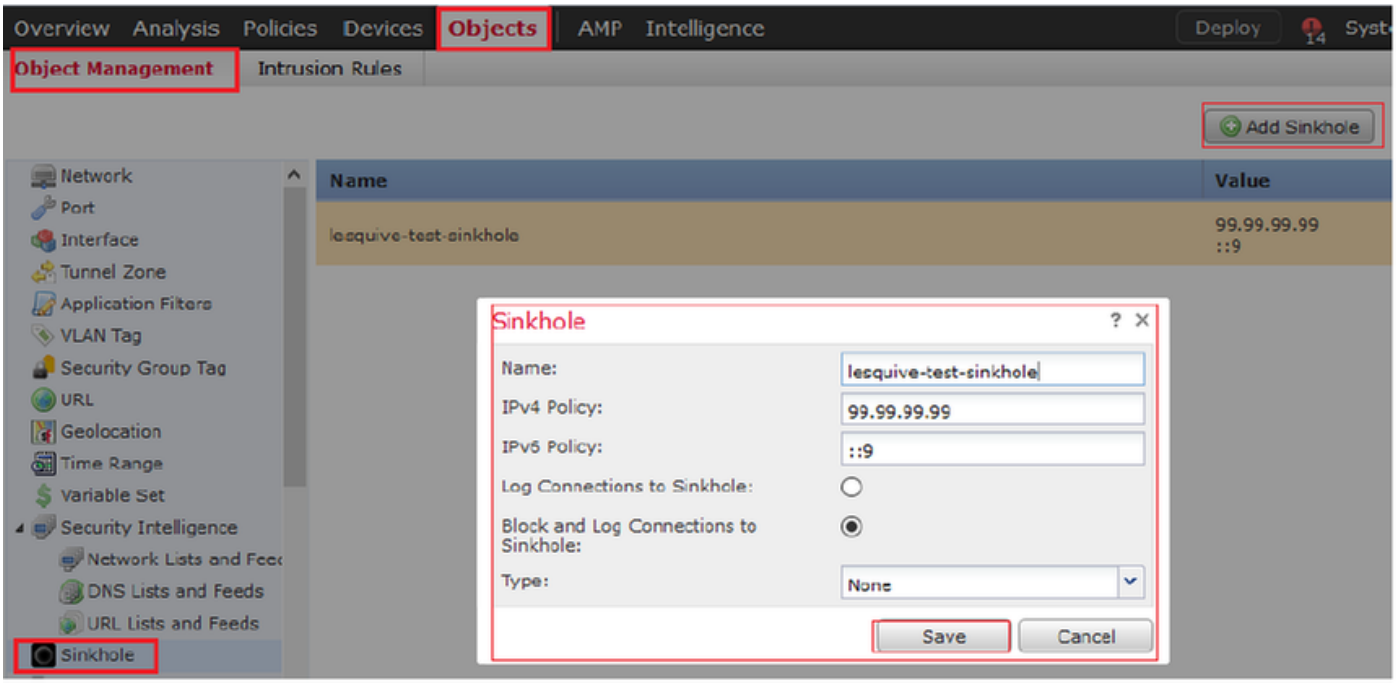
*匹配cisco.com时的调试：

```
> system support firewall-engine-debug

Please specify an IP protocol: udp
Please specify a client IP address:
Please specify a client port:
Please specify a server IP address:
Please specify a server port:
Monitoring firewall engine debug messages

192.168.20.10-61373 > 156.154.70.1-53 17 AS 1 I 0 DNS SI shared mem lookup returned 0 for cisco.com.cr_security.lab
192.168.20.10-61373 > 156.154.70.1-53 17 AS 1 I 0 Skipping DNS rule lookup for cisco.com.cr_security.lab since we've already gotten a response
192.168.20.10-61373 > 156.154.70.1-53 17 AS 1 I 0 Got end of flow event from hardware with flags 00000000
192.168.20.10-61374 > 156.154.70.1-53 17 AS 1 I 1 DNS SI shared mem lookup returned 0 for cisco.com.cr_security.lab
192.168.20.10-61374 > 156.154.70.1-53 17 AS 1 I 1 Skipping DNS rule lookup for cisco.com.cr_security.lab since we've already gotten a response
192.168.20.10-61374 > 156.154.70.1-53 17 AS 1 I 1 Got end of flow event from hardware with flags 00000000
192.168.20.10-61375 > 156.154.70.1-53 17 AS 1 I 1 DNS SI shared mem lookup returned 1 for cisco.com
192.168.20.10-61375 > 156.154.70.1-53 17 AS 1 I 1 Starting SrcZone first with intfs 1 -> 0, vlan 0
192.168.20.10-61375 > 156.154.70.1-53 17 AS 1 I 1 using rule order 1, id 1 action Allow
192.168.20.10-61375 > 156.154.70.1-53 17 AS 1 I 1 using rule order 2, id 3 action DNS NXDomain
192.168.20.10-61375 > 156.154.70.1-53 17 AS 1 I 1 using rule order 3, id 5 action DNS NXDomain
192.168.20.10-61375 > 156.154.70.1-53 17 AS 1 I 1 Got DNS list match. si list 1048620
192.168.20.10-61375 > 156.154.70.1-53 17 AS 1 I 1 Firing DNS action DNS NXDomain
192.168.20.10-61375 > 156.154.70.1-53 17 AS 1 I 1 Injecting NX domain reply.
192.168.20.10-61375 > 156.154.70.1-53 17 AS 1 I 1 DNS SI: Matched rule order 3, Id 5, si list id 1048620, action 22, reason 2048, SI Categories 1048620,0
192.168.20.10-61376 > 156.154.70.1-53 17 AS 1 I 0 DNS SI shared mem lookup returned 1 for cisco.com
192.168.20.10-61376 > 156.154.70.1-53 17 AS 1 I 0 Starting SrcZone first with intfs 1 -> 0, vlan 0
192.168.20.10-61376 > 156.154.70.1-53 17 AS 1 I 0 using rule order 1, id 1 action Allow
192.168.20.10-61376 > 156.154.70.1-53 17 AS 1 I 0 using rule order 2, id 3 action DNS NXDomain
192.168.20.10-61376 > 156.154.70.1-53 17 AS 1 I 0 using rule order 3, id 5 action DNS NXDomain
192.168.20.10-61376 > 156.154.70.1-53 17 AS 1 I 0 Got DNS list match. si list 1048620
192.168.20.10-61376 > 156.154.70.1-53 17 AS 1 I 0 Firing DNS action DNS NXDomain
192.168.20.10-61376 > 156.154.70.1-53 17 AS 1 I 0 Injecting NX domain reply.
192.168.20.10-61376 > 156.154.70.1-53 17 AS 1 I 0 DNS SI: Matched rule order 3, Id 5, si list id 1048620, action 22, reason 2048, SI Categories 1048620,0
```

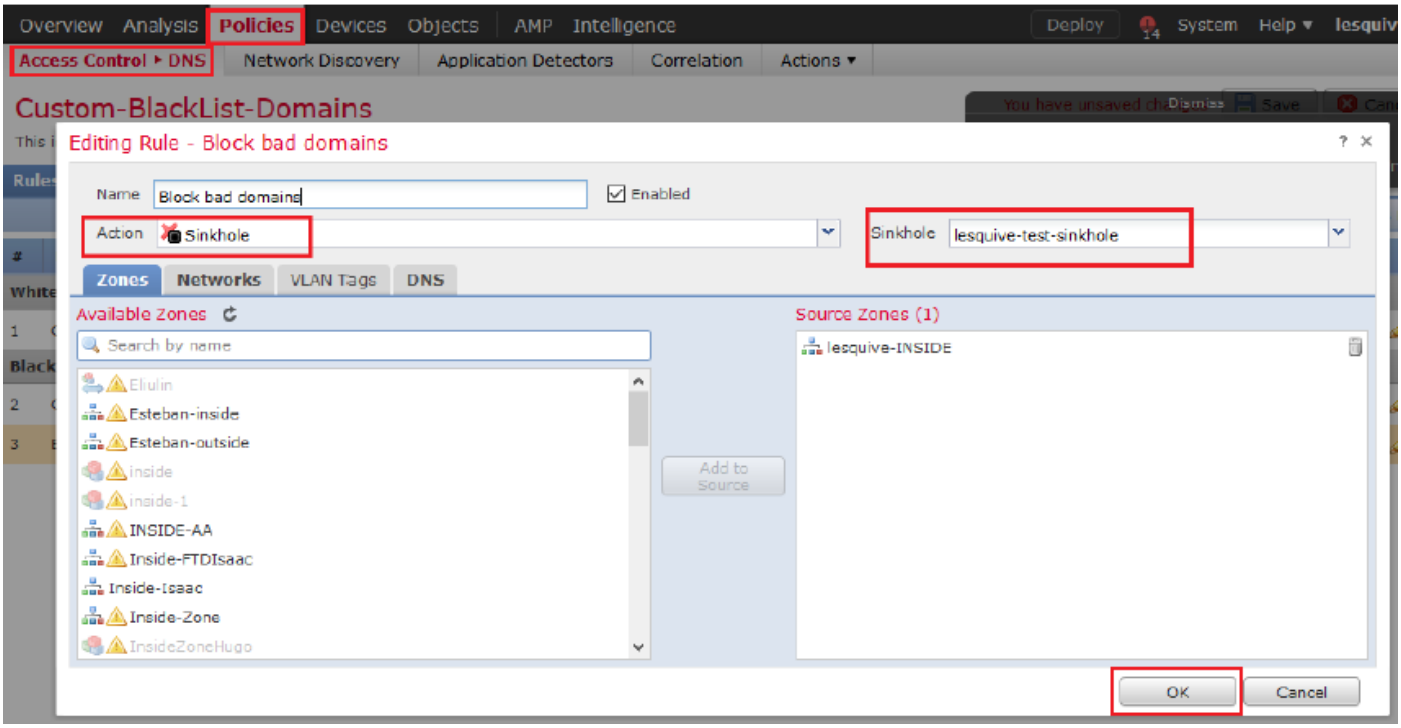
可选Sinkhole配置

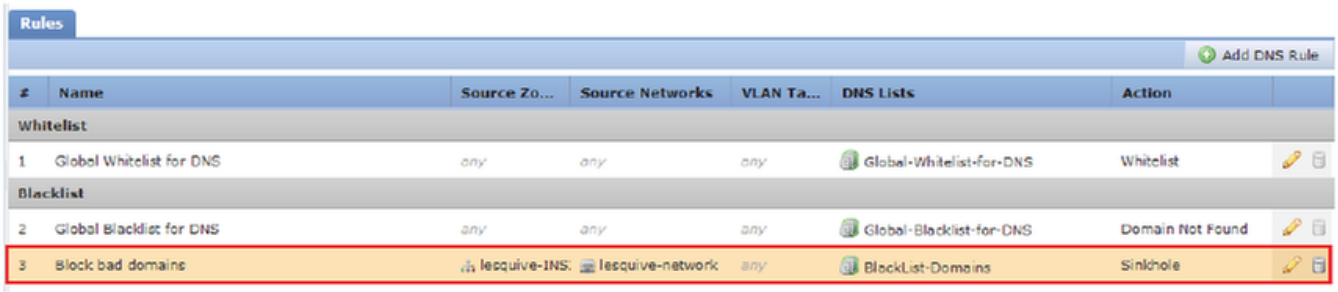
DNS信洞是提供虚假信息的DNS服务器。它不会返回“无此名称”DNS响应，而是返回虚假IP地址，以响应您所阻止的域的DNS查询。

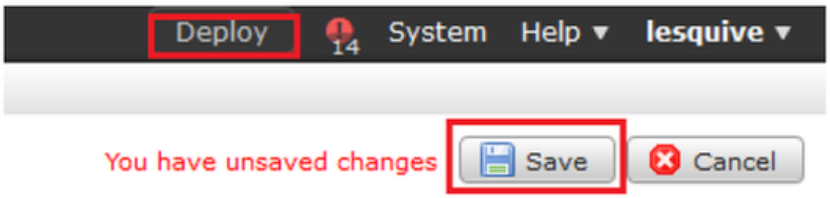
步骤1.导航至“对象”>>“对象管理”>>“Sinkhole”>>“添加Sinkhole”并创建虚假的IP地址信息。



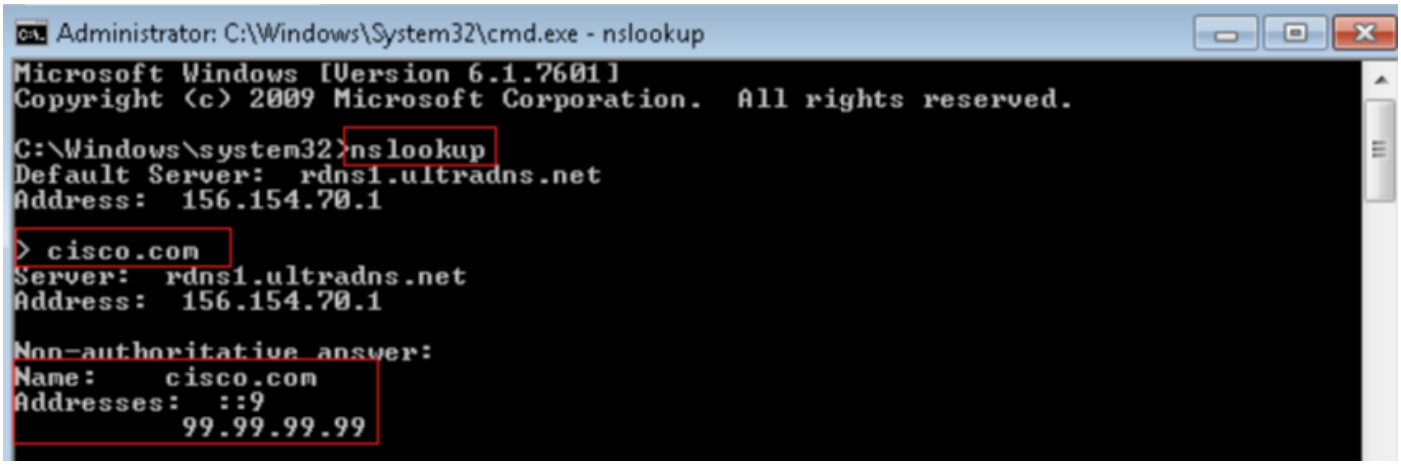
步骤2.将Sinkhole应用到DNS策略，并将更改部署到FTD。

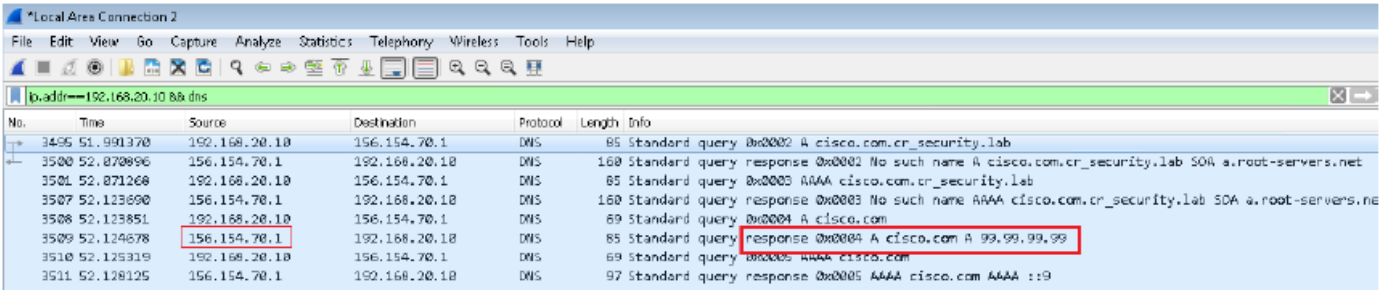






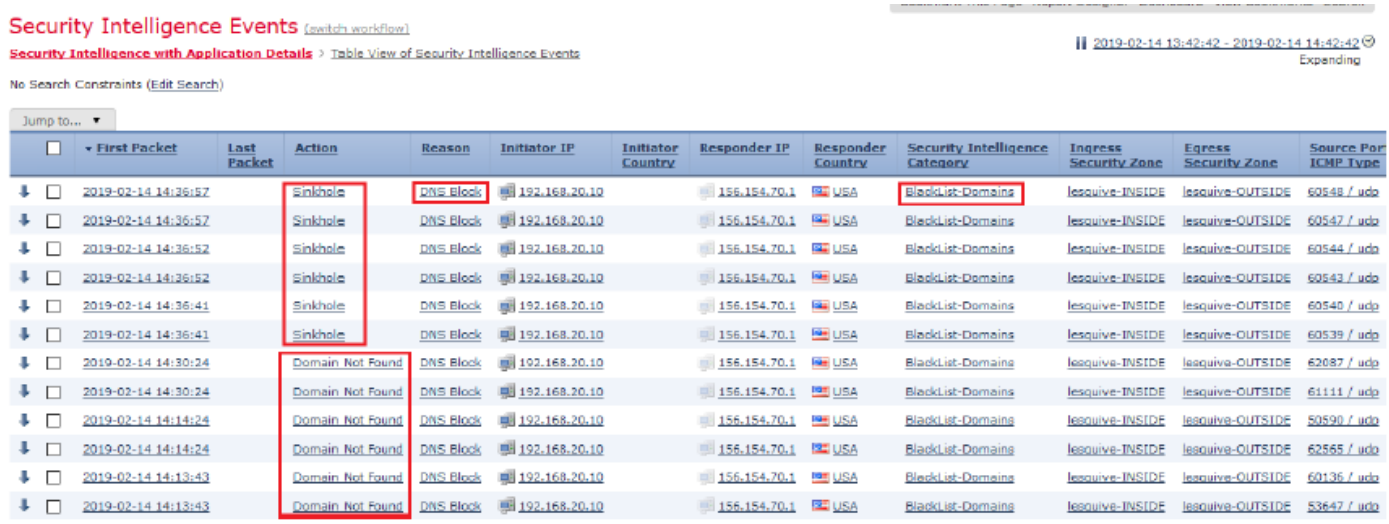
验证Sinkhole是否正常工作





故障排除

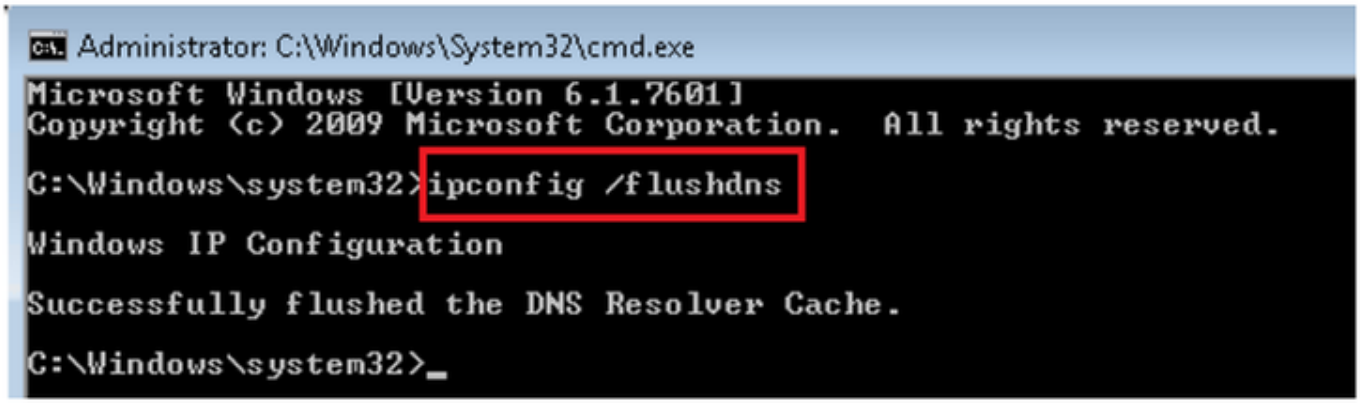
导航至Analysis >> Connections >> Security Intelligence Events，以跟踪SI触发的所有事件，只要您已在DNS策略中启用日志记录：



您还可以在**FMC管理的FTD上使**用system support firewall-engine-debug命令。

```
>
> system support firewall-engine-debug

Please specify an IP protocol: udp
Please specify a client IP address:
Please specify a client port:
Please specify a server IP address:
Please specify a server port:
Monitoring firewall engine debug messages
```

数据包捕获有助于确认DNS请求是否正在向FTD服务器发出。测试时，不要忘记清除本地主机上的缓存。


Administrator: C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.
C:\Windows\system32>ipconfig /flushdns
Windows IP Configuration
Successfully flushed the DNS Resolver Cache.
C:\Windows\system32>