排除Umbrella无线控制器(9800)集成故障

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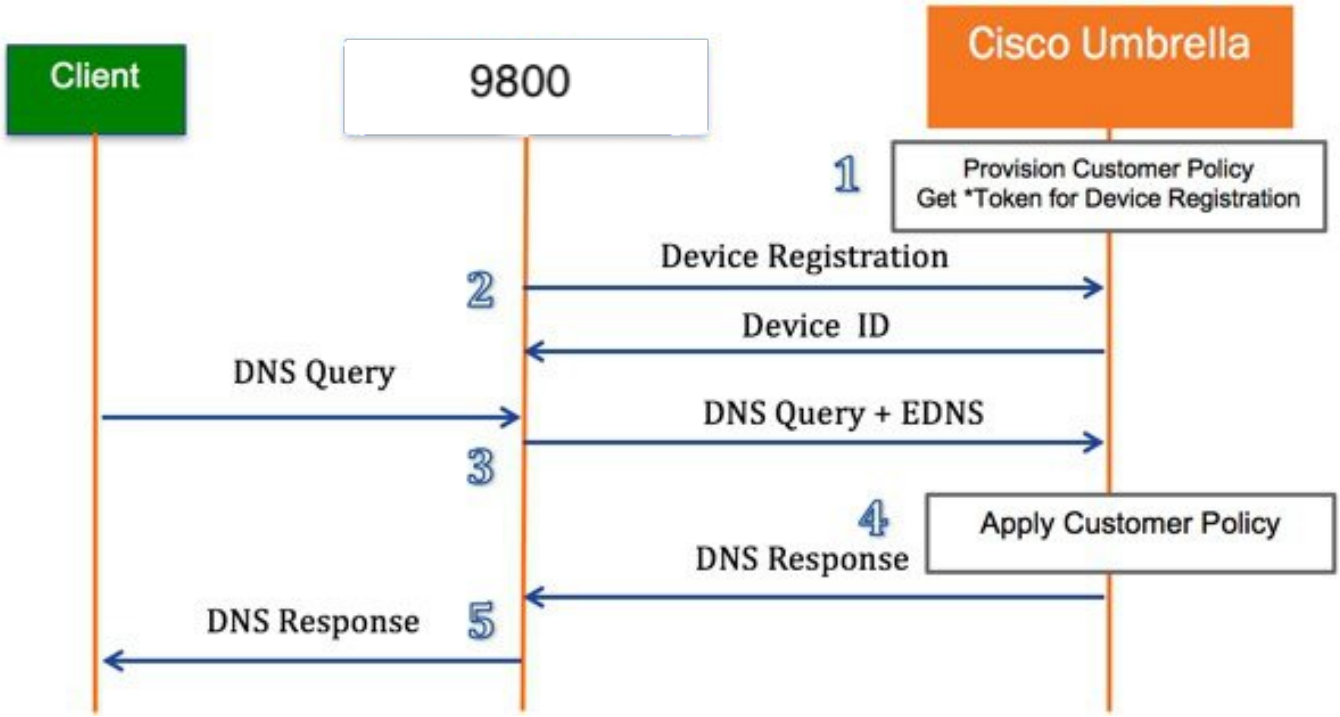
简介

本文档介绍如何对9800系列无线控制器与Umbrella的集成进行故障排除。

概述

本文是Cisco Catalyst 9200和Catalyst 9300交换机的延续，可作为对9800和Cisco Umbrella之间的注册问题和工作流程进行故障排除的指南。

Cisco Umbrella常规工作流程



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1. 向Cisco Umbrella服务器注册无线控制器是一个一次性过程，通过安全的HTTPS隧道进行。
2. 从Cisco Umbrella控制面板获取设备(9800)注册的API令牌。
3. 在9800上应用令牌。这会将设备注册到Cisco Umbrella帐户。接下来，在9800上创建Cisco Umbrella Profile。配置文件会自动推送到Cisco Umbrella，因为身份和策略是基于每个身份实施的。
4. 无线客户端流量流向Cisco Umbrella服务器。
5. 无线客户端向9800发送DNS请求。
6. 9800监听DNS数据包，并使用思科Umbrella配置文件对其进行标记。配置文件是也驻留在Cisco Umbrella上的数据包的身份。
7. 此EDNS数据包重定向到Cisco Umbrella云服务器进行名称解析。
8. 然后，Cisco Umbrella根据身份实施策略，并应用基于类别的过滤规则以确保组织合规。
9. 根据规则，它会将阻止的页面或已解析的IP地址返回给查询的DNS请求的客户端。

有关配置9800的详细步骤，请参阅安全配置指南。

注册和证书导入

1. 从Umbrella控制面板获取您的API令牌：Admin > API Keys >（创建）Legacy Network Devices。
2. 使用以下任一方法，通过CLI将CA证书导入9800:
   从URL导入
   发出命令并允许9800获取证书：

   ```
   crypto pki trustpool import url http://www.cisco.com/security/pki/trs/ios.p7b
   ```

   直接导入终端
   使用命令复制并粘贴CA证书（请参阅附件）：

   ```
   crypto pki trustpool import terminal
   ```

3. 使用命令将API令牌输入到9800 CLI:

   ```
   parameter-map type umbrella global
   token XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
   ```

验证Cisco Umbrella配置

要查看Cisco Umbrella配置详细信息，请使用此命令：

```
Device# show umbrella config



Umbrella Configuration
=======================
Token: 5XXXXXXABXXXXXFXXXXXXXXXDXXXXXXXXXXXABXX
API-KEY: NONE
OrganizationID: xxxxxxx
Local Domain Regex parameter-map name: dns_bypass
DNSCrypt:Enabled
Public-key: B735:1140:206F:225D:3E2B:D822:D7FD:691E:A1C3:3CC8:D666:8D0C:BE04:BFAB:CA43:FB79
UDP Timeout: 5 seconds
Resolver address:
1. 208.67.220.220
2. 208.67.222.222
3. 2620:119:53::53
4. 2620:119:35::35



ewc1#show umbrella deviceid detailed

Device registration details
1.global
     Tag : global
     Device-id : 010a2ed75e520fda
     Description : Device Id recieved successfully
     WAN interface : None



ewc1#show umbrella dnscrypt
   DNSCrypt: Enabled
   Public-key: B735:1140:206F:225D:3E2B:D822:D7FD:691E:A1C3:3CC8:D666:8D0C:BE04:BFAB:CA43:FB79
   Certificate Update Status:
        Last Successfull Attempt: 10:40:58 UTC Apr 8 2020
   Certificate Details:
       Certificate Magic     : DNSC
       Major Version         : 0x0001
       Minor Version         : 0x0000
       Query Magic           : 0x7163373861576F6F
       Serial Number         : 1574811744
       Start  Time           : 1574811744 (23:42:24 UTC Nov 26 2019)
       End Time              : 1606347744 (23:42:24 UTC Nov 25 2020)
       Server Public Key     : 88B4:E44B:35E9:64B4:90BD:DABA:E825:A24B:0415:A08B:E19D:7DDB:87A3:3CD7:7E

       Client Secret Key Hash: E323:7E82:C0C2:1F0C:55AE:1473:862D:6D26:9607:B41D:3F51:F587:9482:8709:40
       Client Public key     : 8D52:4D73:CF69:4890:F130:2845:4CBE:A9CA:87AF:4CDA:FE17:C626:2F8A:1780:CD

       NM key Hash           : FAAD:4C16:6DA3:D6F3:655D:FF98:36B7:73E7:9D1C:21F5:A0E3:A083:17D7:C308:52
```

调试和日志记录

要禁用DNSCrypt，请使用此命令：

```
parameter-map type umbrella global > no dnscrypt
```

您可能会看到以下错误："无法使用URL导入证书":

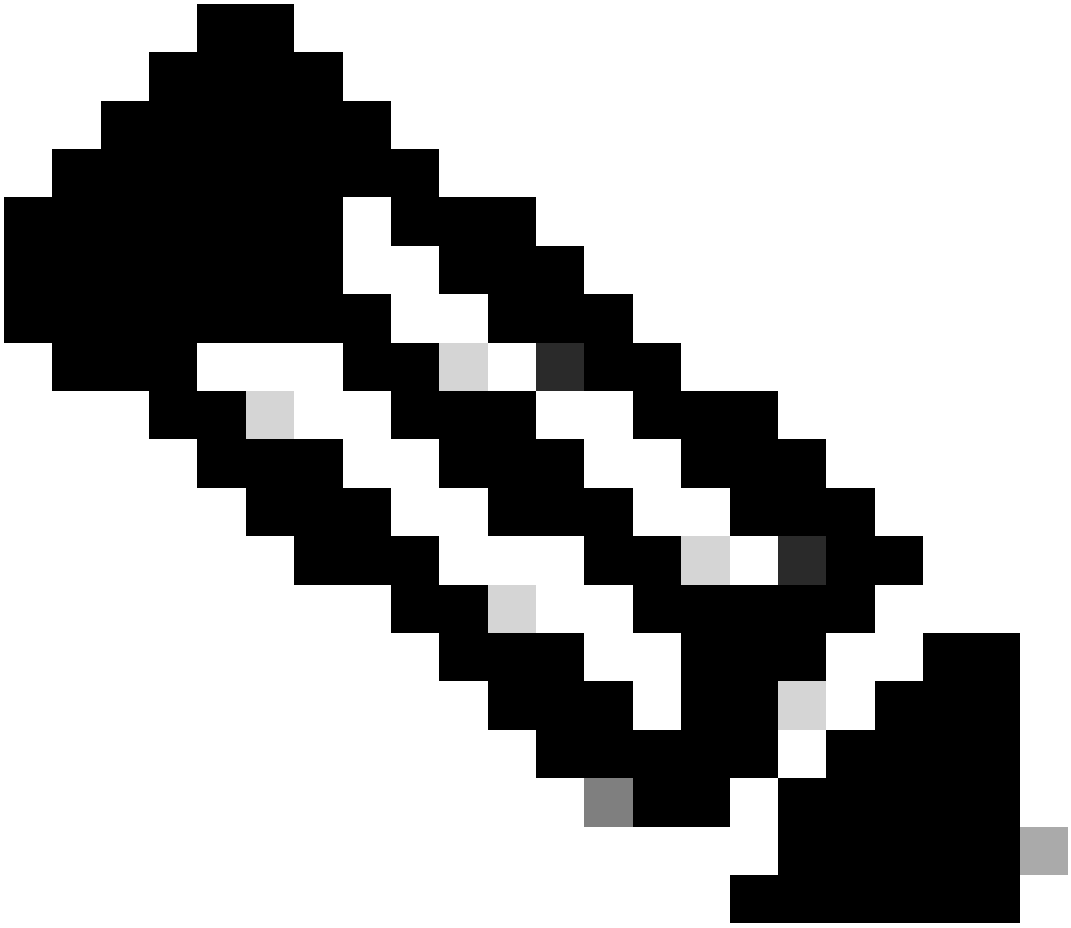
```
crypto pki trustpool import urlhttp://www.cisco.com/security/pki/trs/ios.p7b

% Error: failed to open file.

% No certificates imported fromhttp://www.cisco.com/security/pki/trs/ios.p7b.
```

解决方法：

从此位置手动复制和粘贴PEM格式的CA证书。

接下来，启用设备注册调试日志：

```
debug umbrella dnscrypt
debug umbrella device-registration
debug umbrella config
term monitor
```



注意：可能会出现多个9800可以分配相同设备ID的实例。对于虚拟9800（嵌入式无线控制器[WC]），会出现这种情况。

所有虚拟WC都具有相同的硬编码MAC地址："CC46D6CCCCCC"。

从eWC A调试示例：

<#root>

```
Nov 2 19:21:18.903 Central: UMBRELLA-DEV-REG:Device registration process start: umbrella parameter-map
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:Socket 0 event handler: event type = WRITE EVENT
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:Send POST request invoked
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:Get registration request info invoked
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:Get registration request info: Found new queued request fo
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:Send POST request for umbrella parameter-map global (tag:
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:Send POST request for umbrella parameter-map global (tag:
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:Send POST request for umbrella parameter-map global (tag:
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:
Nov 2 19:21:18.915 Central: Dev reg json buffer :{"model":"B77A8731C7F4D6E92C07D7DCB68961470000A553","ma
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:
```

```
Nov 2 19:21:18.915 Central: umbrella parameter-map name :global macAddr :cc46.d6cc.cccc
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:Build POST request invoked: post size = 238, size = 141
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:Build POST request: hostname = api.opendns.com
Nov 2 19:21:18.915 Central: UMBRELLA-DEV-REG:Build POST request: URI = /v3/networkdevices
Nov 2 19:21:18.916 Central: UMBRELLA-DEV-REG:Build POST request done
Nov 2 19:21:18.916 Central: UMBRELLA-DEV-REG:Send POST request for umbrella parameter-map global (tag: 
Nov 2 19:21:18.916 Central: UMBRELLA-DEV-REG:Send POST request for umbrella parameter-map global (tag: 
Host: api.opendns.com
Authorization:OpenDNS,api_key="B0E16D19C32D42EC996B635X4X9005B9",token="B77A8731C7F4D6E92C07D7DCB689614
Content-Type: application/json
Content-Length: 141

{"model":"B77A7561C7F4ABC92C07D7DCB68961470000A553","macAddress":"CC46D6CCCCCC","label":"global","tag":
---------------------------------------<OUTPUT OMITTED>---------------------------------------
Nov 2 19:21:23.553 Central: UMBRELLA-DEV-REG:Registration response: msg_part = 3, bytes = 256, resp: co
x-envoy-upstream-service-time: 1462
x-xss-protection: 1; mode=block
x-ingress-point: mil1

{"
```

deviceId":"010a7859d0d39393"

```
,"deviceKey":"B77A8731C7F4D6E92C07D7DCB68961470000A553-CC46D6CCCCCC-global","label":"global","seria
Nov 2 19:21:23.553 Central: UMBRELLA-DEV-REG:Registration response: msg_part = 4, bytes = 1
78, resp: lNumber":"9KZNYR9FPPQ","phishing":1,"createdAt":1635877282,"originId":xxxxxxxx,"
apiKey":"b0e16d19c32d42ec996b635x4x9005b9","deviceTypeId":1,"vendorId":51,"organizationId":xxxxx}
```

从eWC B调试示例：

<#root>

```
Nov 2 19:21:41.909 Central: UMBRELLA-DEV-REG:Device registration process start: umbrella parameter-map 
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Socket 0 event handler: event type = WRITE EVENT
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Send POST request invoked
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Get registration request info invoked
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Get registration request info: Found new queued request fo
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Send POST request for umbrella parameter-map global (tag: 
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Send POST request for umbrella parameter-map global (tag: 
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Send POST request for umbrella parameter-map global (tag: 
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:
Nov 2 19:21:41.919 Central: Dev reg json buffer :{"model":"B77A7561C7F4ABC92C07D7DCB68961470000A553","ma
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:
Nov 2 19:21:41.919 Central: umbrella parameter-map name :global macAddr :cc46.d6cc.cccc
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Build POST request invoked: post size = 238, size = 141
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Build POST request: hostname = api.opendns.com
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Build POST request: URI = /v3/networkdevices
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Build POST request done
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Send POST request for umbrella parameter-map global (tag: 
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Send POST request for umbrella parameter-map global (tag: 
Host: api.opendns.com
Authorization:OpenDNS,api_key="B0E16D19C32D42EC996B635X4X9005B9",token="B77A8731C7F4D6E92C07D7DCB689614
Content-Type: application/json
Content-Length: 141

{"model":"B77A8731C7F4D6E92C07D7DCB68961470000A553","macAddress":"CC46D6CCCCCC","label":"global","tag":
---------------------------------------<OUTPUT OMITTED>---------------------------------------
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Registration response: msg_part = 3, bytes = 256, resp: co
```

```
x-envoy-upstream-service-time: 1462
x-xss-protection: 1; mode=block
x-ingress-point: mil1

{"

deviceId":"010a7859d0d39393"

,"deviceKey":"B77A8731C7F4D6E92C07D7DCB68961470000A553-CC46D6CCCCCC-global","label":"global","serialNum
Nov 2 19:21:41.919 Central: UMBRELLA-DEV-REG:Registration response: msg_part = 4, bytes = 1
78, resp: lNumber":"9KZNYR9FPPQ","phishing":1,"createdAt":1635877282,"originId":573529511,"
apiKey":"b0e16d19c32d42ec996b635x4x9005b9","deviceTypeId":1,"vendorId":51,"organizationId":xxxxx}
```

此处，POST请求包含API令牌（来自Cisco Umbrella控制面板的传统设备API令牌）、API密钥、型号（与API令牌相同）、无线LAN控制器(WLC)的MAC地址、参数映射名称（标记）和设备序列号。

设备ID使用API令牌、API密钥、标记和MAC地址生成。因为这两个9800具有相同的上述值，所以为它们分配相同的设备ID。

这是预料之中的行为。要解决此问题，您必须在9800的一个或两个上创建自定义参数映射;

```
parameter-map type umbrella <custom name>
```

通过创建自定义参数映射“cpm”，我们将创建一个新标记，该标记将产生不同的设备ID(deviceId)。

```
<#root>

{

"deviceId":"010a30f6275c92ce"

,"deviceKey":"0DCDA24CDD6A92D714FE357539FDCAE80051BA0A-DD46D6BBCCCC-global","label":"global","serialNum

{

"deviceId":"010a341b037ea6b9"

,"deviceKey":"0DCDA24CDD6A92D714FE357539FDCAE80051BA0A-DD46D6BBCCCC-cpm","label":"global","serialNumber
```

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