在无线局域网控制器中配置验证和排除有线访客故障

目录

简介

本文档介绍如何在9800和IRCM中使用外部Web身份验证配置、验证和排除有线访客接入故障。

先决条件

要求

Cisco 建议您了解以下主题：

9800 WLC

AireOS WLC

移动隧道

ISE

假设在配置有线访客接入之前，已在两个WLC之间建立移动隧道。

这方面的内容不在本配置示例的范围之内。有关详细说明，请参阅附件标题为[在9800上配置移动拓扑]的文档

使用的组件

9800 WLC版本17.12.1

5520 WLC版本8.10.185.0

ISE版本3.1.0.518

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。

在锚定到另一个catalyst 9800的catalyst 9800上配置有线访客

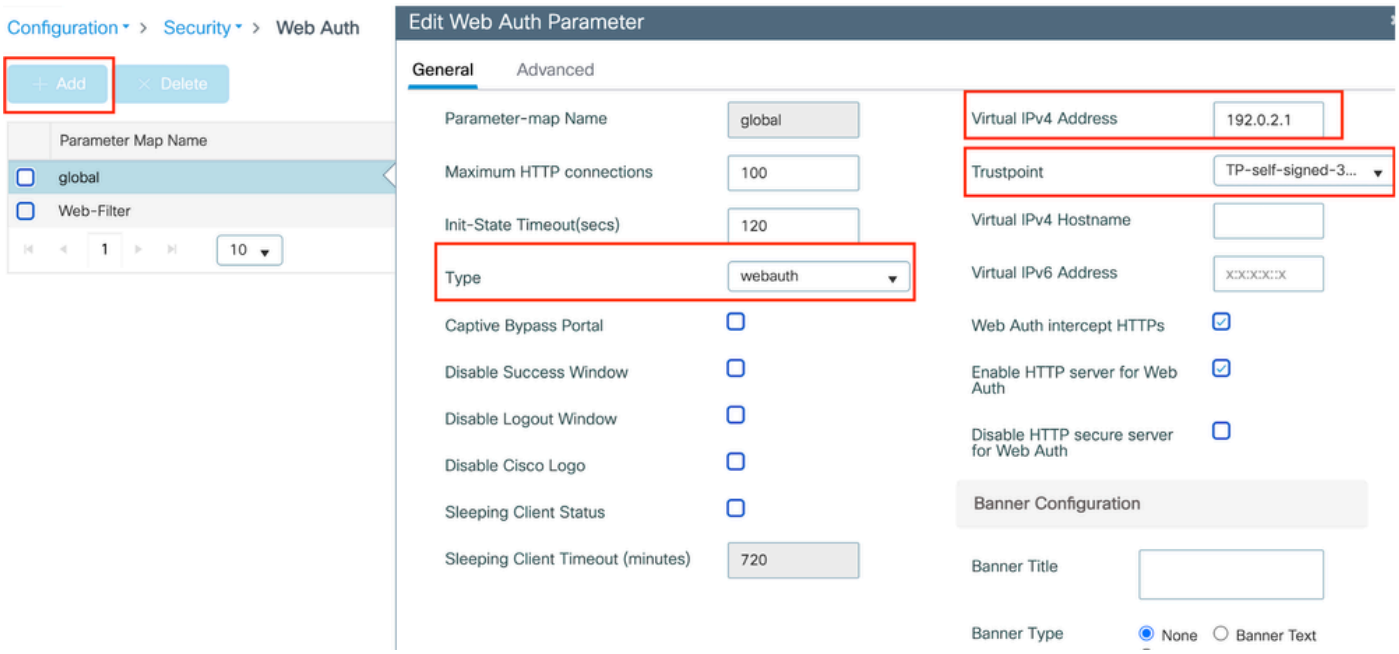
网络图

网络拓扑

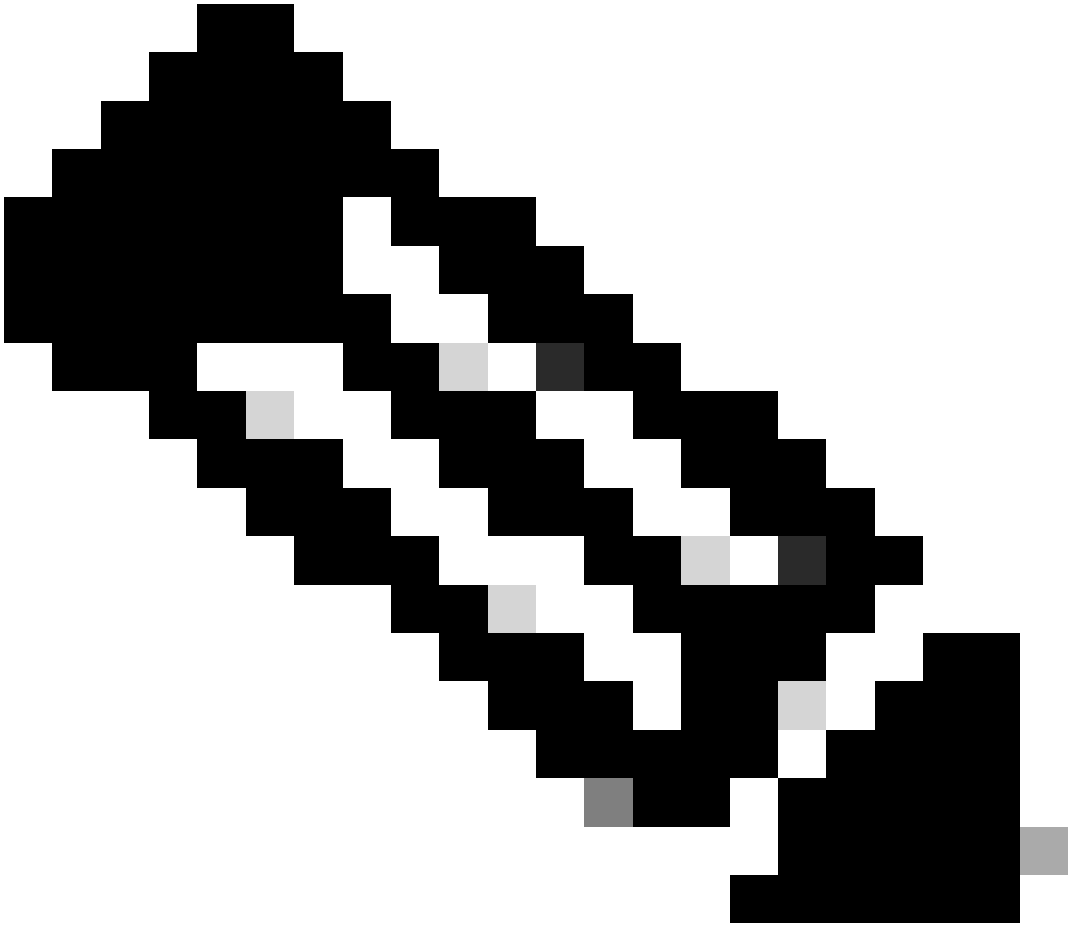
外部9800 WLC上的配置

配置Web参数映射

第1步：导航到配置>安全> Web身份验证，选择全局，验证控制器的虚拟IP地址和信任点映射，并确保将类型设置为webauth。

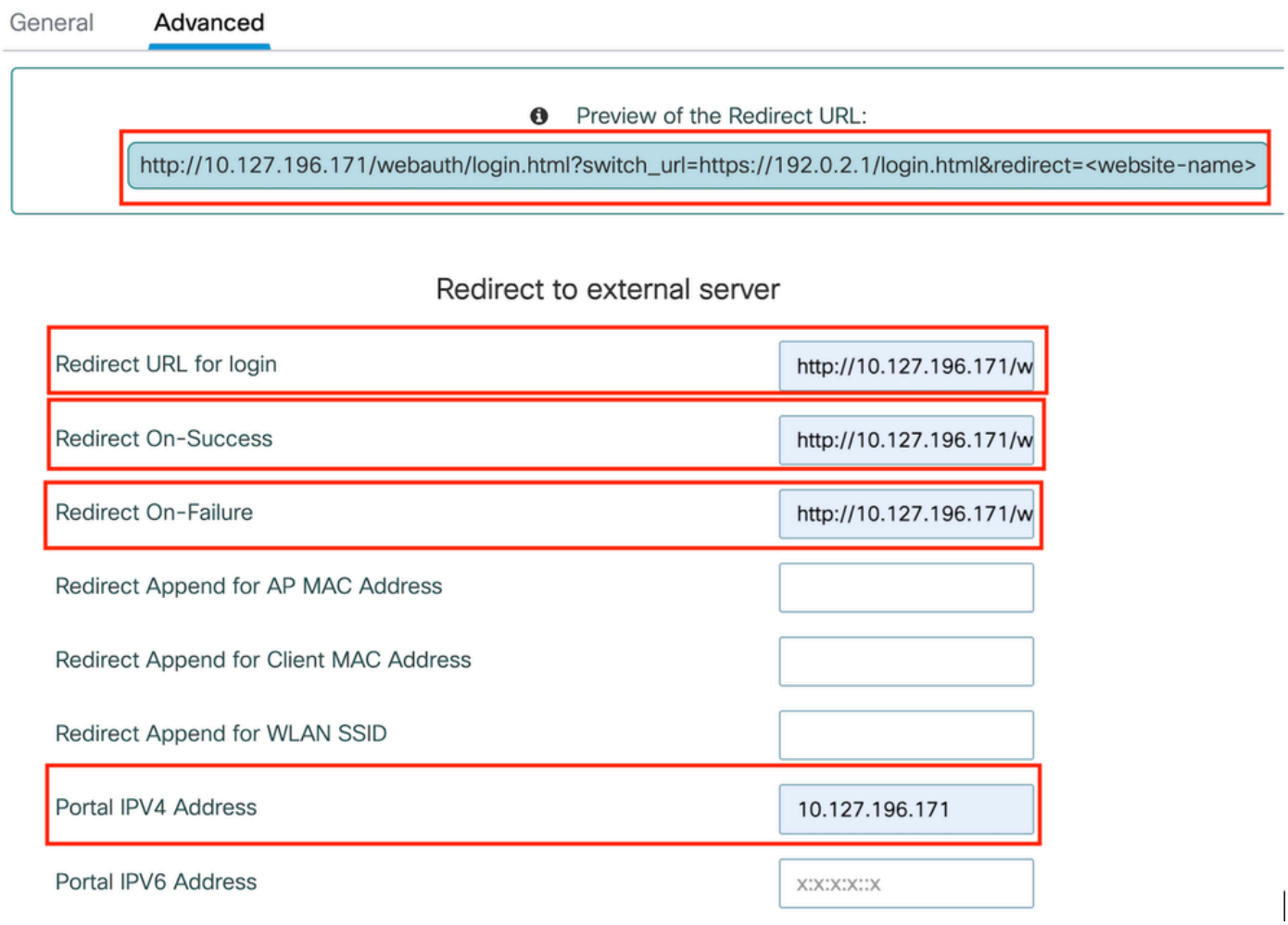


全局参数映射



注意：Web Auth intercept HTTPs是一个可选设置。如果需要HTTPS重定向，则必须启用Web Auth intercept HTTPS选项。但是，不建议使用此配置，因为它会增加CPU使用率。

第2步：在高级选项卡下，配置客户端重定向的外部网页URL。设置“Redirect URL for Login”和“Redirect On-Failure”；“Redirect On-Success”是可选的。配置后，重定向URL的预览显示在网络身份验证配置文件中。



Advanced选项卡

CLI 配置

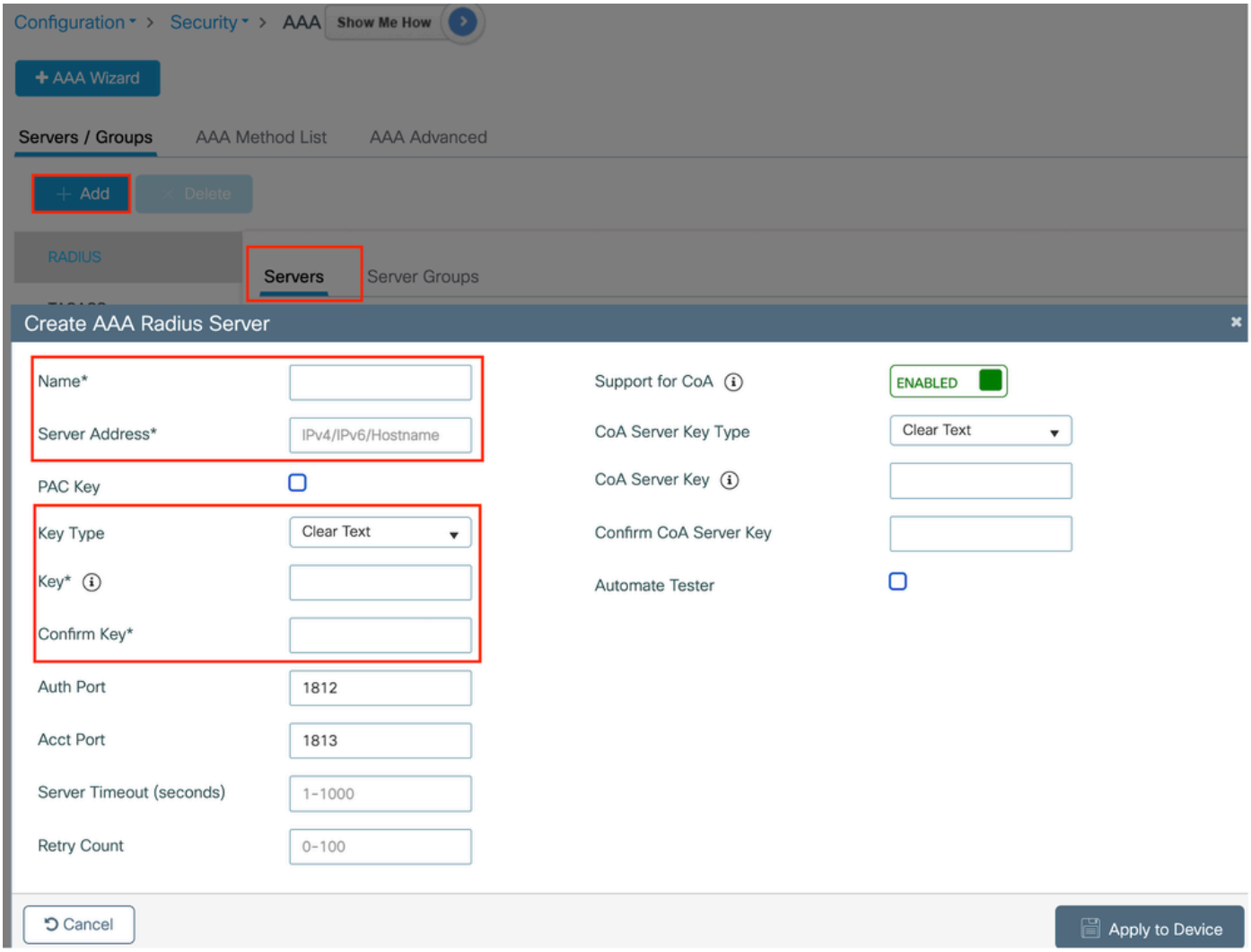
```
parameter-map type webauth global
 type webauth
 virtual-ip ipv4 192.0.2.1
 redirect for-login http://10.127.196.171/webauth/login.html
 redirect on-success http://10.127.196.171/webauth/logout.html
 redirect on-failure http://10.127.196.171/webauth/failed.html
 redirect portal ipv4 10.127.196.171
 intercept-https-enable
 trustpoint TP-self-signed-3915430211
 webauth-http-enable
```

注意：在此方案中，使用全局参数映射。根据要求，通过选择Add配置自定义Web参数映射，并在Advanced选项卡下设置重定向URL。信任点和虚拟IP设置从全局配置文件继承。

AAA设置：

第1步：创建Radius服务器：

导航到Configuration > Security > AAA，单击“Server/Group”部分下的“Add”，然后在“Create AAA Radius Server”页上输入服务器名称、IP地址和共享密钥。

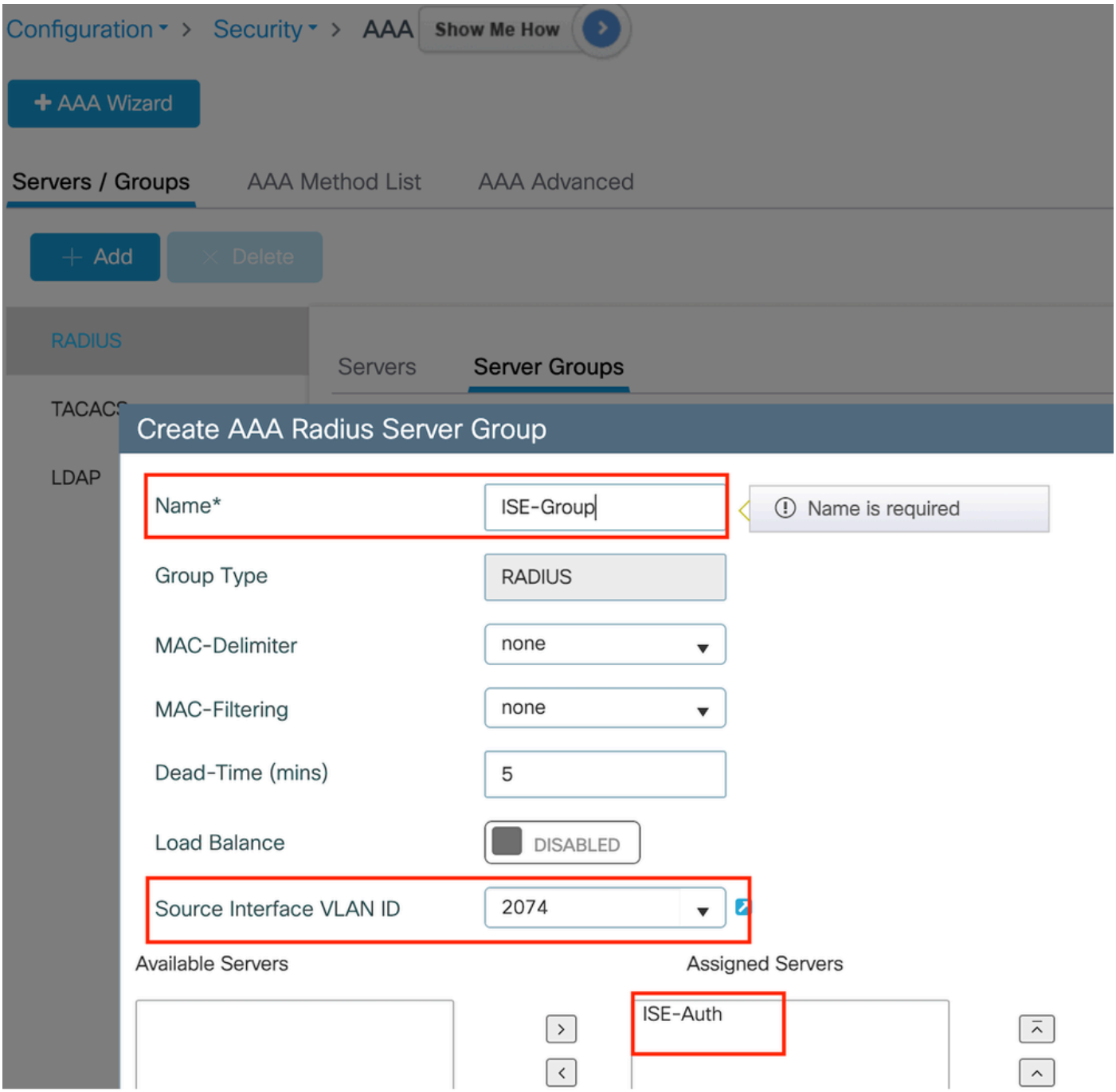


RADIUS 服务器配置

CLI 配置

```
radius server ISE-Auth
 address ipv4 10.197.224.122 auth-port 1812 acct-port 1813
 key *****
 server name ISE-Auth
```

第2步：创建RADIUS服务器组：
在Server Groups部分下选择Add以定义服务器组，并切换要包含在组配置中的服务器。



Radius服务器组

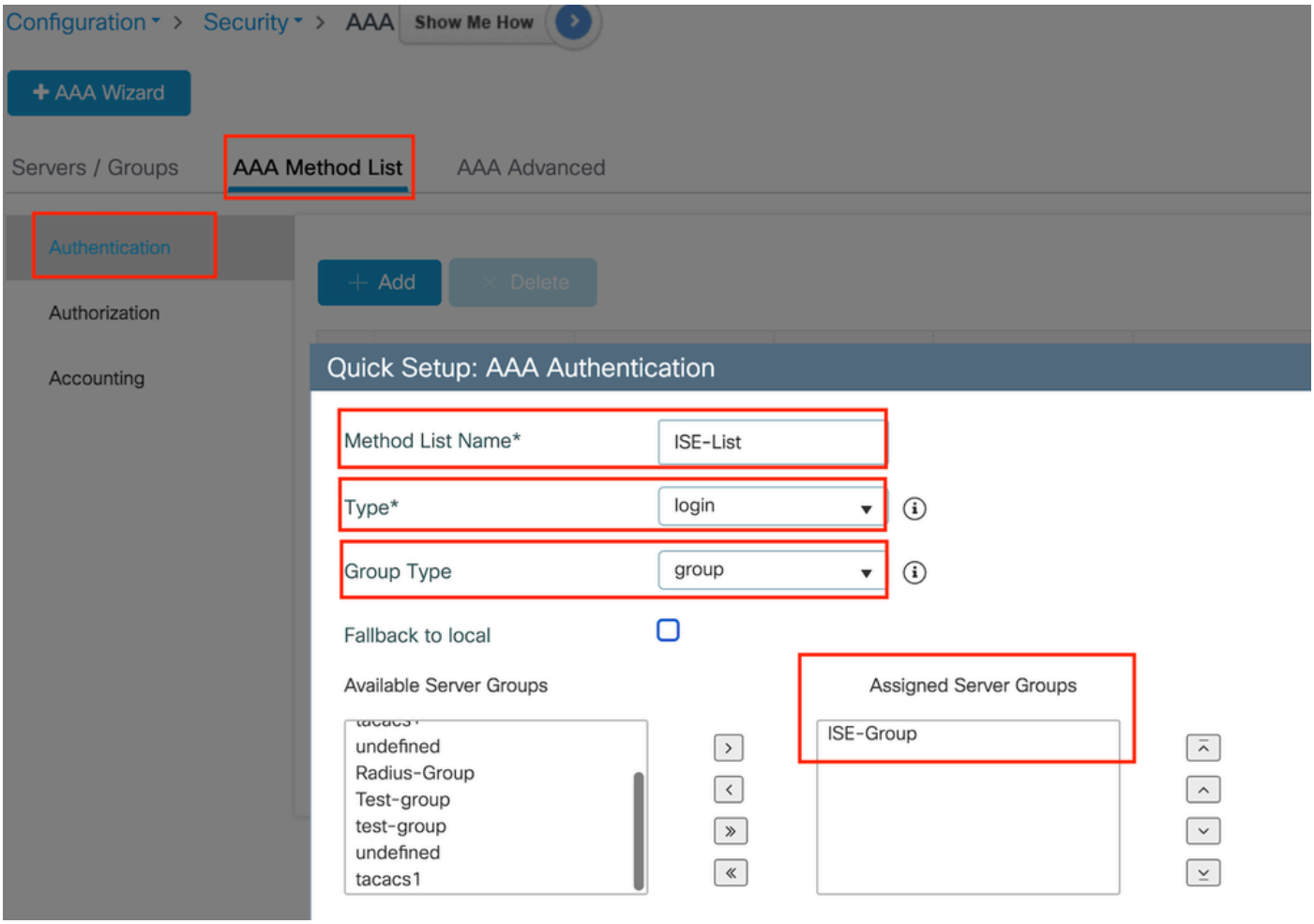
CLI 配置

```
aaa group server radius ISE-Group
 server name ISE-Auth
 ip radius source-interface Vlan2074
 deadtime 5
```

第3步：配置AAA方法列表：

导航到AAA Method List选项卡，选择Authentication下的Add，定义Type为“login”且Group type为

“Group”的方法列表名称，并在Assigned Server Group部分下映射配置的身份验证服务器组。



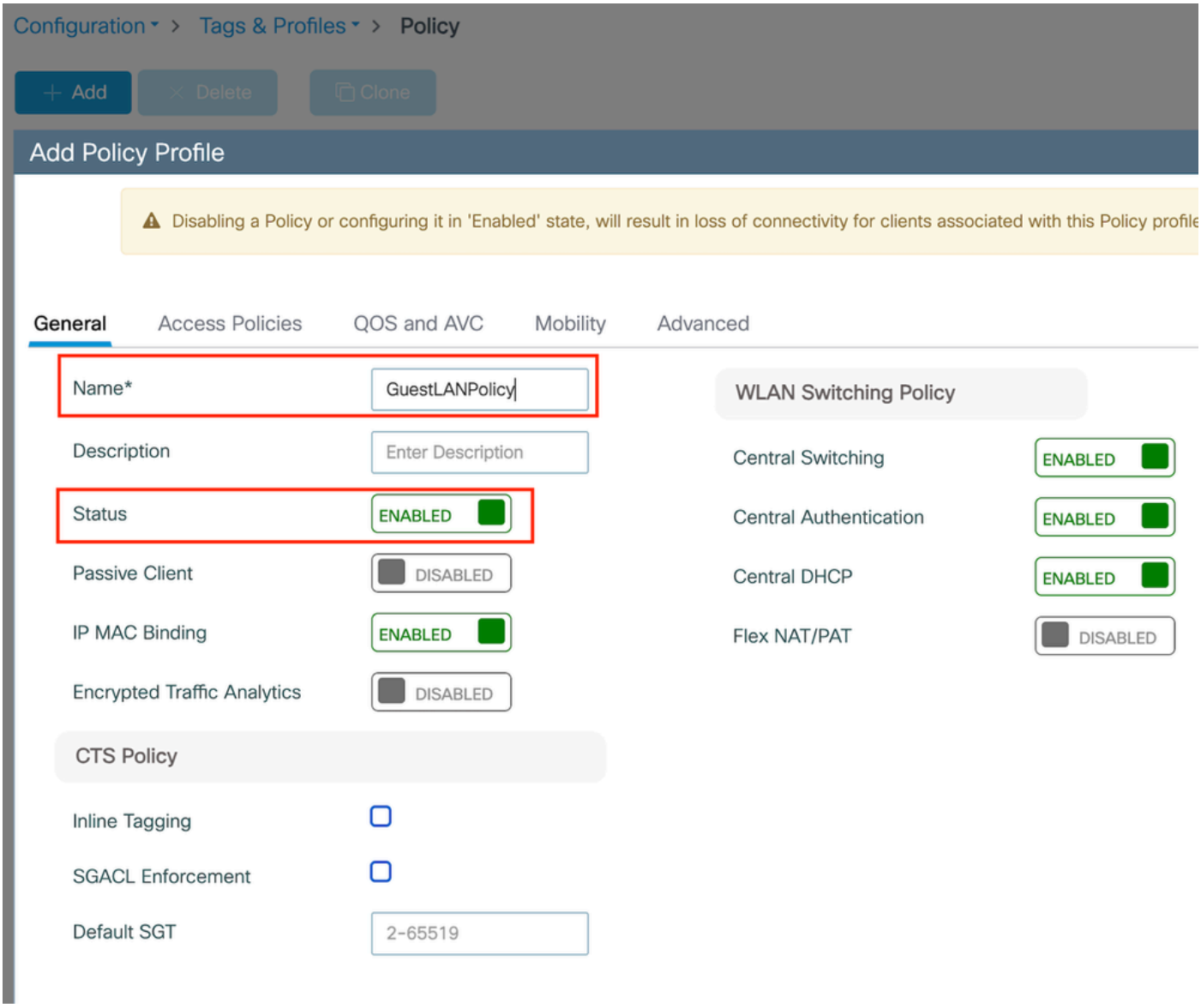
身份验证方法列表

CLI 配置

```
aaa authentication login ISE-List group ISE-Group
```

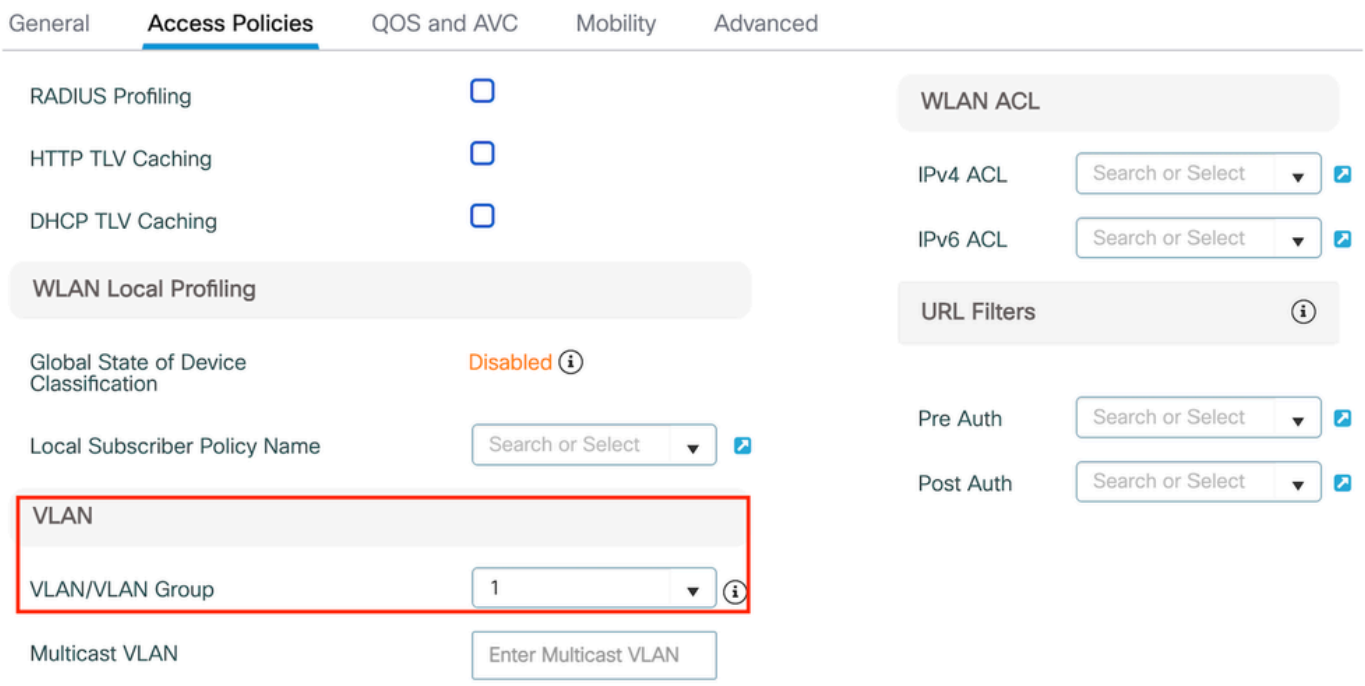
配置策略配置文件

第1步：导航到配置>标签和配置文件>策略，在常规选项卡中命名您的新配置文件，并使用状态切换功能启用它。



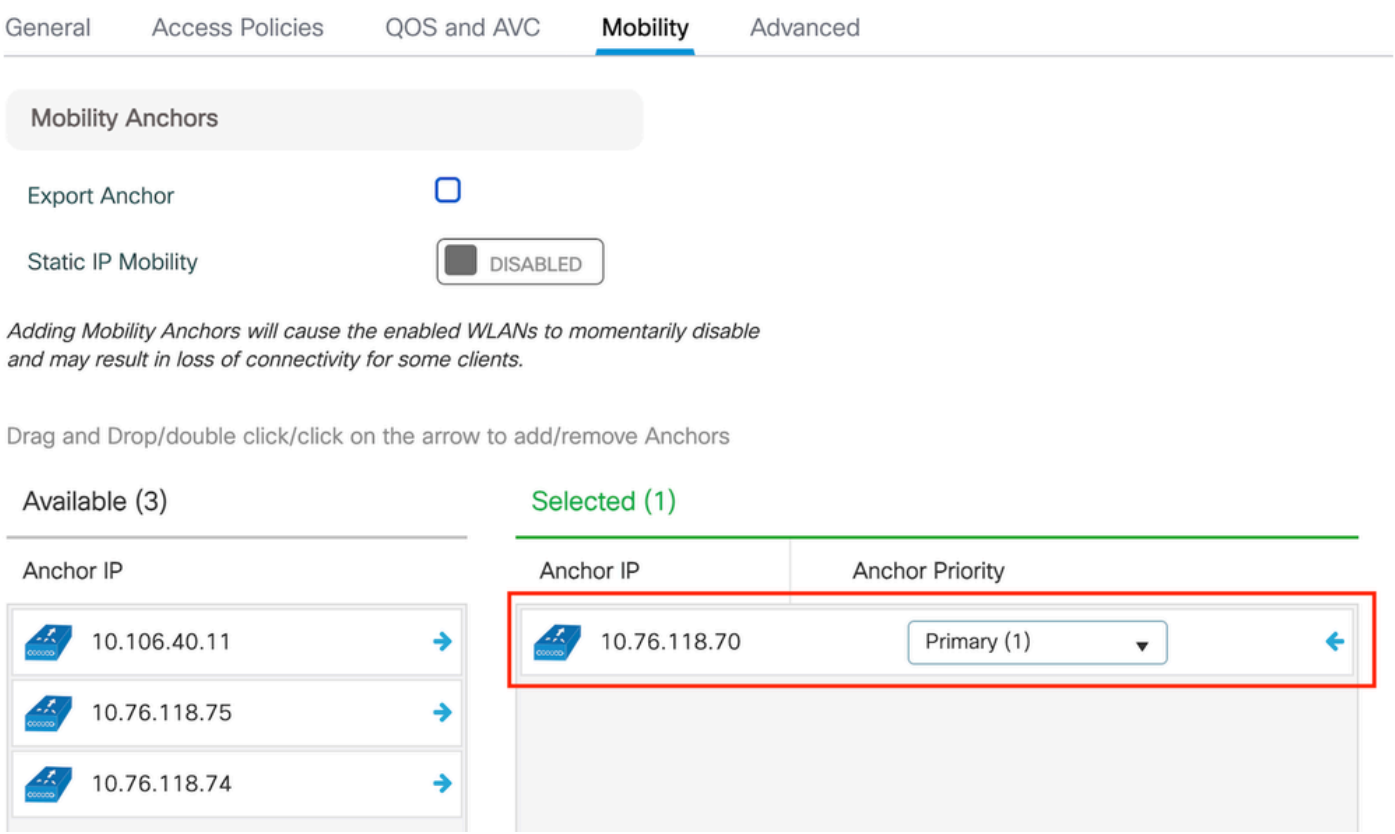
策略配置文件

第2步：在访问策略选项卡下，在锚点控制器上完成vlan映射时分配随机vlan。在本例中，配置了vlan 1



Access Policy选项卡

第3步：在移动选项卡下，将锚点控制器切换到主(1)，并根据冗余要求选择配置辅助和第三移动隧道



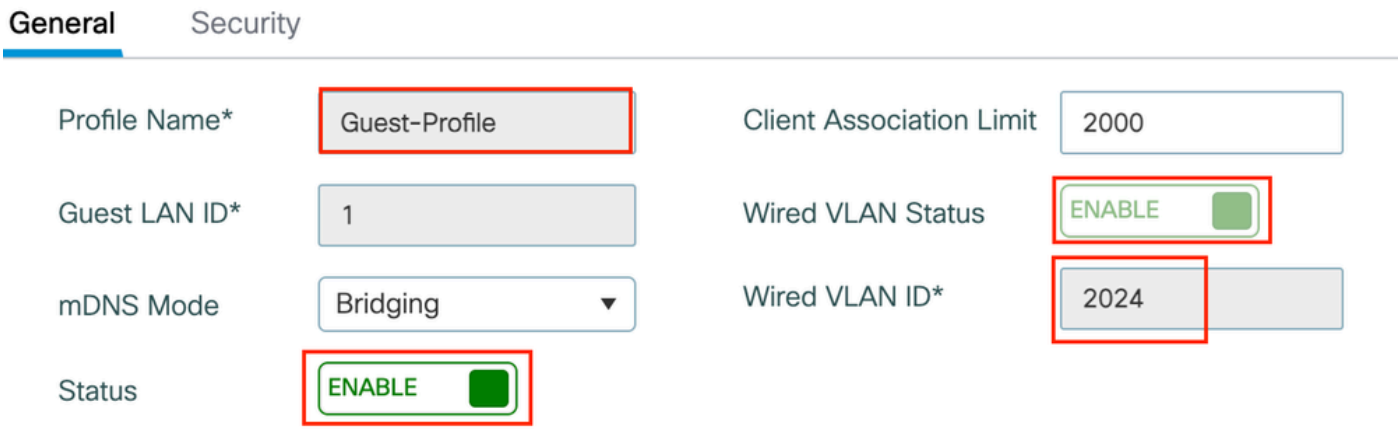
移动映射

CLI 配置

```
wireless profile policy GuestLANPolicy
 mobility anchor 10.76.118.70 priority 1
 no shutdown
```

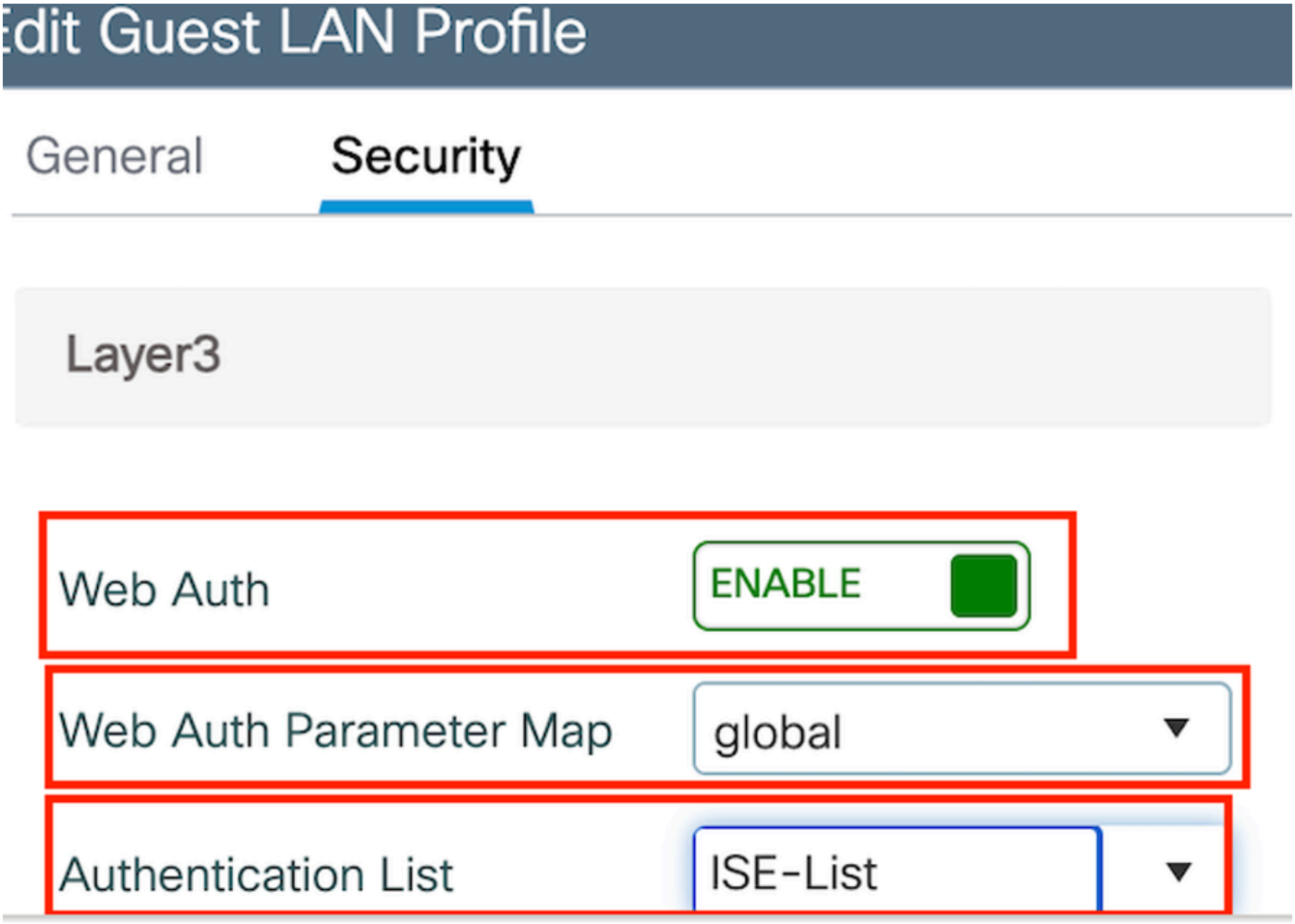
配置访客LAN配置文件

第1步：导航到配置>无线>访客LAN，选择添加，配置唯一的配置文件名称，启用有线VLAN，输入有线访客用户的VLAN ID，并将配置文件状态切换到启用。



访客LAN配置文件

第2步：在“安全”(Security)选项卡下，启用网络身份验证，映射网络身份验证参数映射，然后从“身份验证”(Authentication)下拉列表中选择RADIUS服务器。



访客LAN安全选项卡

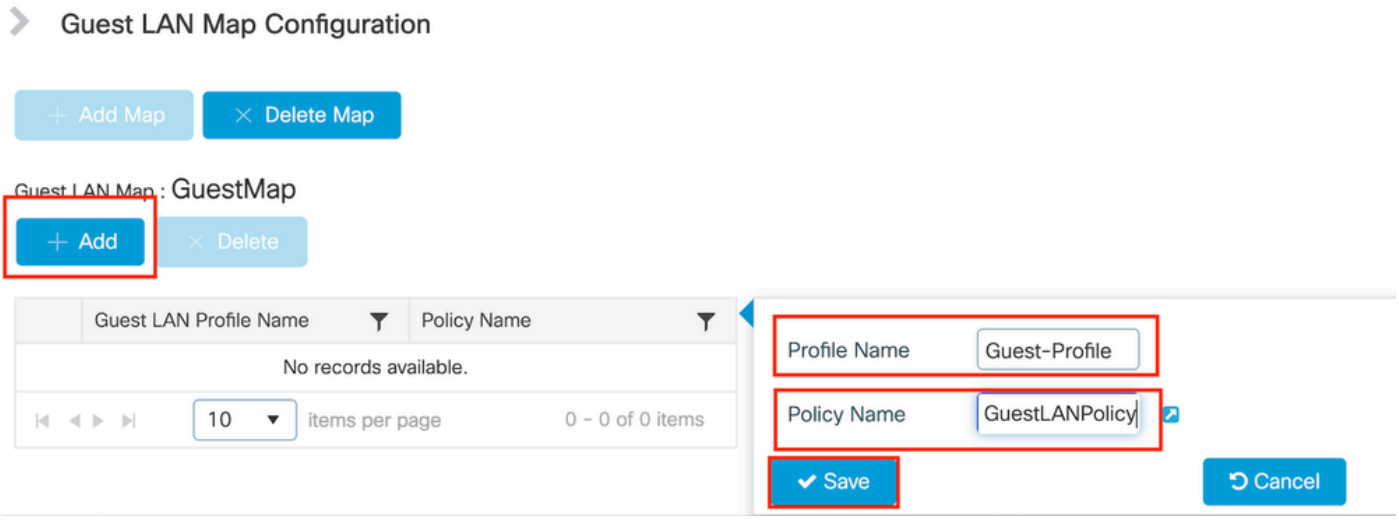
CLI 配置

```
guest-lan profile-name Guest-Profile 1 wired-vlan 2024
 security web-auth authentication-list ISE-List
 security web-auth parameter-map global
```

访客LAN映射

导航到Configuration > Wireless > Guest LAN。

在访客LAN映射配置部分下，选择添加并映射策略配置文件和访客LAN配置文件



访客LAN映射

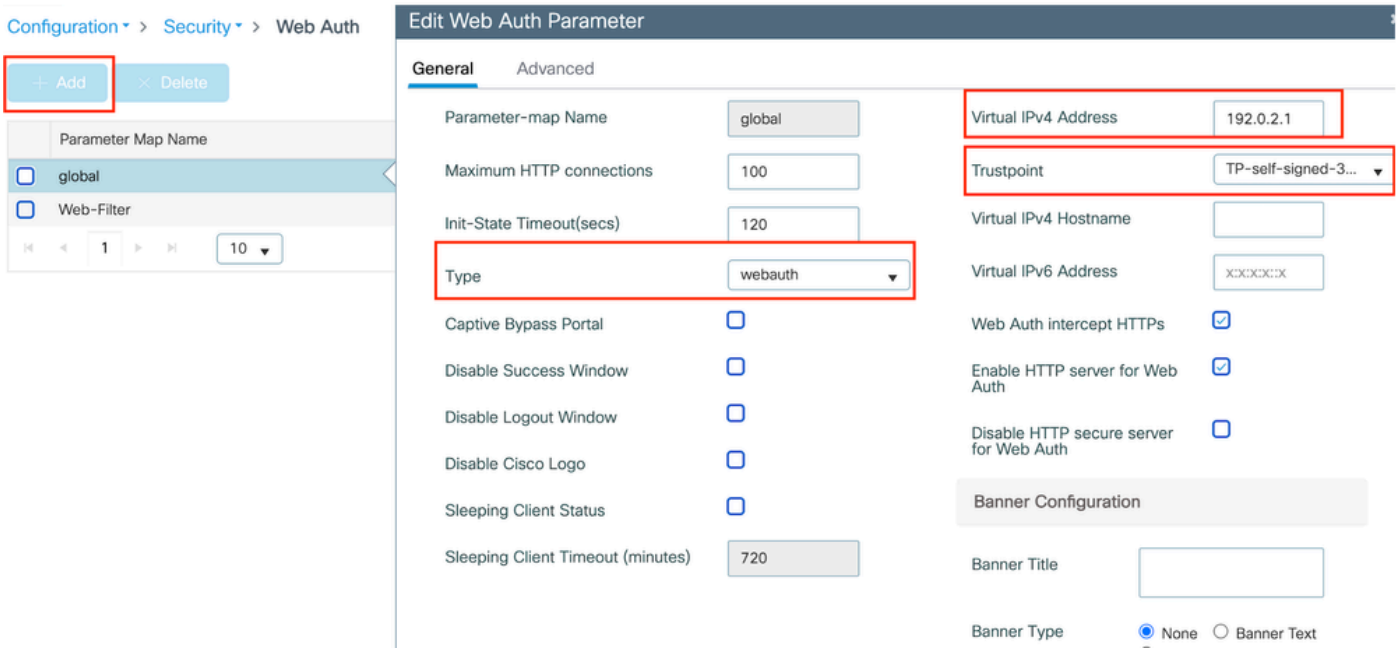
CLI 配置

```
wireless guest-lan map GuestMap
guest-lan Guest-Profile policy GuestLANPolicy
```

锚点9800 WLC上的配置

配置Web参数映射

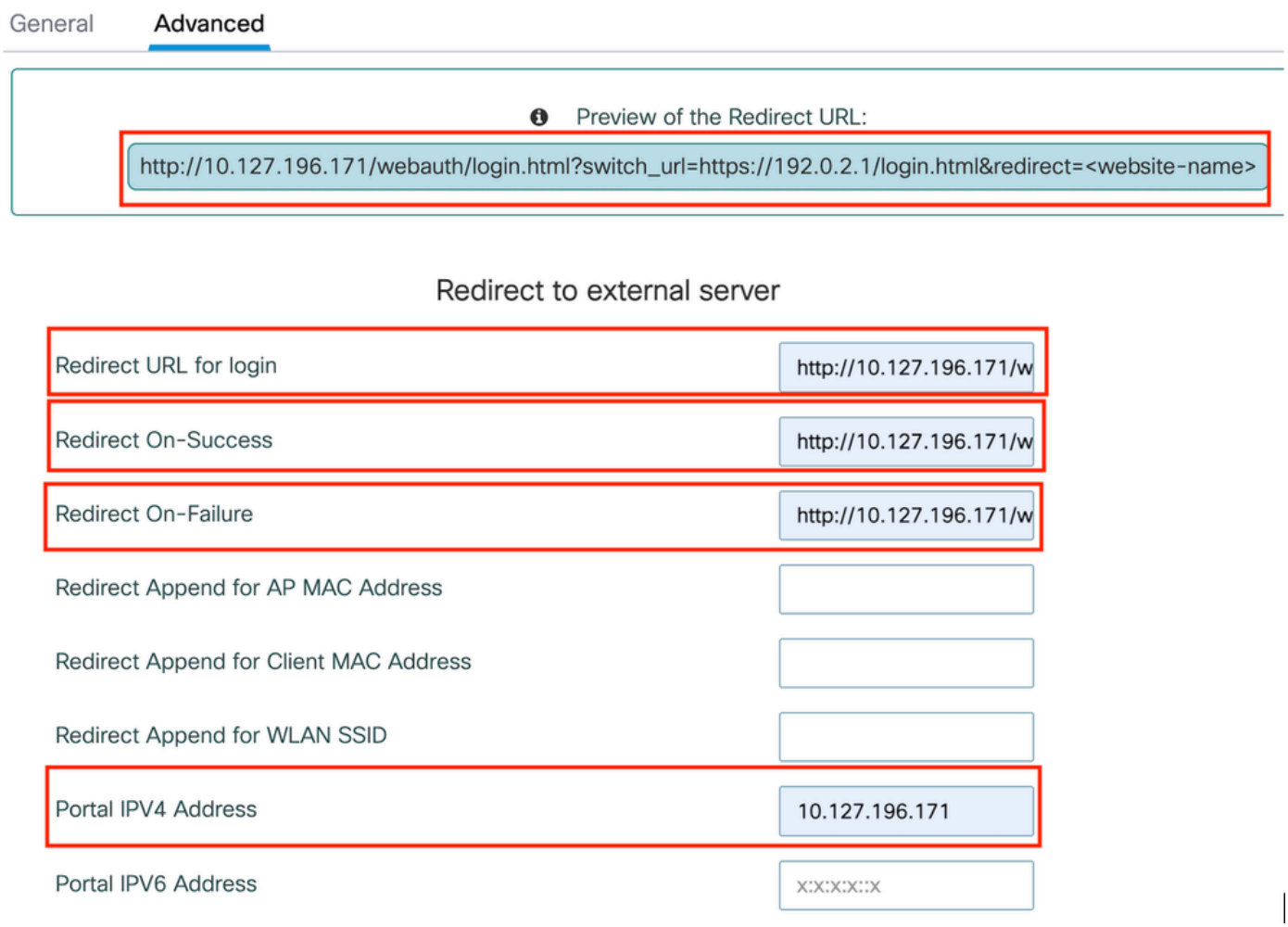
第1步：导航到配置>安全> Web身份验证，选择全局，验证控制器的虚拟IP地址和信任点映射，并确保将类型设置为webauth。



全局参数映射

第2步：在高级选项卡下，配置客户端重定向的外部网页URL。设置“Redirect URL for Login”和“Redirect On-Failure”；“Redirect On-Success”是可选的。

配置后，重定向URL的预览显示在网络身份验证配置文件中。



Advanced选项卡

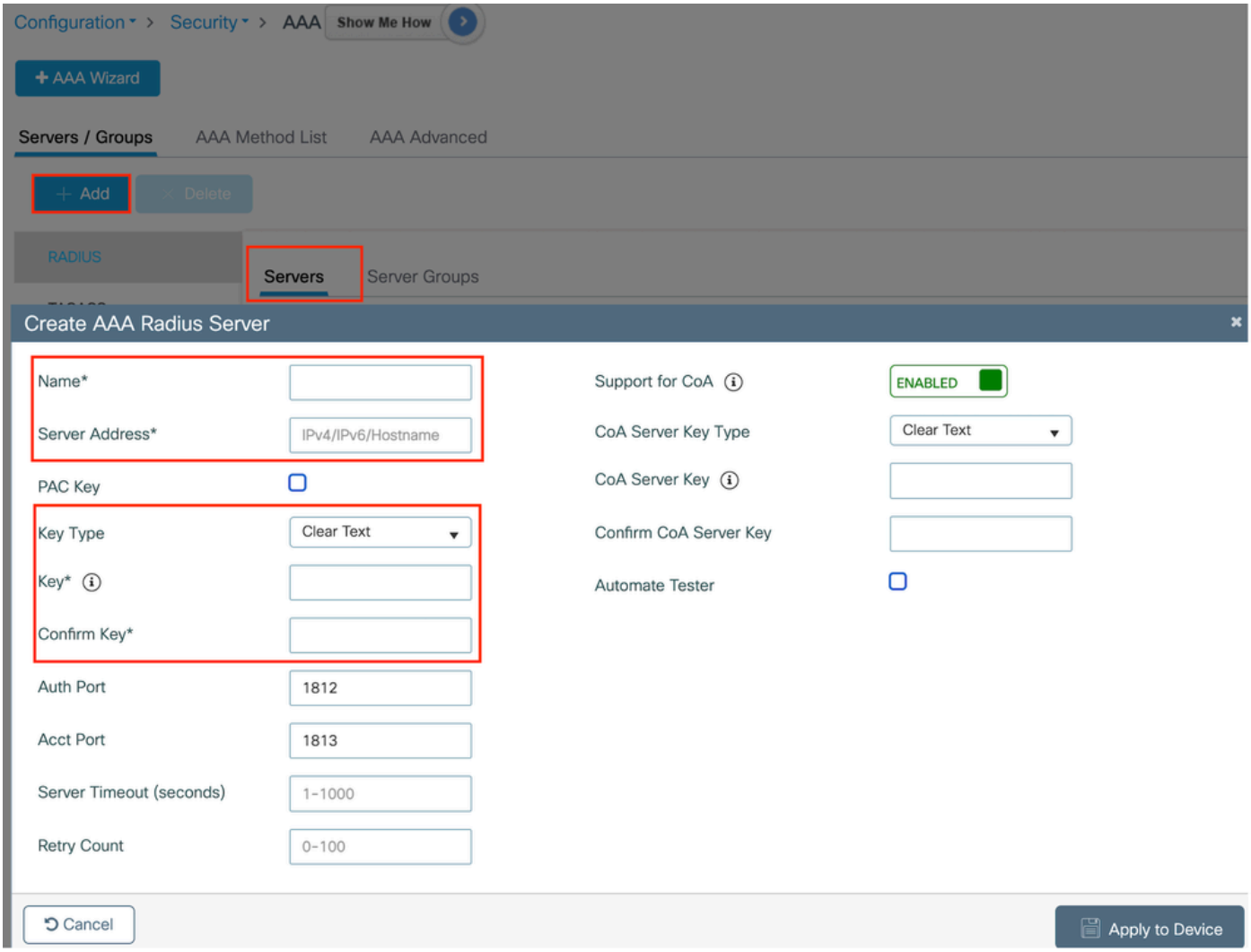
CLI 配置

```
parameter-map type webauth global
 type webauth
 virtual-ip ipv4 192.0.2.1
 redirect for-login http://10.127.196.171/webauth/login.html
 redirect on-success http://10.127.196.171/webauth/logout.html
 redirect on-failure http://10.127.196.171/webauth/failed.html
 redirect portal ipv4 10.127.196.171
 intercept-https-enable.
 trustpoint TP-self-signed-3915430211
 webauth-http-enable
```

AAA设置：

第1步：创建Radius服务器：

导航到Configuration > Security > AAA，单击“Server/Group”部分下的Add，在“Create AAA Radius Server”页上，输入服务器名称、IP地址和共享密钥。

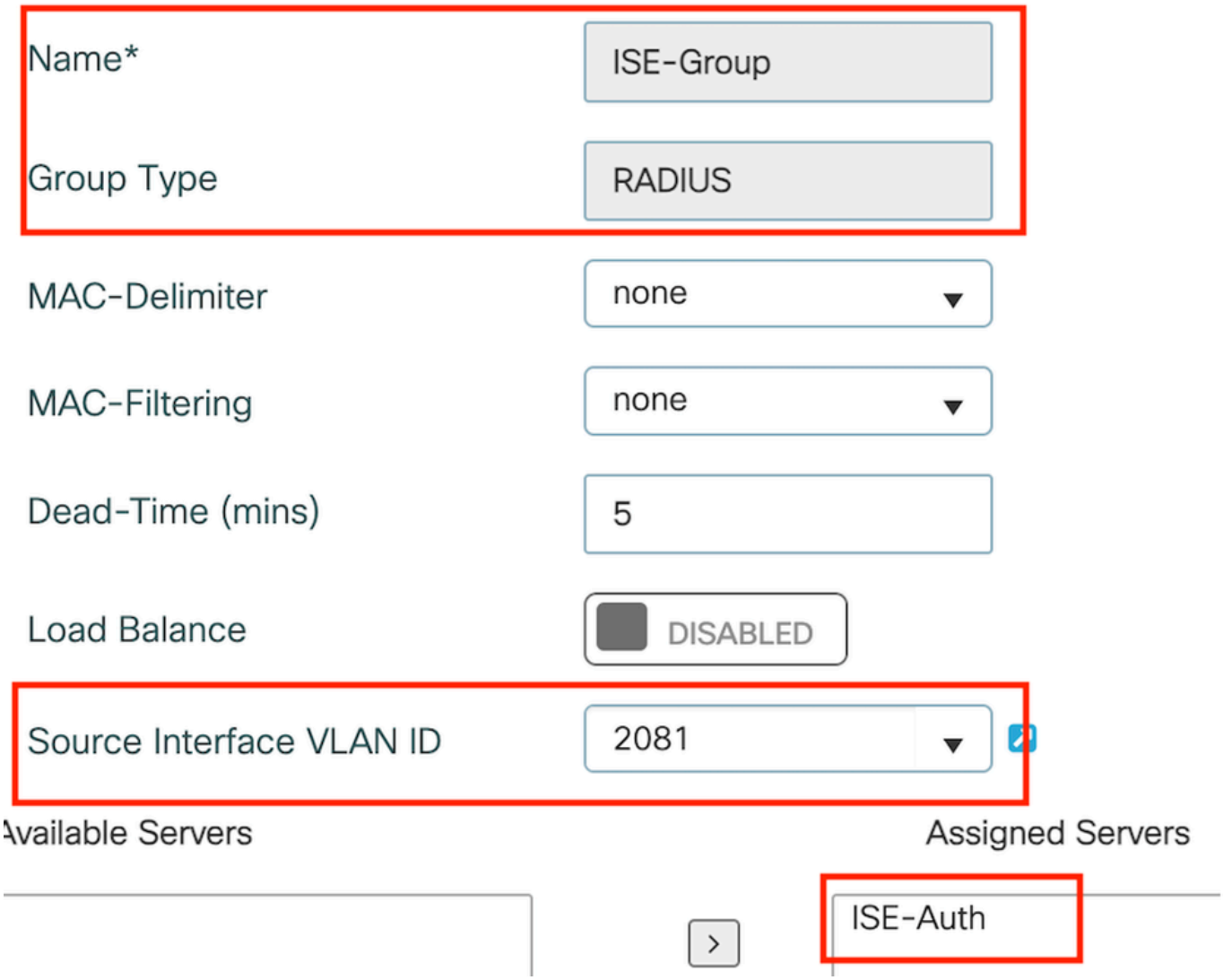


RADIUS 服务器配置

CLI 配置

```
radius server ISE-Auth
 address ipv4 10.197.224.122 auth-port 1812 acct-port 1813
 key *****
 server name ISE-Auth
```

第2步：创建RADIUS服务器组：
在“Server Groups”部分下，选择Add以定义服务器组，并切换要包含在组配置中的服务器。



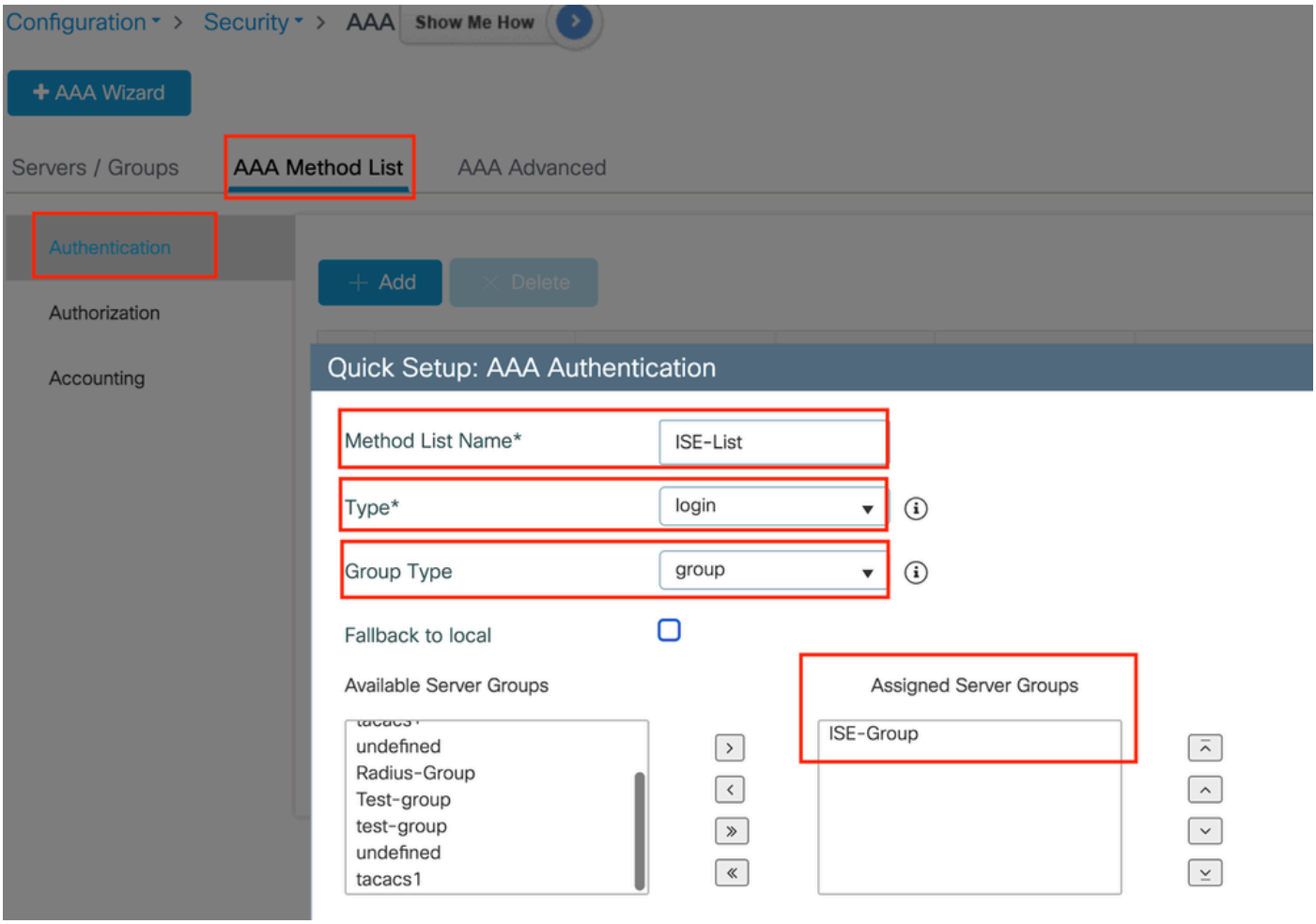
锚点RADIUS组

CLI 配置

```
aaa group server radius ISE-Group
 server name ISE-Auth
 ip radius source-interface Vlan2081
 deadtime 5
```

第3步：配置AAA方法列表：

导航到AAA Method List选项卡，在Authentication下选择Add，定义Type为“login”和Group type为“Group”的方法列表名称，并在Assigned Server Group部分下映射配置的身份验证服务器组。



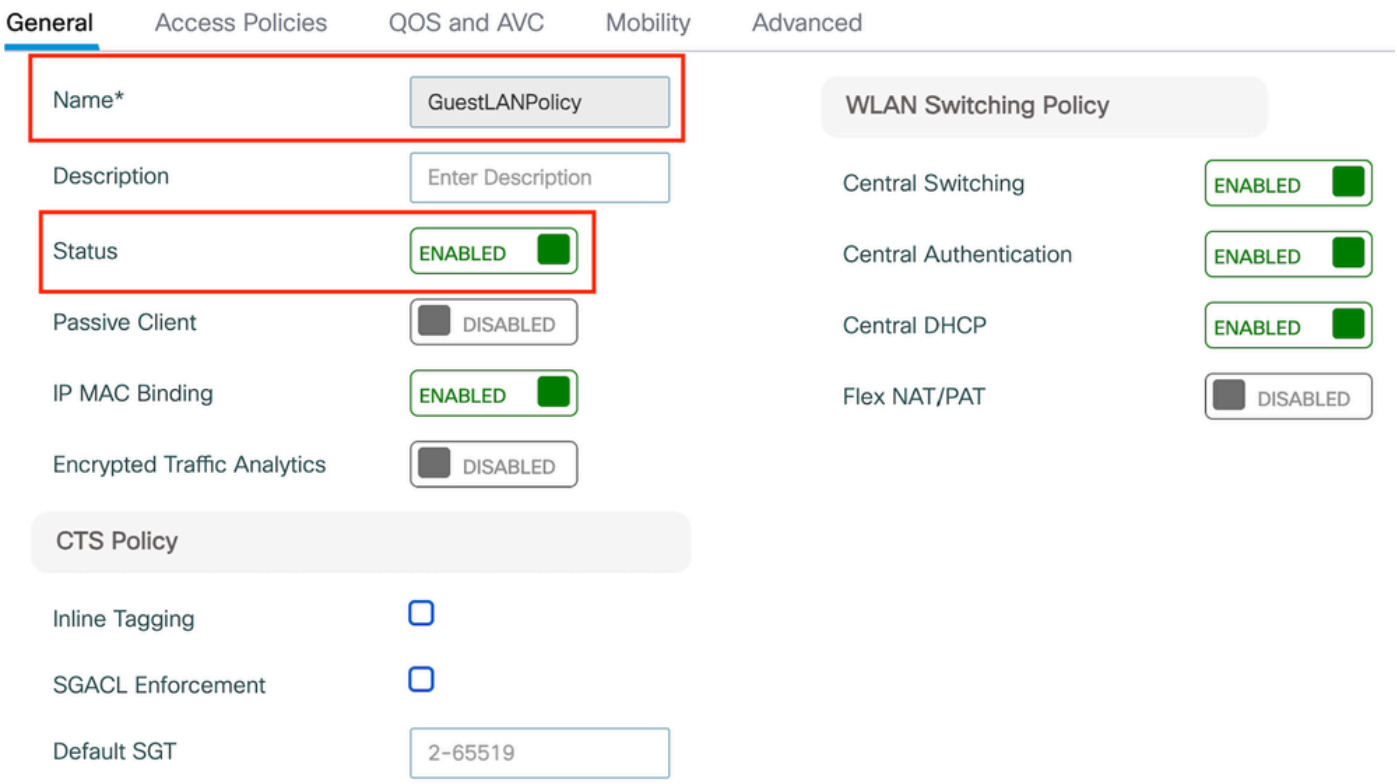
身份验证方法列表

CLI 配置

```
aaa authentication login ISE-List group ISE-Group
```

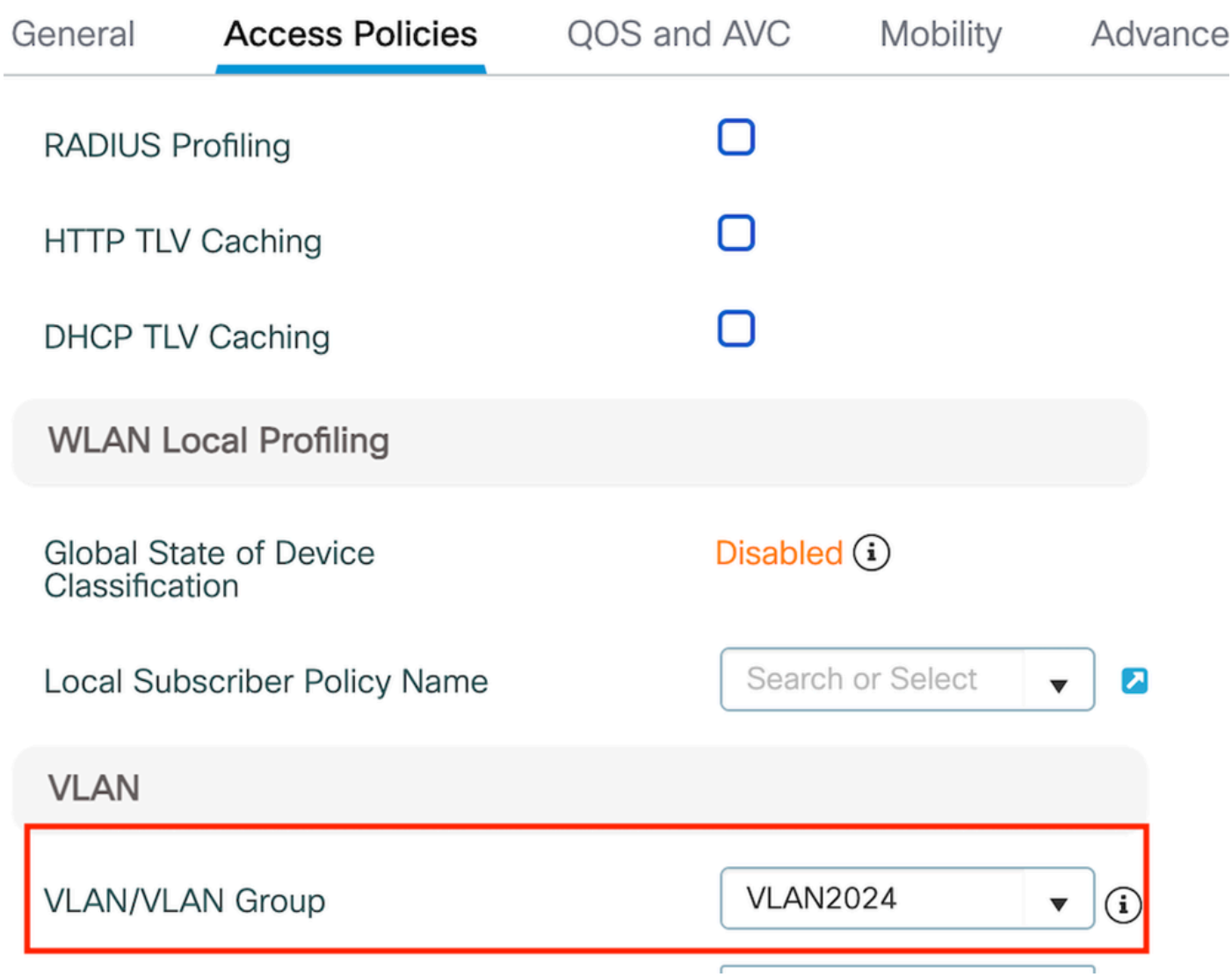
配置策略配置文件

第1步：导航到配置>标签和配置文件>策略，使用与外部控制器上的名称相同的名称配置策略配置文件并启用配置文件。

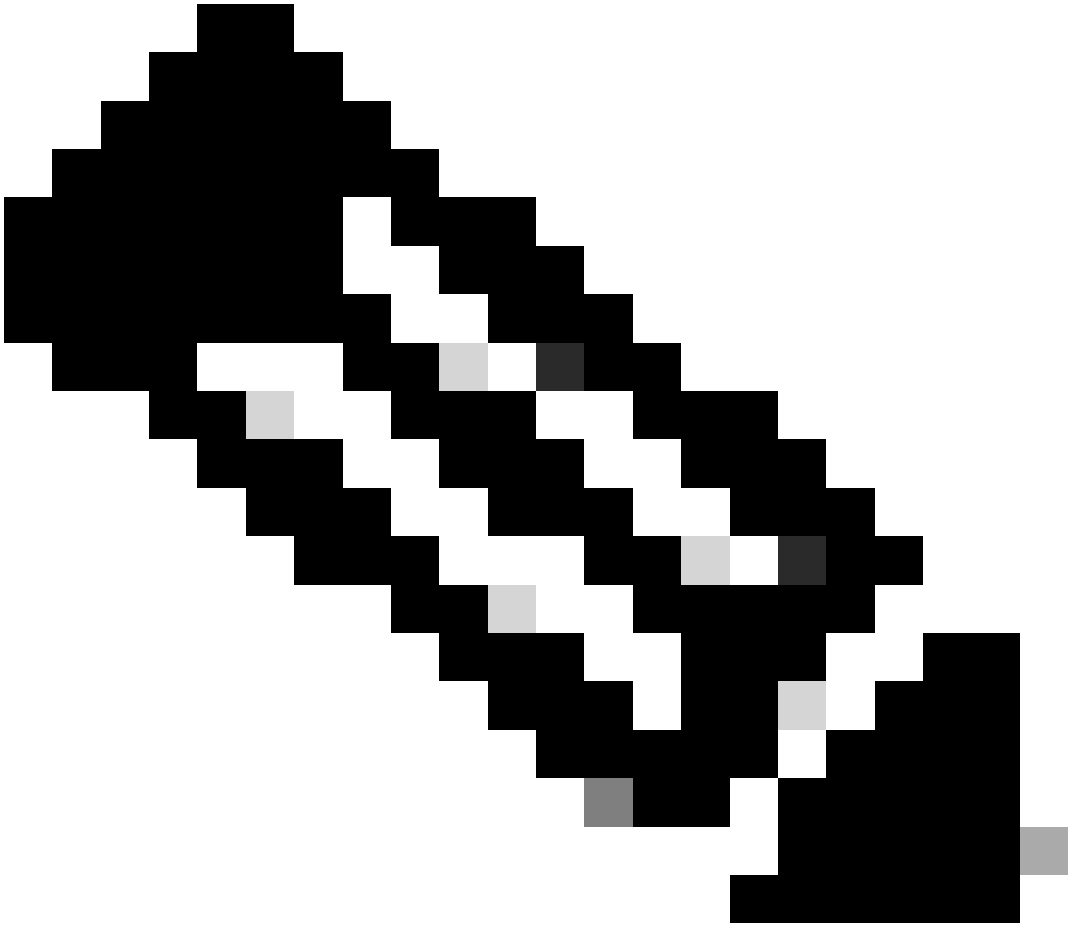


锚点策略配置文件

第2步：在访问策略下，从下拉列表中映射有线客户端VLAN

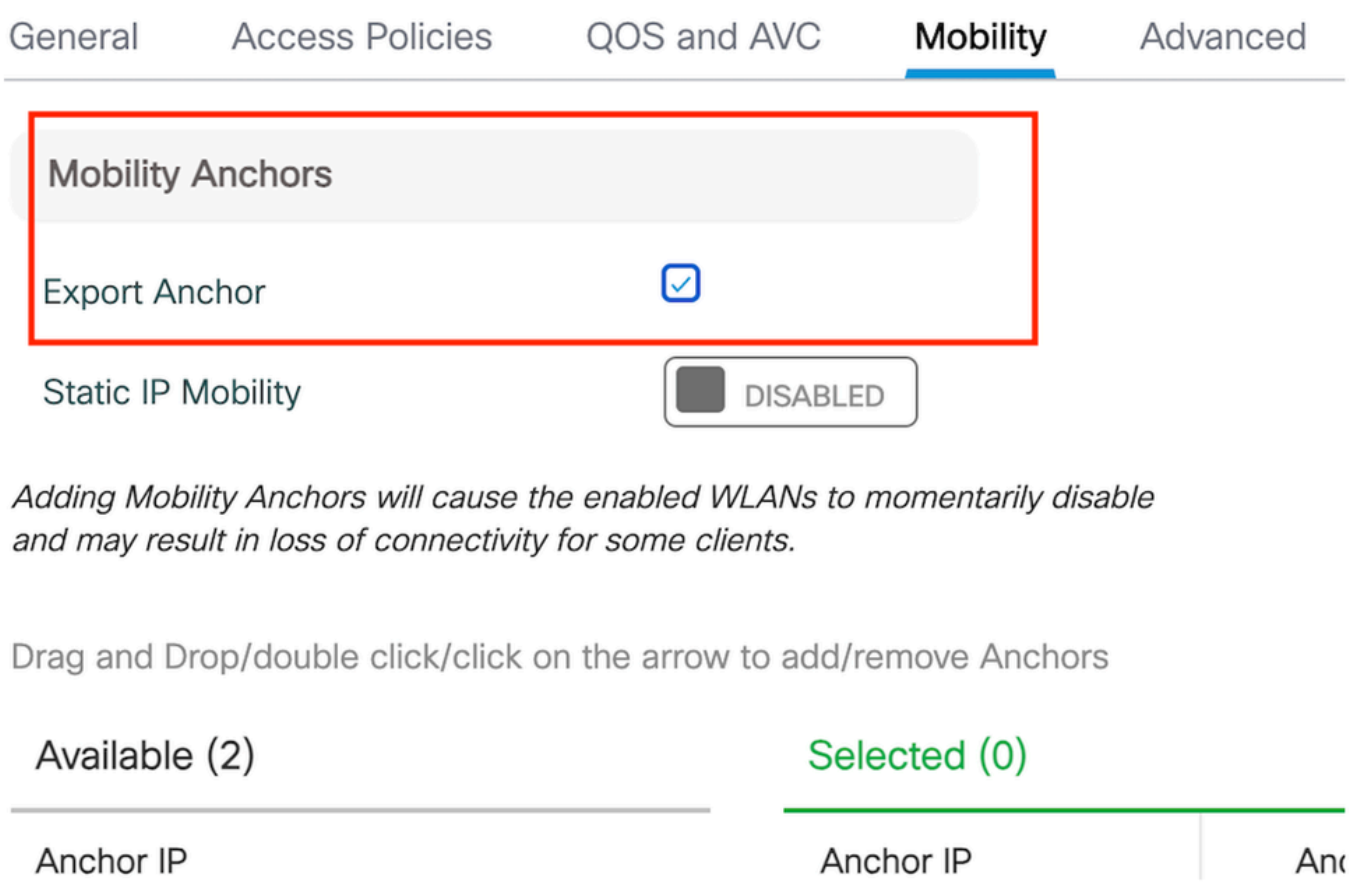

General
Access Policies
QOS and AVC
Mobility
Advance
RADIUS Profiling
HTTP TLV Caching
DHCP TLV Caching
WLAN Local Profiling
Global State of Device Classification
Disabled
Local Subscriber Policy Name
Search or Select
VLAN
VLAN/VLAN Group
VLAN2024

“访问策略”选项卡

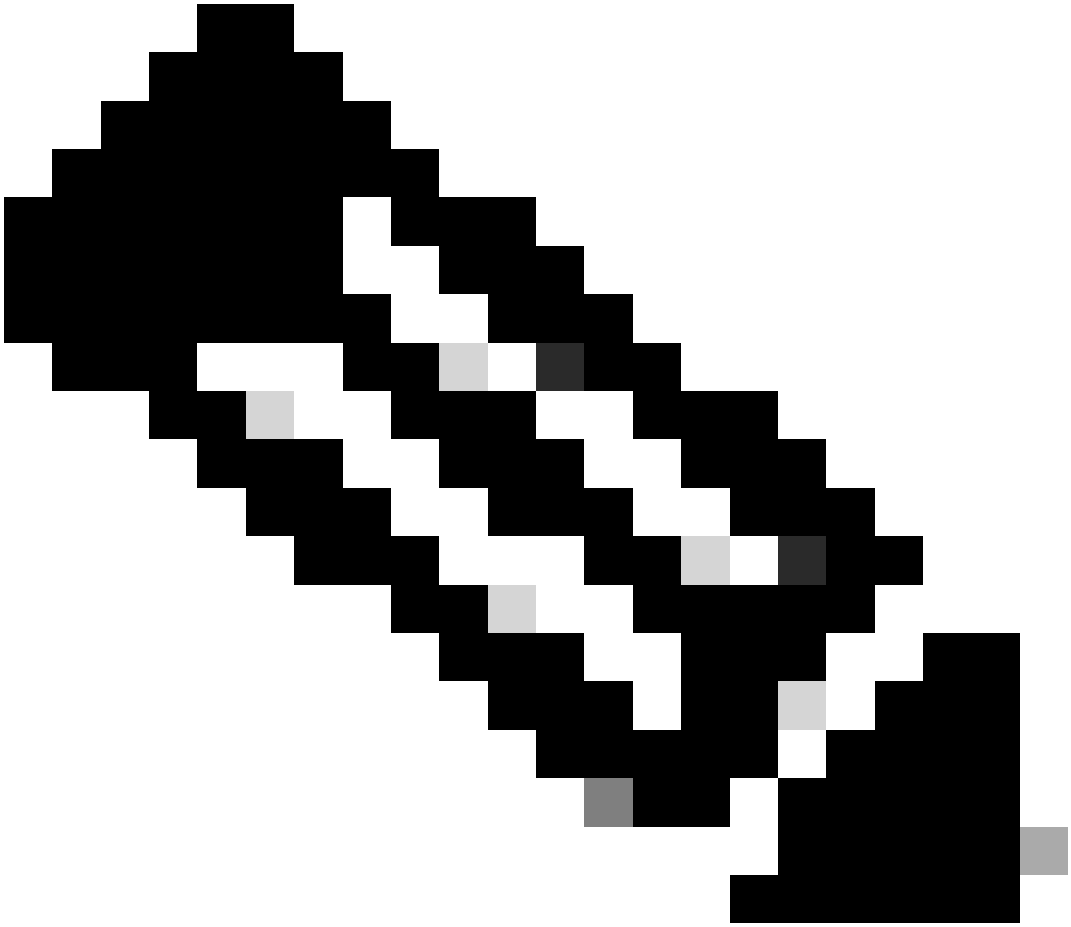


注意：除VLAN外，策略配置文件的配置必须在外部和锚点控制器上匹配。

第3步：在移动选项卡下，选中导出锚点复选框。


General
Access Policies
QOS and AVC
Mobility
Advanced
Mobility Anchors
Export Anchor
Static IP Mobility
DISABLED
Adding Mobility Anchors will cause the enabled WLANs to momentarily disable and may result in loss of connectivity for some clients.
Drag and Drop/double click/click on the arrow to add/remove Anchors
Available (2)
Selected (0)
Anchor IP
Anchor IP

导出锚点



注意：此配置指定9800无线局域网控制器(WLC)作为与指定策略配置文件关联的任何WLAN的锚点WLC。当外部9800 WLC将客户端重定向到锚点WLC时，它会提供有关WLAN和分配给客户端的策略配置文件的详细信息。这使锚点WLC能够根据收到的信息应用适当的本地策略配置文件。

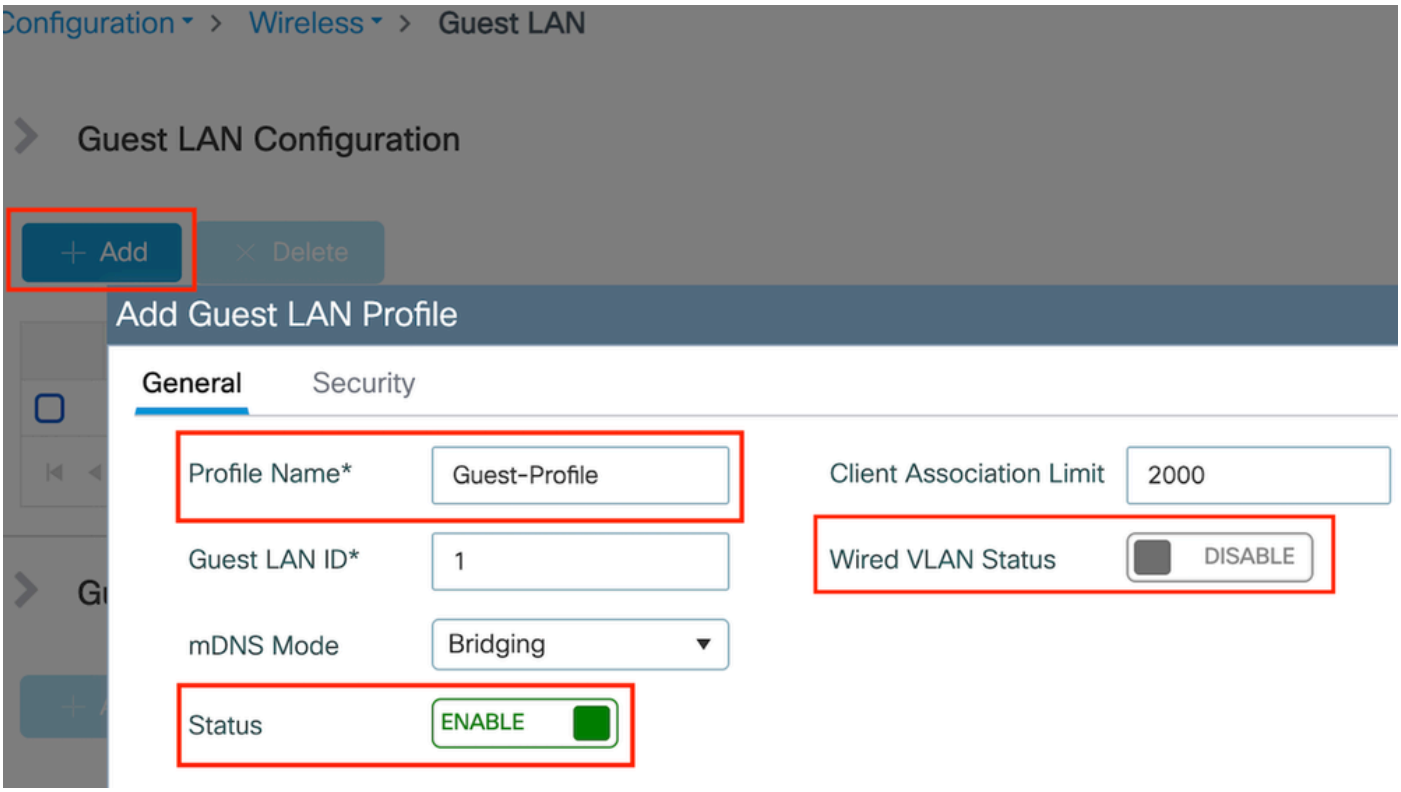
CLI 配置

```
wireless profile policy GuestLANPolicy
 mobility anchor
 vlan VLAN2024
 no shutdown
```

配置访客LAN配置文件

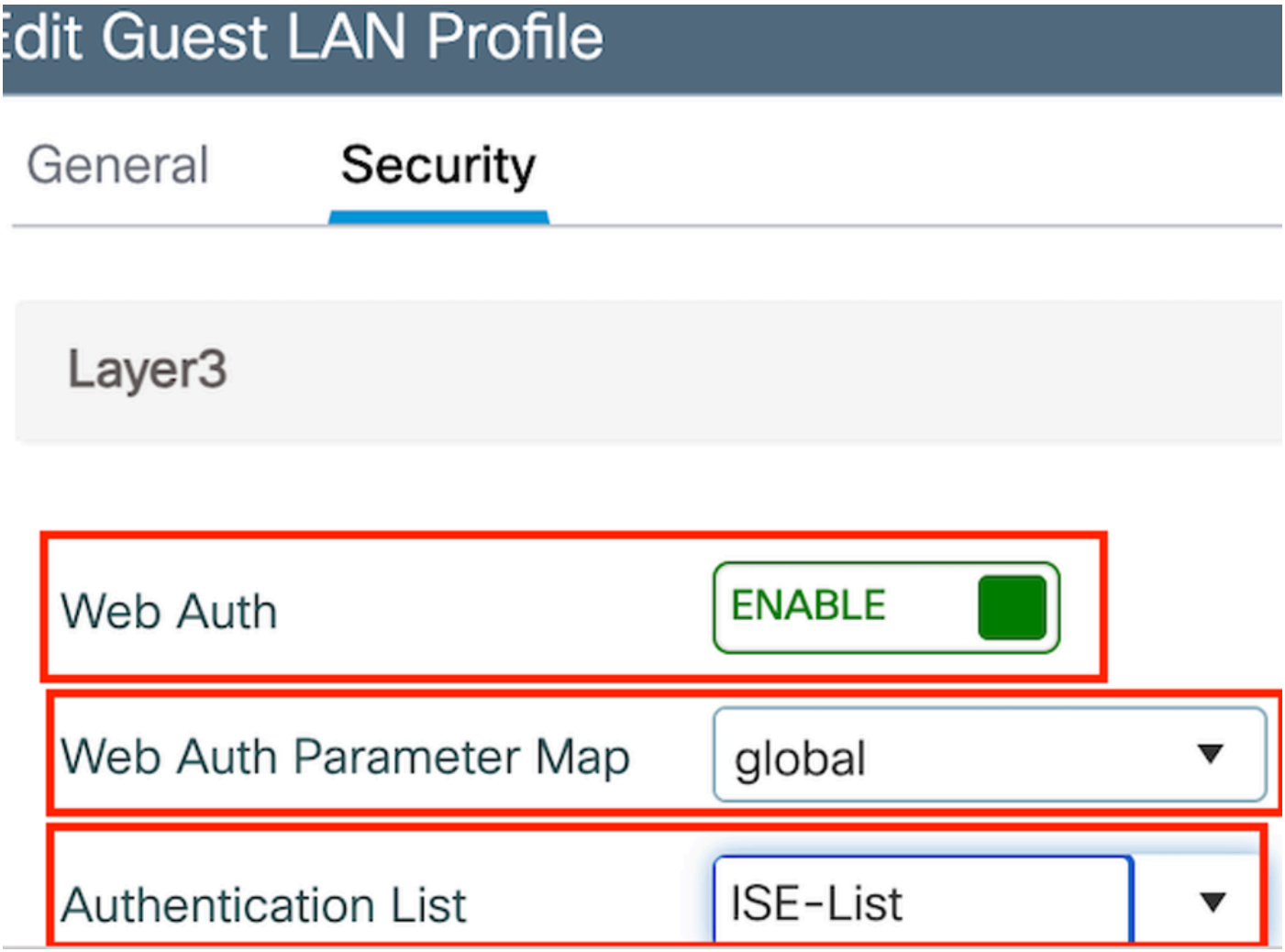
第1步：导航到配置>无线>访客LAN，然后选择添加创建并配置访客LAN配置文件。确保配置文件

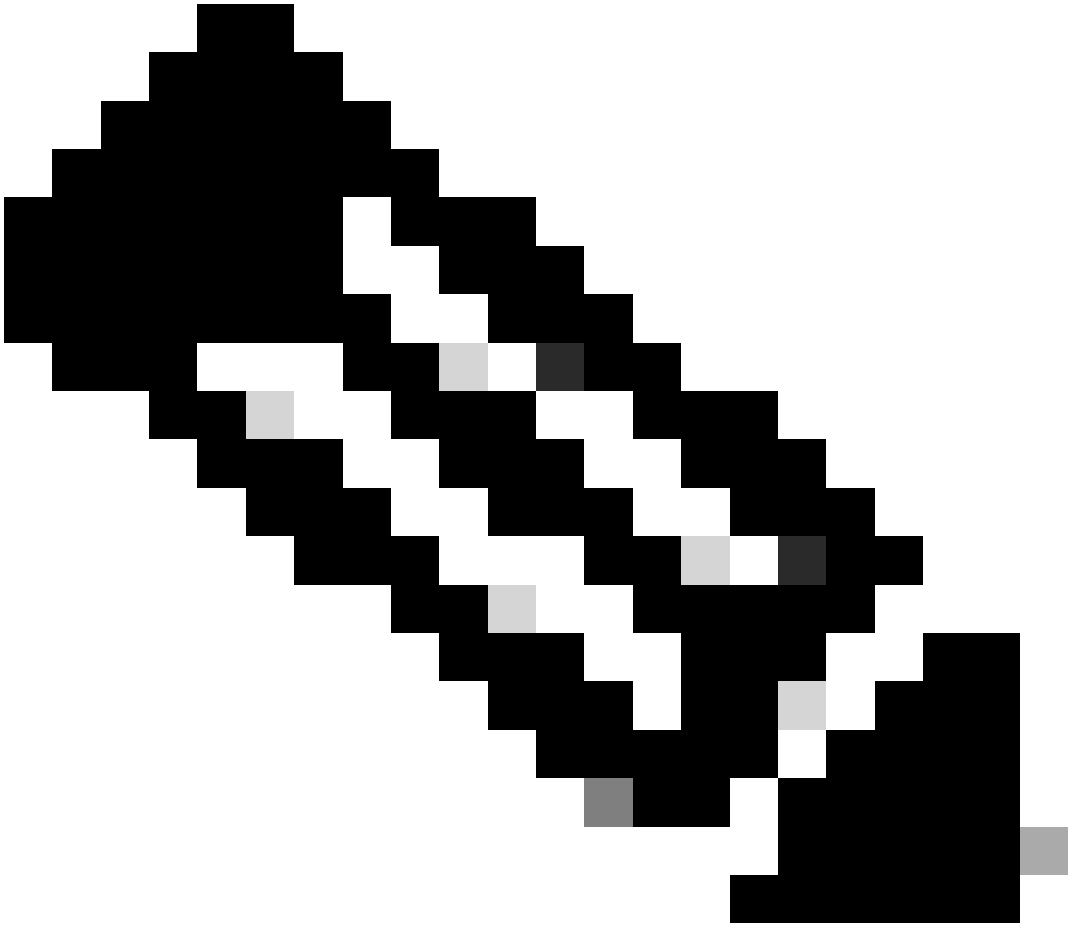
名称与外部控制器的配置文件名称匹配。请注意，必须在锚点控制器上禁用有线VLAN。



访客LAN配置文件

第2步：在安全设置中，启用Web Auth，然后配置Web Auth参数映射和身份验证列表。


Edit Guest LAN Profile
General
Security
Layer3
Web Auth
ENABLE
Web Auth Parameter Map
global
Authentication List
ISE-List



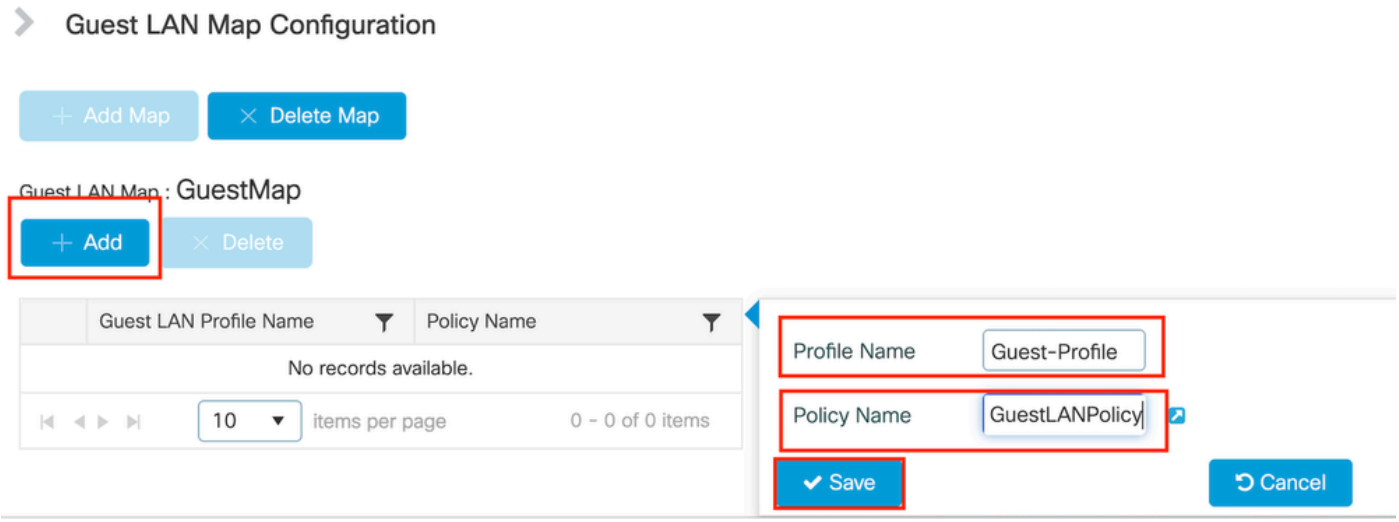
注意：除有线VLAN状态外，外部控制器和锚点控制器之间的访客LAN配置文件配置必须相同

CLI 配置

```
guest-lan profile-name Guest-Profile 1
 security web-auth authentication-list ISE-List
 security web-auth parameter-map global
```

访客LAN映射

第1步：导航到配置>无线>访客LAN。在Guest LAN MAP configuration部分中，选择Add并将策略配置文件映射到访客LAN配置文件。



访客LAN映射

```
wireless guest-lan map GuestMap
guest-lan Guest-Profile policy GuestLANPolicy
```

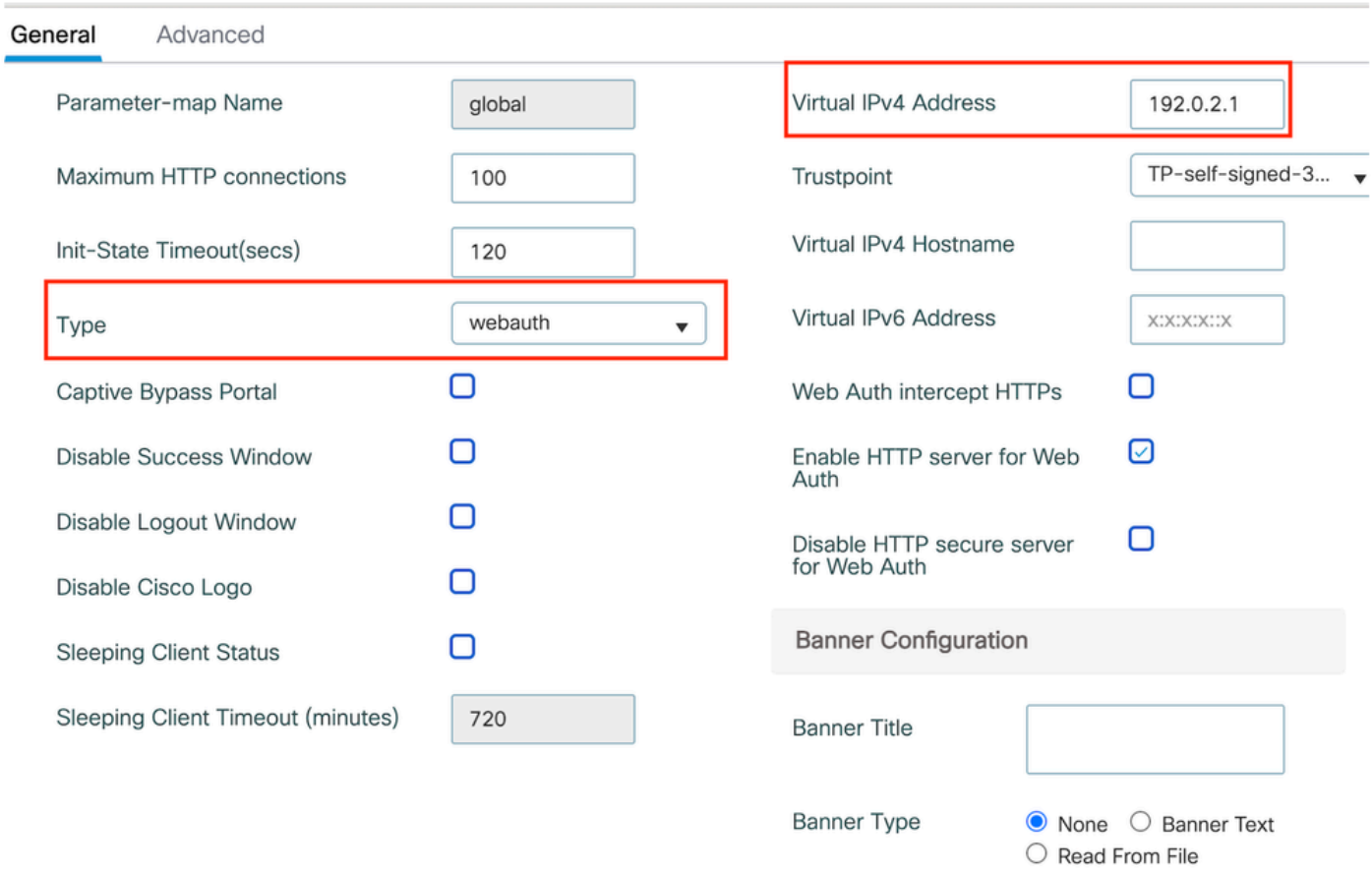
在锚定到AireOS 5520控制器的Catalyst 9800上配置有线访客

网络拓扑

外部9800 WLC上的配置

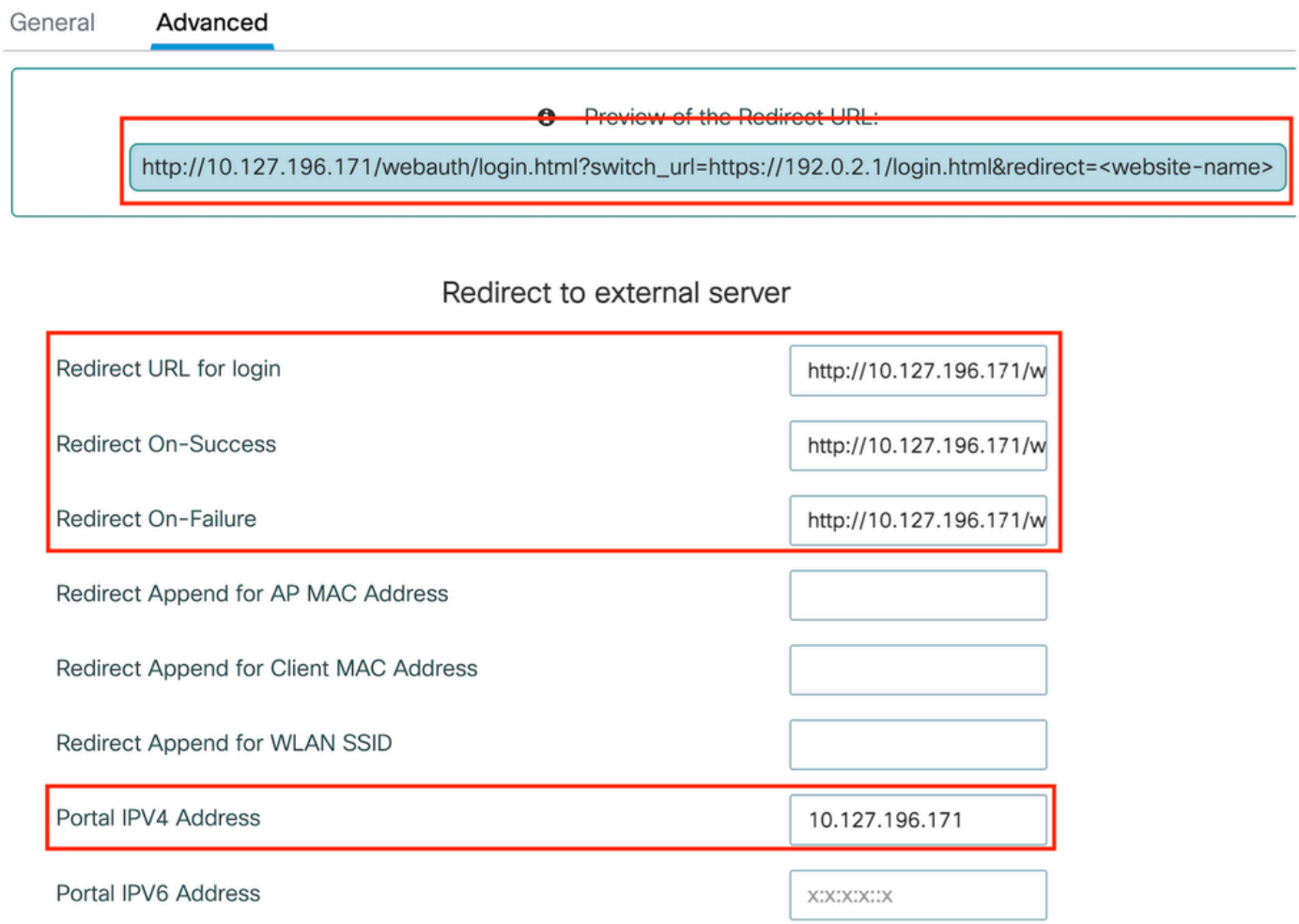
配置Web参数映射

第1步：导航到配置>安全> Web身份验证，然后选择全局。验证控制器的虚拟IP地址和信任点是否正确映射到配置文件(类型设置为webauth)。



Web参数映射

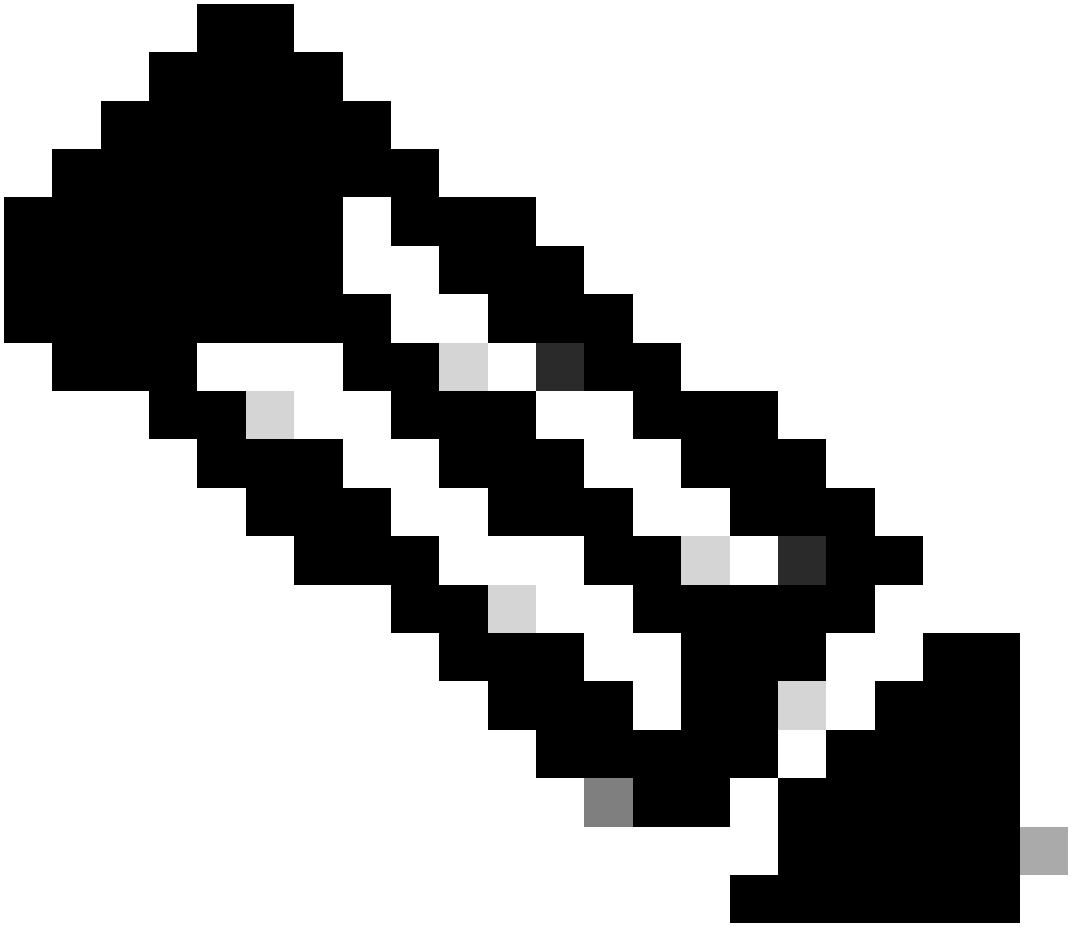
第2步：在高级选项卡下，指定客户端必须重定向到的外部网页URL。配置Redirect URL for Login和Redirect On-Failure。Redirect On-Success设置是可选配置。



Advanced选项卡

CLI 配置

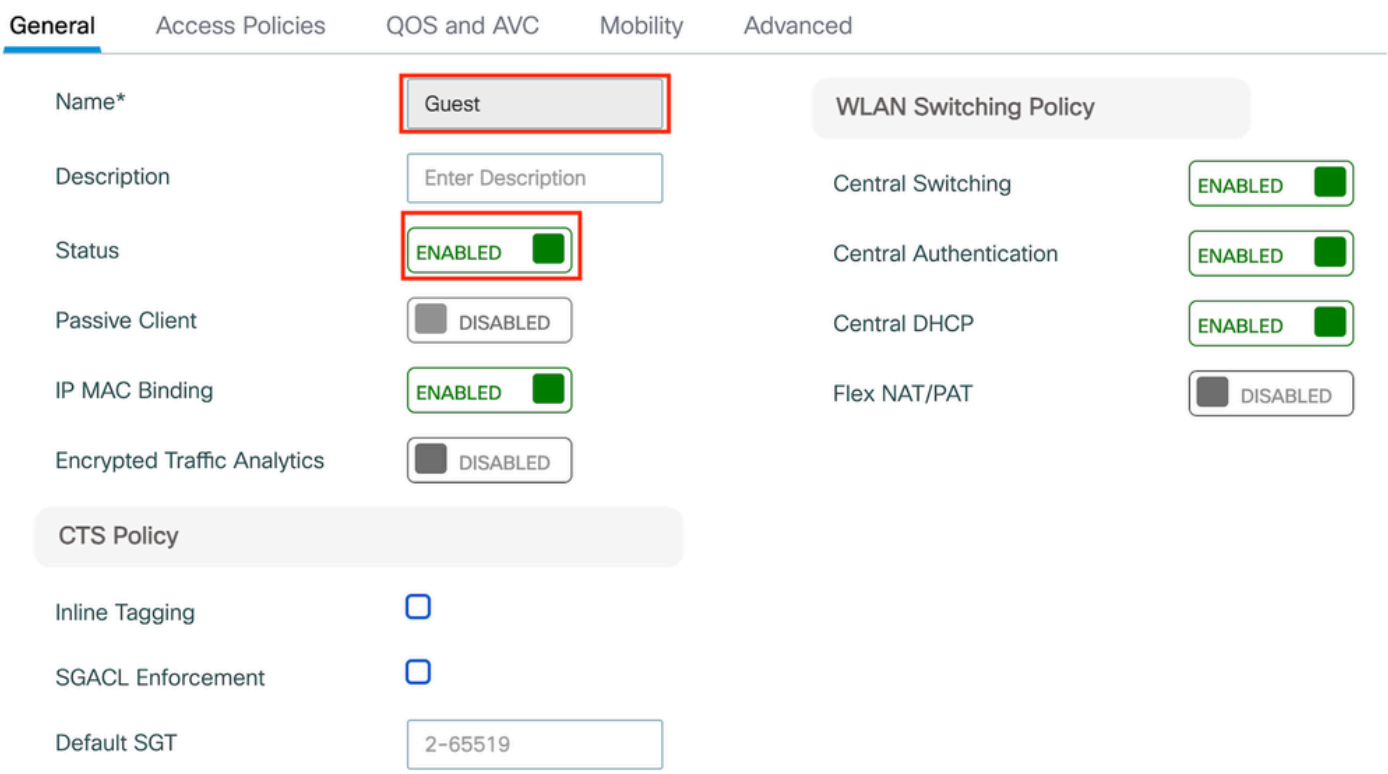
```
parameter-map type webauth global
 type webauth
 virtual-ip ipv4 192.0.2.1
 redirect for-login http://10.127.196.171/webauth/login.html
 redirect on-success http://10.127.196.171/webauth/logout.html
 redirect on-failure http://10.127.196.171/webauth/failed.html
 redirect portal ipv4 10.127.196.171
 trustpoint TP-self-signed-3010594951
 webauth-http-enable
```



注意：有关AAA配置，请参阅外部9800 WLC的“”部分中提供的配置详细信息。

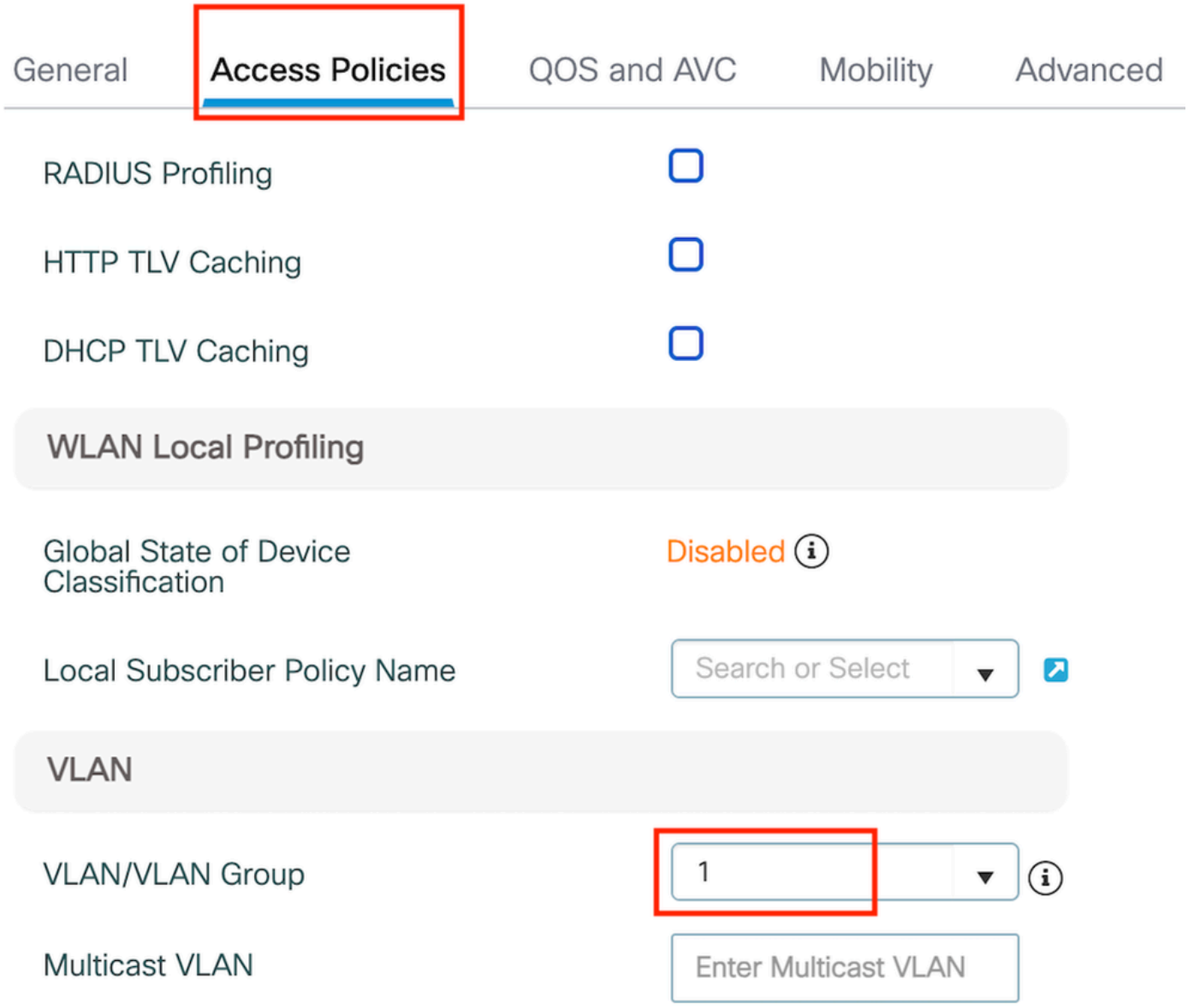
配置策略配置文件

第1步：导航到配置>标签和配置文件>策略。选择Add，然后在General选项卡中为配置文件提供名称并启用状态切换。



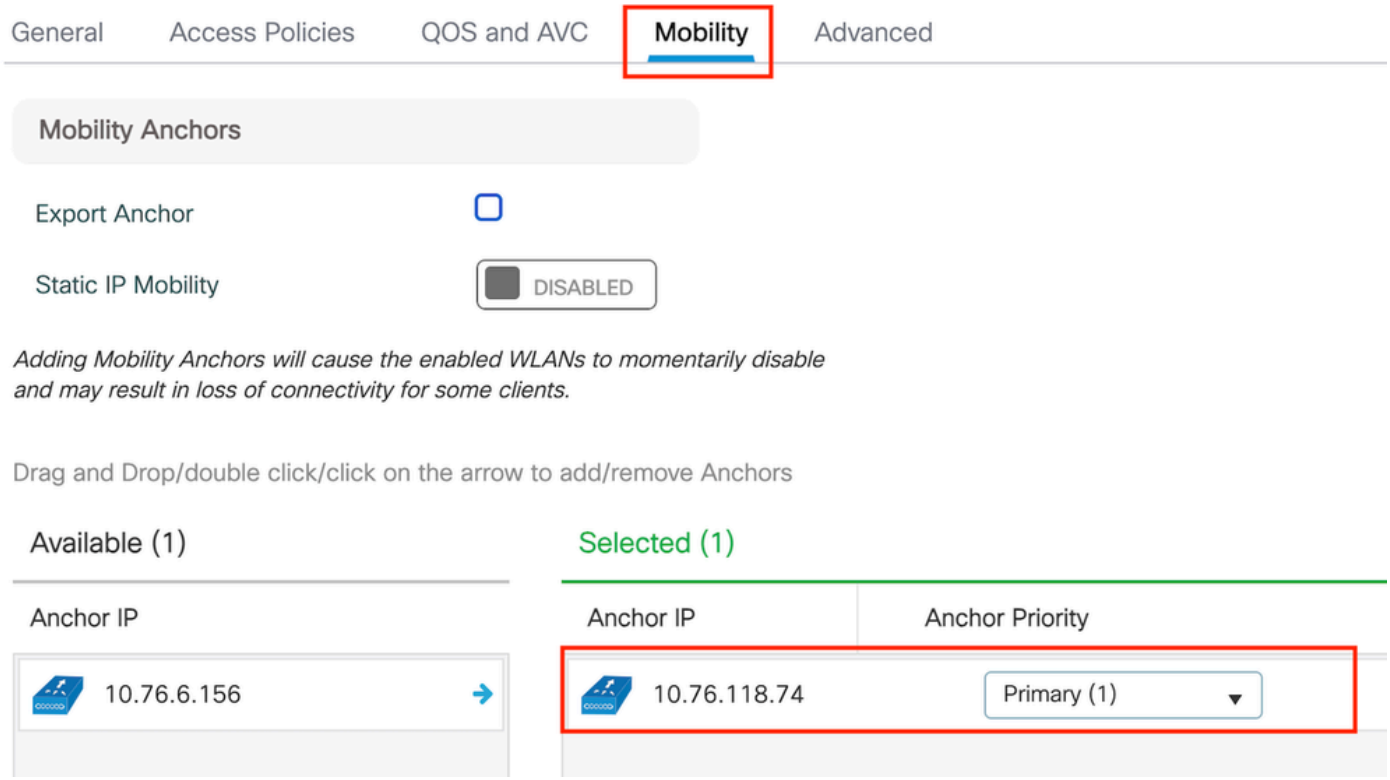
策略配置文件

第2步：在访问策略(Access Policies)选项卡中，分配随机VLAN。

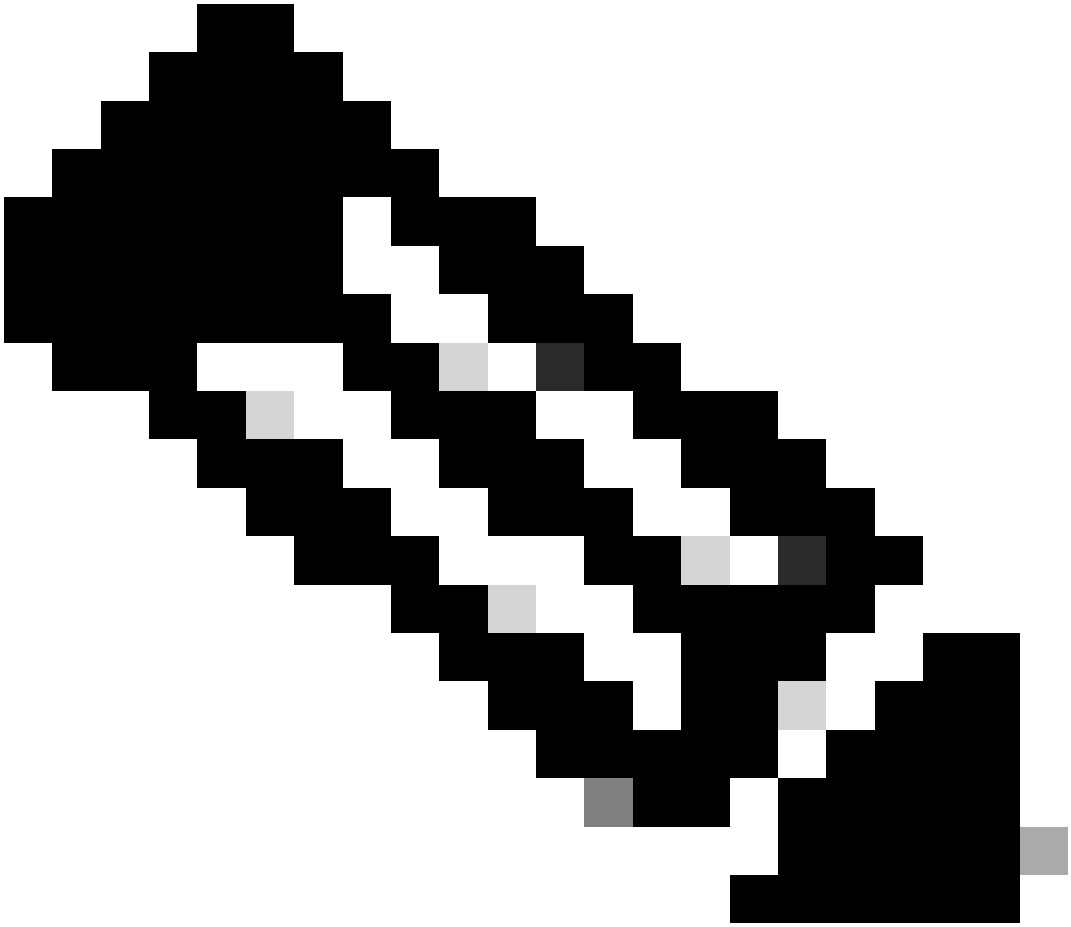


访问策略

第3步：在Mobility选项卡中，切换锚点控制器并将其优先级设置为Primary (1)



Mobility选项卡



注意：9800外部WLC的策略配置文件必须与5520锚点WLC的访客LAN配置文件匹配，但vlan配置除外

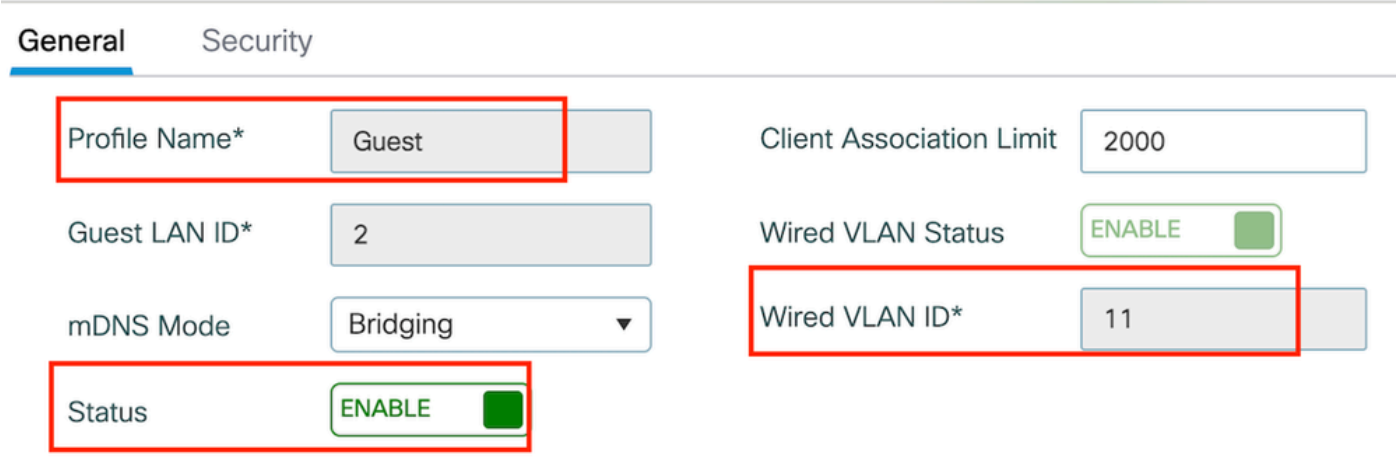
CLI 配置

```
wireless profile policy Guest
 no accounting-interim
 exclusionlist timeout 180
 no flex umbrella dhcp-dns-option
 mobility anchor 10.76.118.74 priority 1
 no shutdown
```

配置访客LAN配置文件

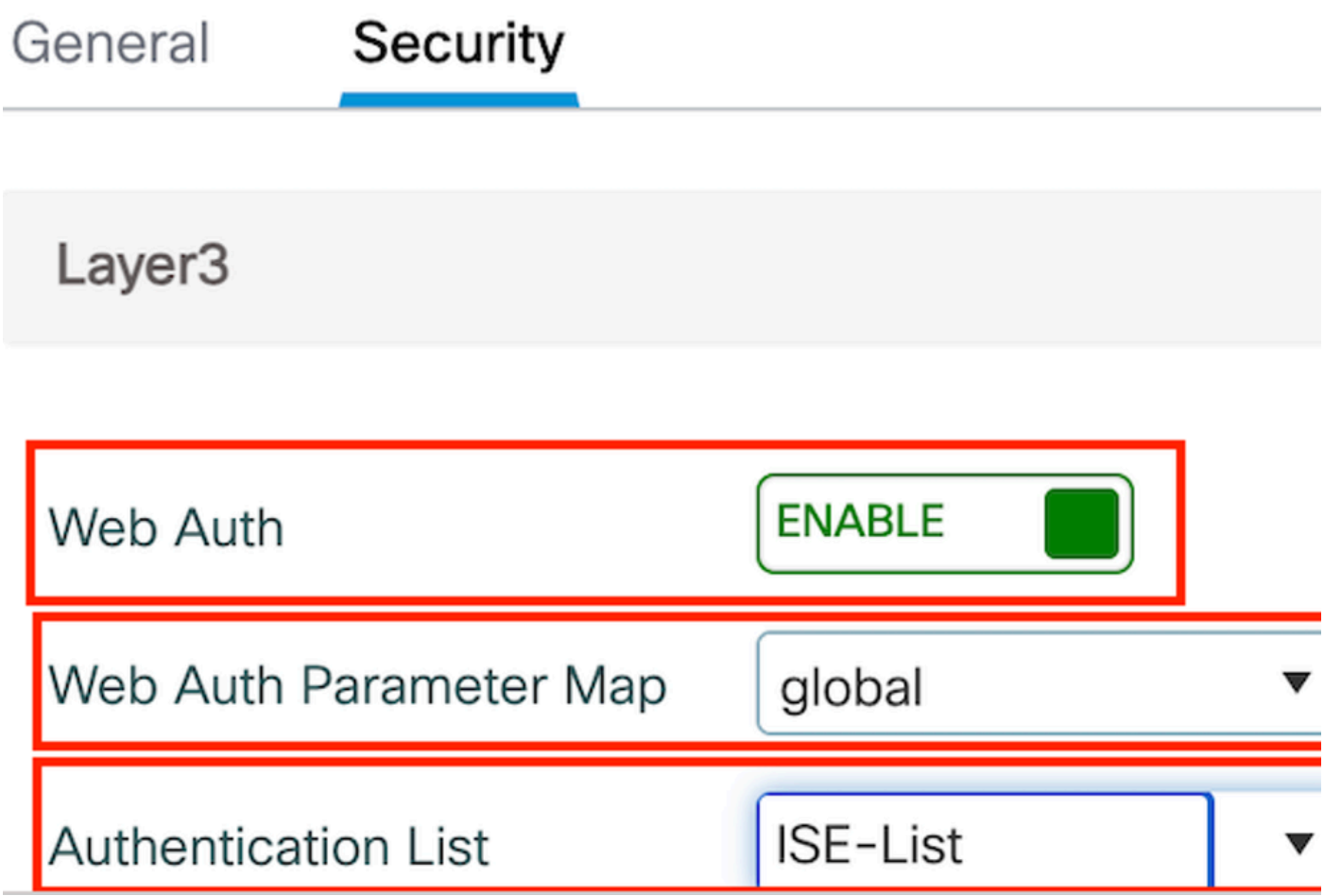
第1步：导航到配置>无线>访客LAN，选择添加。配置唯一的配置文件名称并启用有线VLAN，指定

专用于有线访客用户的VLAN ID。最后，将配置文件状态切换为Enabled。

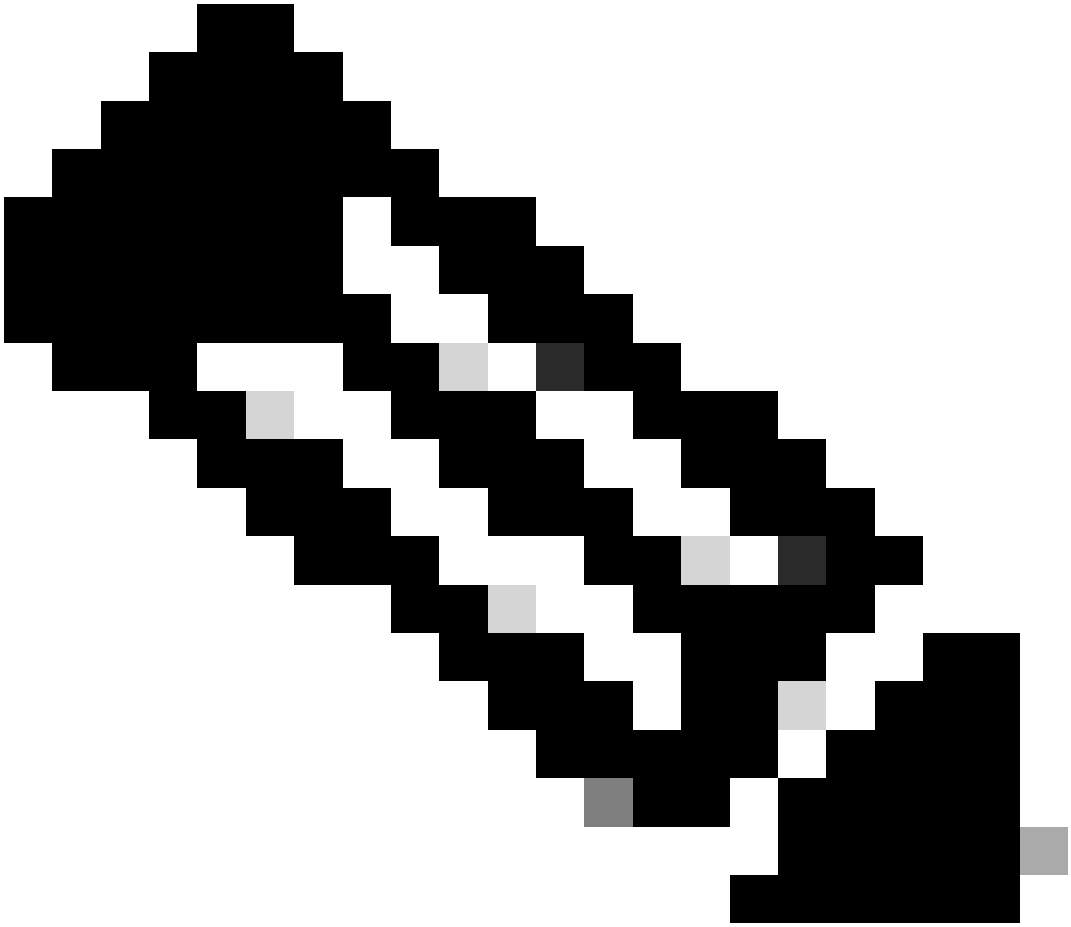


访客LAN策略

第2步：在安全选项卡下，启用网络身份验证，映射Web身份验证参数映射，然后从身份验证下拉列表中选择RADIUS服务器。



“安全”选项卡



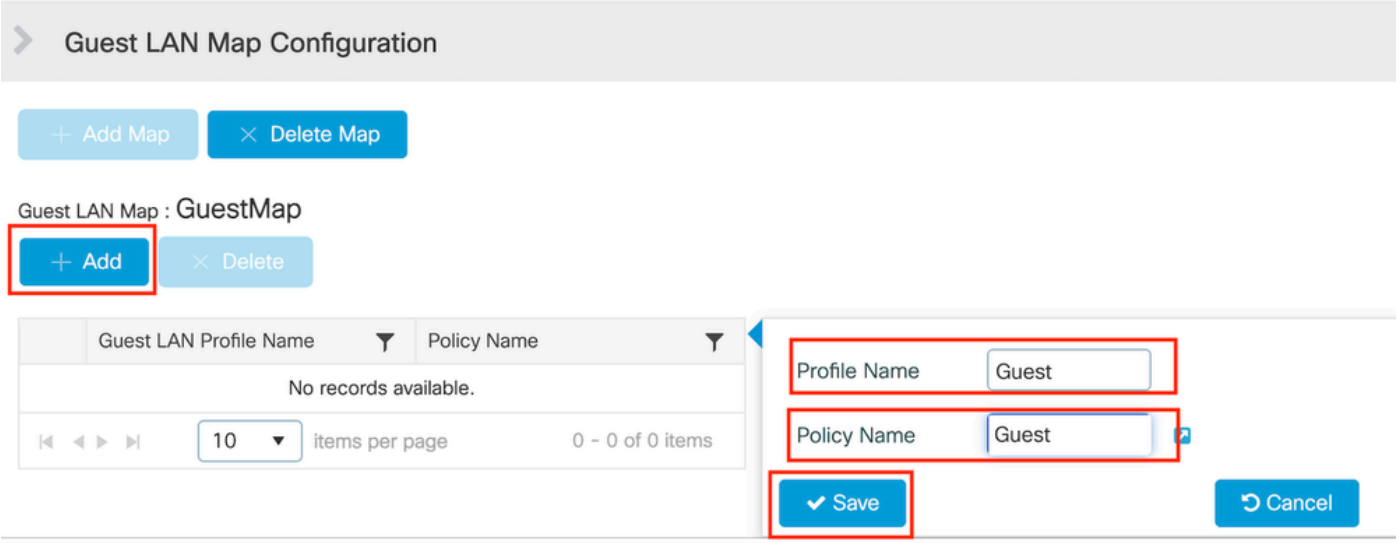
注意：对于9800外部和5520锚点控制器，访客LAN配置文件名称必须相同

CLI 配置

```
guest-lan profile-name Guest 2 wired-vlan 11
 security web-auth authentication-list ISE-List
 security web-auth parameter-map global
```

访客LAN映射

第1步：导航到配置>无线>访客LAN。在访客LAN映射配置部分中，选择添加，并将策略配置文件映射到访客LAN配置文件。



访客LAN映射

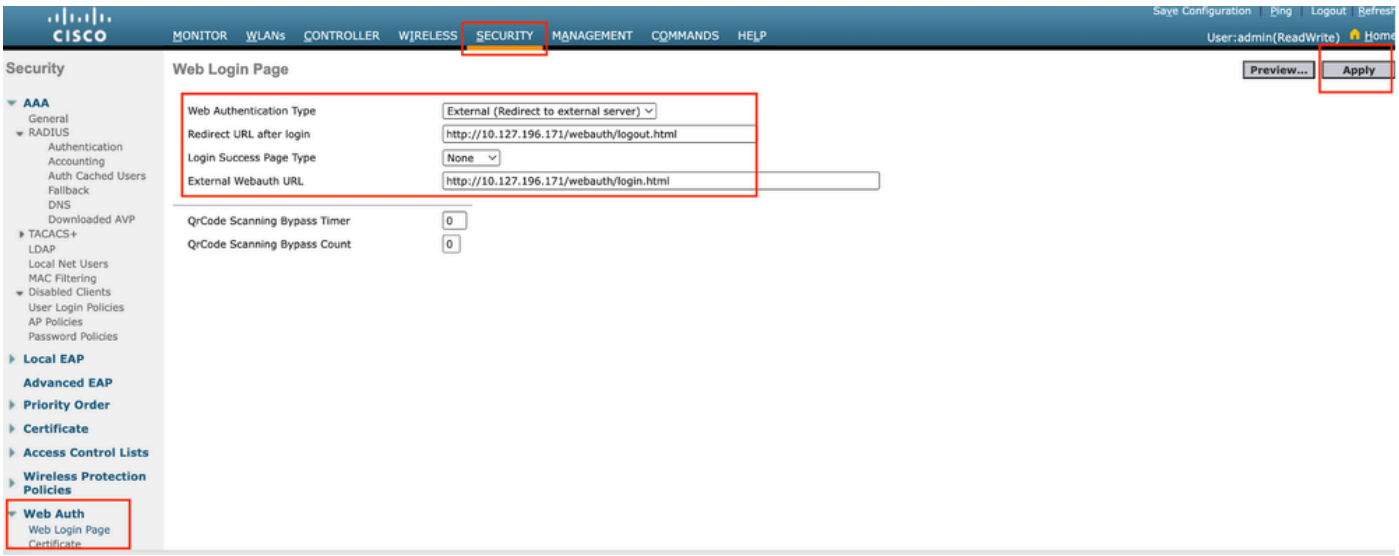
CLI 配置

```
wireless guest-lan map GuestMap
 guest-lan Guest policy Guest
```

锚点5520 WLC上的配置

配置Web身份验证

第1步：导航到安全>网络身份验证>网络登录页面。将Web身份验证类型设置为External (Redirect to external server)，并配置外部Web身份验证URL。登录后重定向URL是可选的，并且可以在客户端需要在身份验证成功之后重定向到专用页时进行配置。

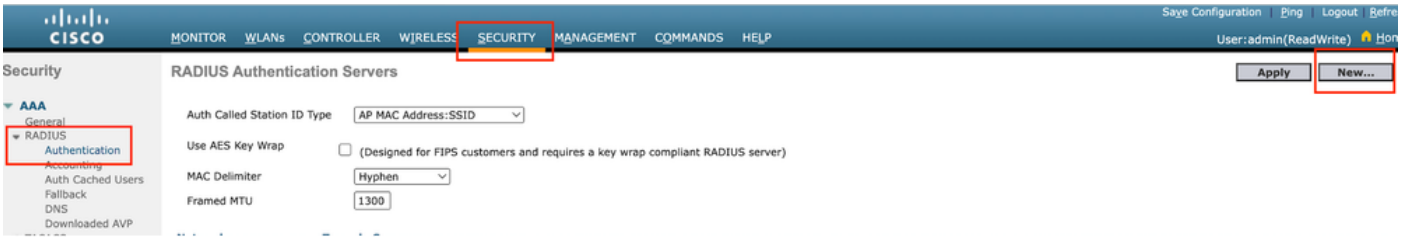


Web身份验证设置

AAA设置：

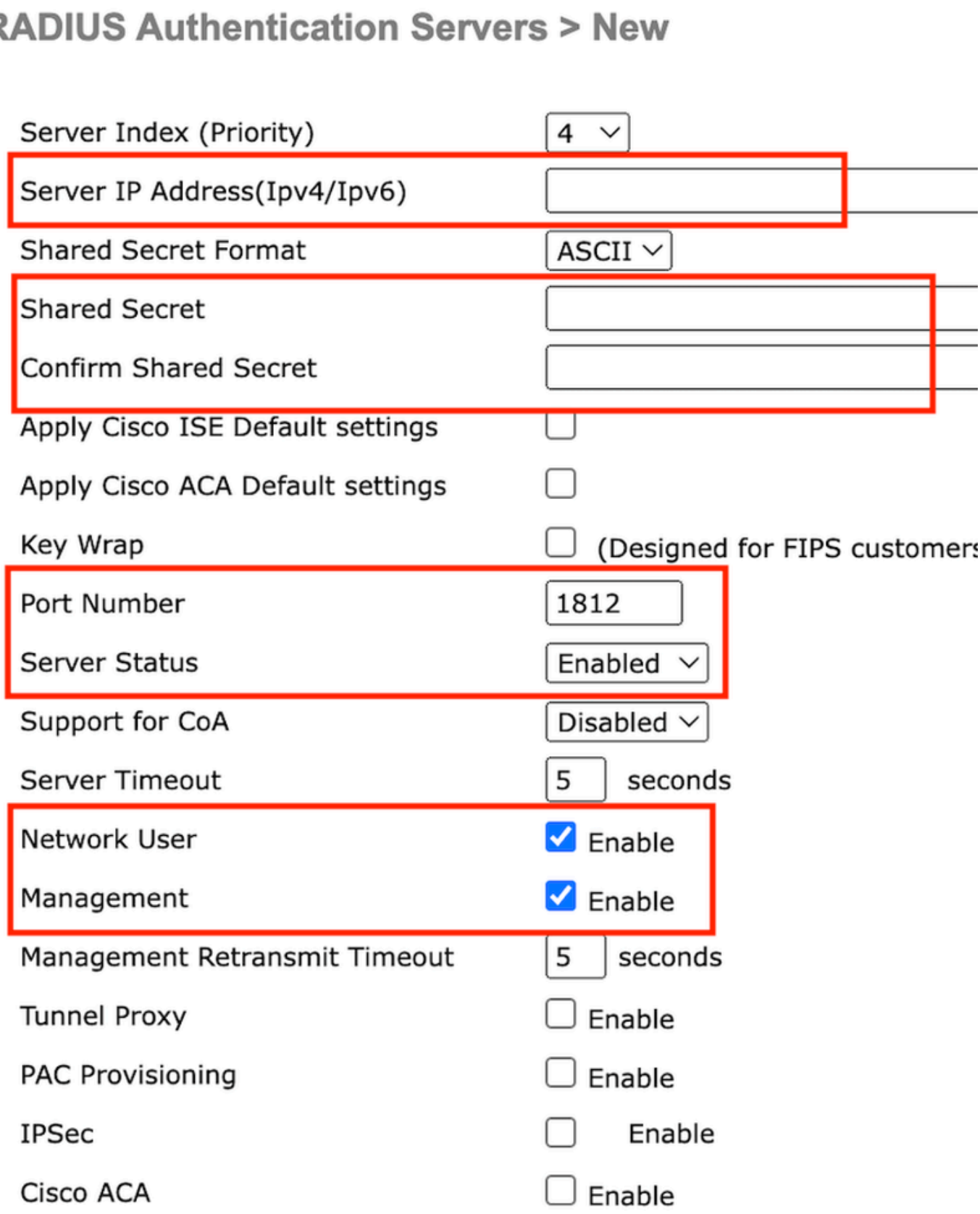
第1步：配置RADIUS服务器

导航到Security > Radius > Authentication > New。



RADIUS 服务器

第2步：在控制器上配置RADIUS服务器IP和共享密钥。将服务器状态切换到已启用并选中网络用户复选框。

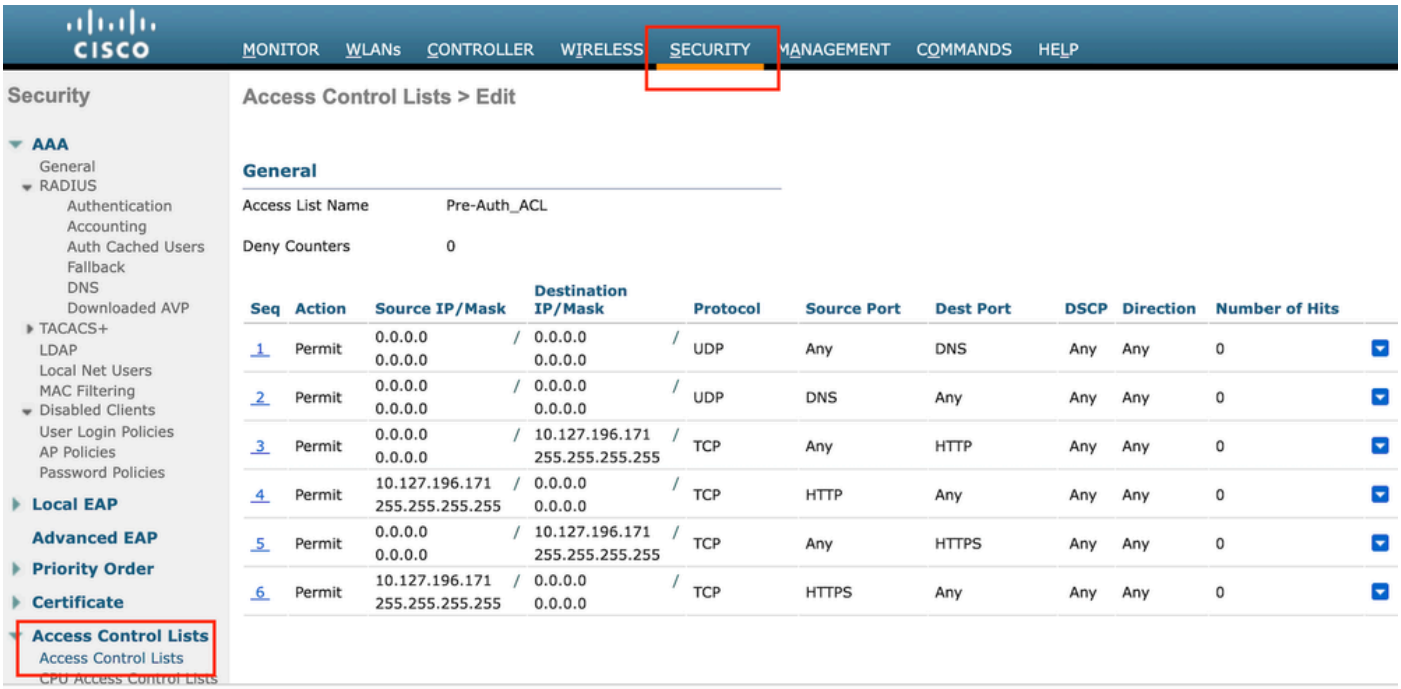


服务器配置

配置访问控制列表

第1步：导航到安全>访问控制列表，然后选择新建。创建预身份验证ACL，允许流量流向DNS和外

部Web服务器。



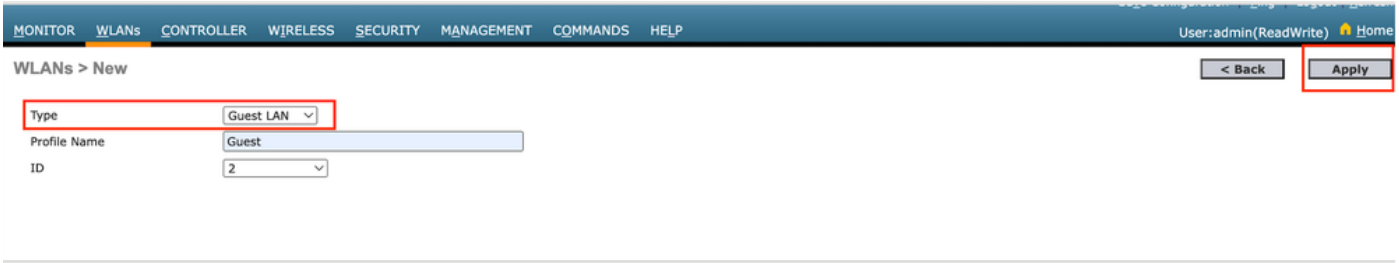
允许流量流向Web服务器的访问列表

配置访客LAN配置文件

第1步：导航到WLAN >选择Create New 。

选择Type作为Guest LAN，并配置与9800外部控制器的策略配置文件相同的名称。

创建访客LAN

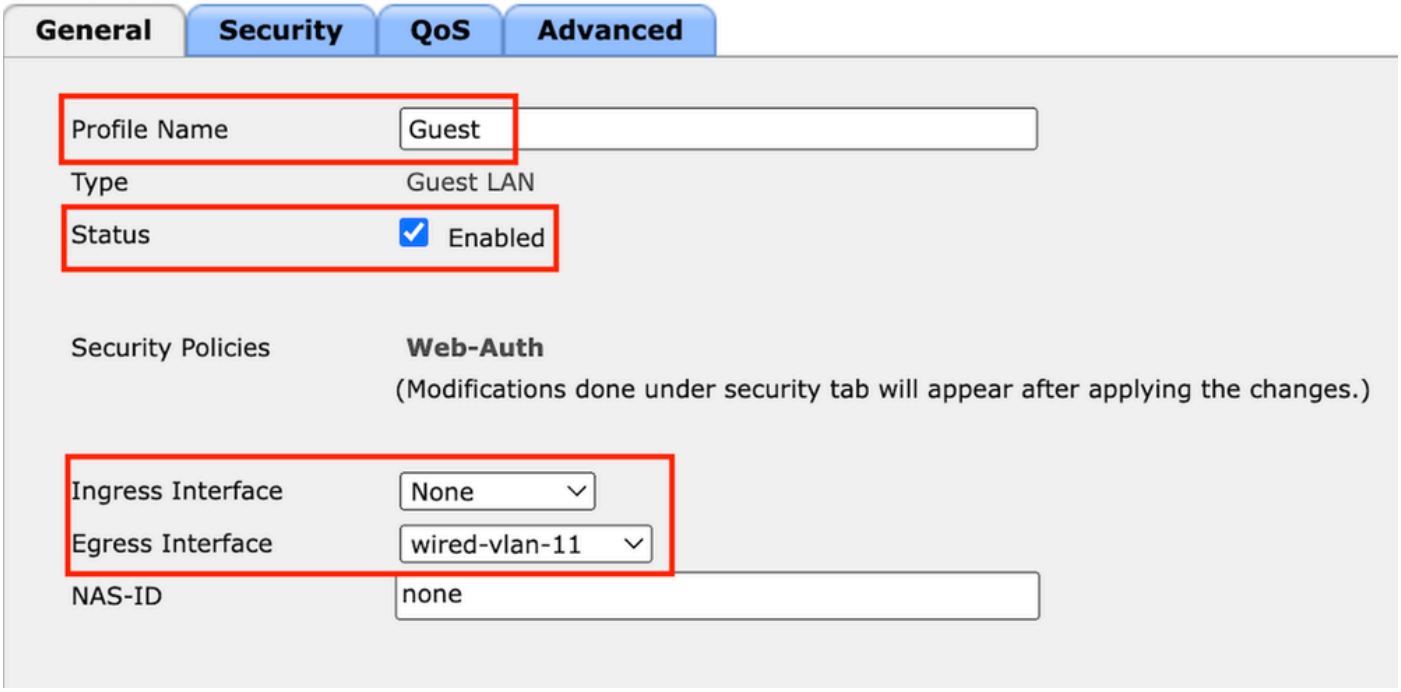


访客LAN配置文件

第2步：在访客LAN配置文件上映射入口和出口接口。

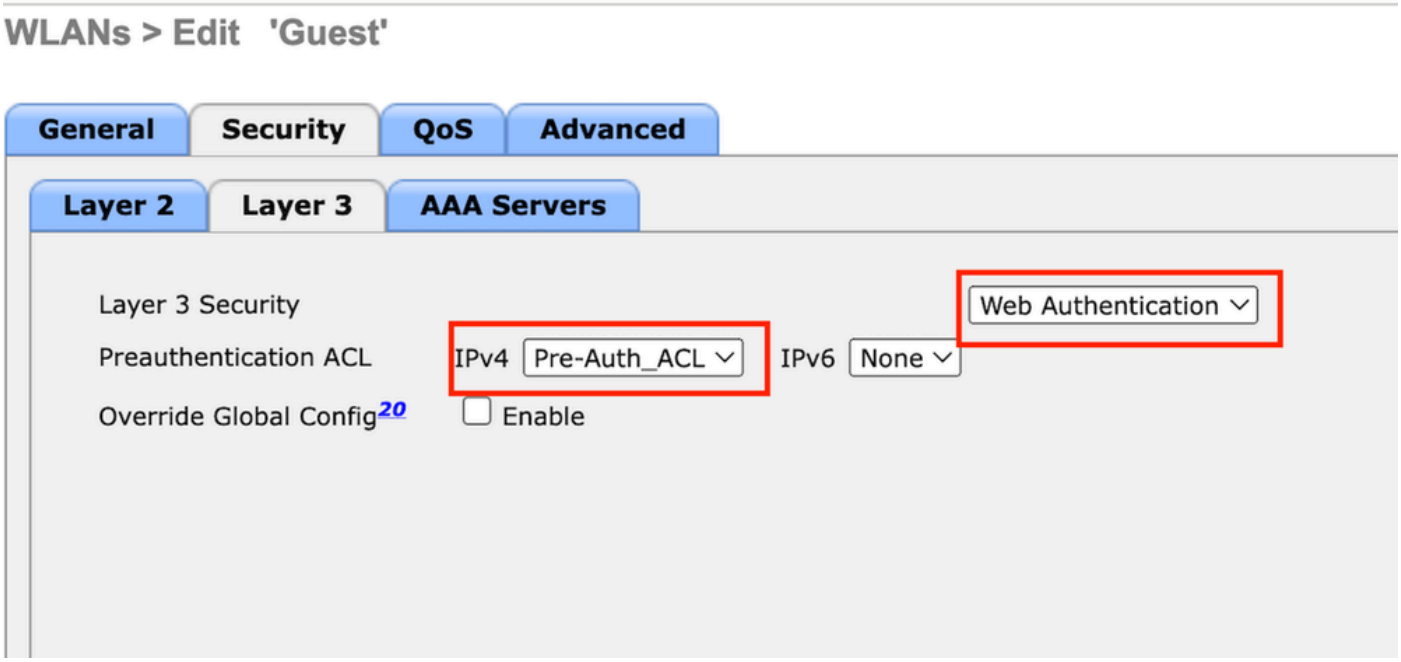
在本例中，Ingress接口为none，因为入口接口是来自外部控制器的EoIP隧道。

出口接口是有线客户端物理连接的VLAN。



访客LAN配置文件

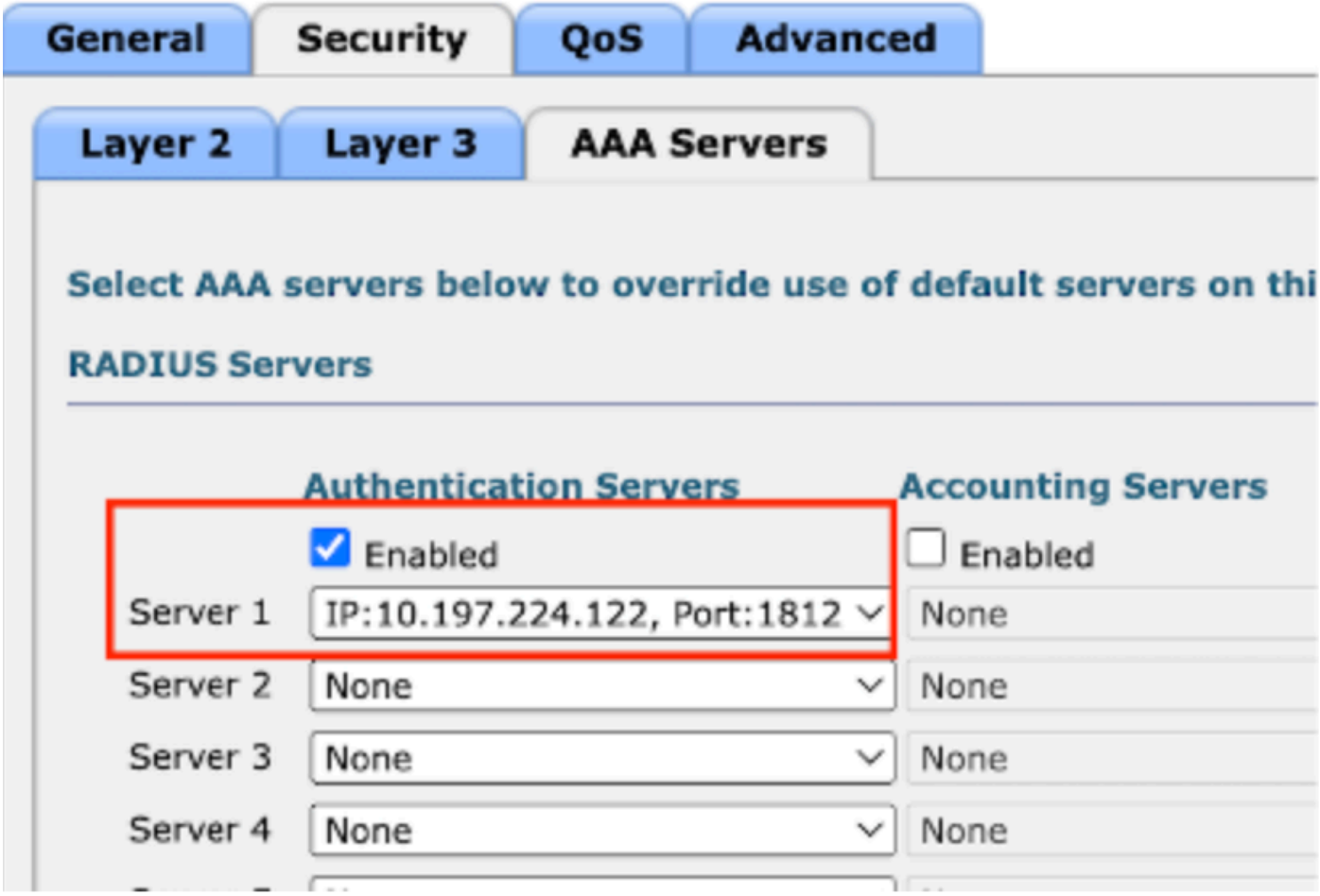
第3步：在“安全”选项卡下，选择第3层安全作为Web身份验证，并映射预身份验证ACL。



访客LAN安全选项卡

第4步：导航到安全> AAA服务器。

选择下拉菜单并将RADIUS服务器映射到访客LAN配置文件。



将RADIUS服务器映射到访客LAN配置文件

第5步：导航到WLAN。将鼠标悬停在访客LAN配置文件的下拉图标上并选择Mobility Anchors。

第6步：选择Mobility Anchor Create将控制器配置为此访客LAN配置文件的导出锚点。

创建移动锚点

在锚定到catalyst 9800的AireOS 5520上配置有线访客

网络拓扑

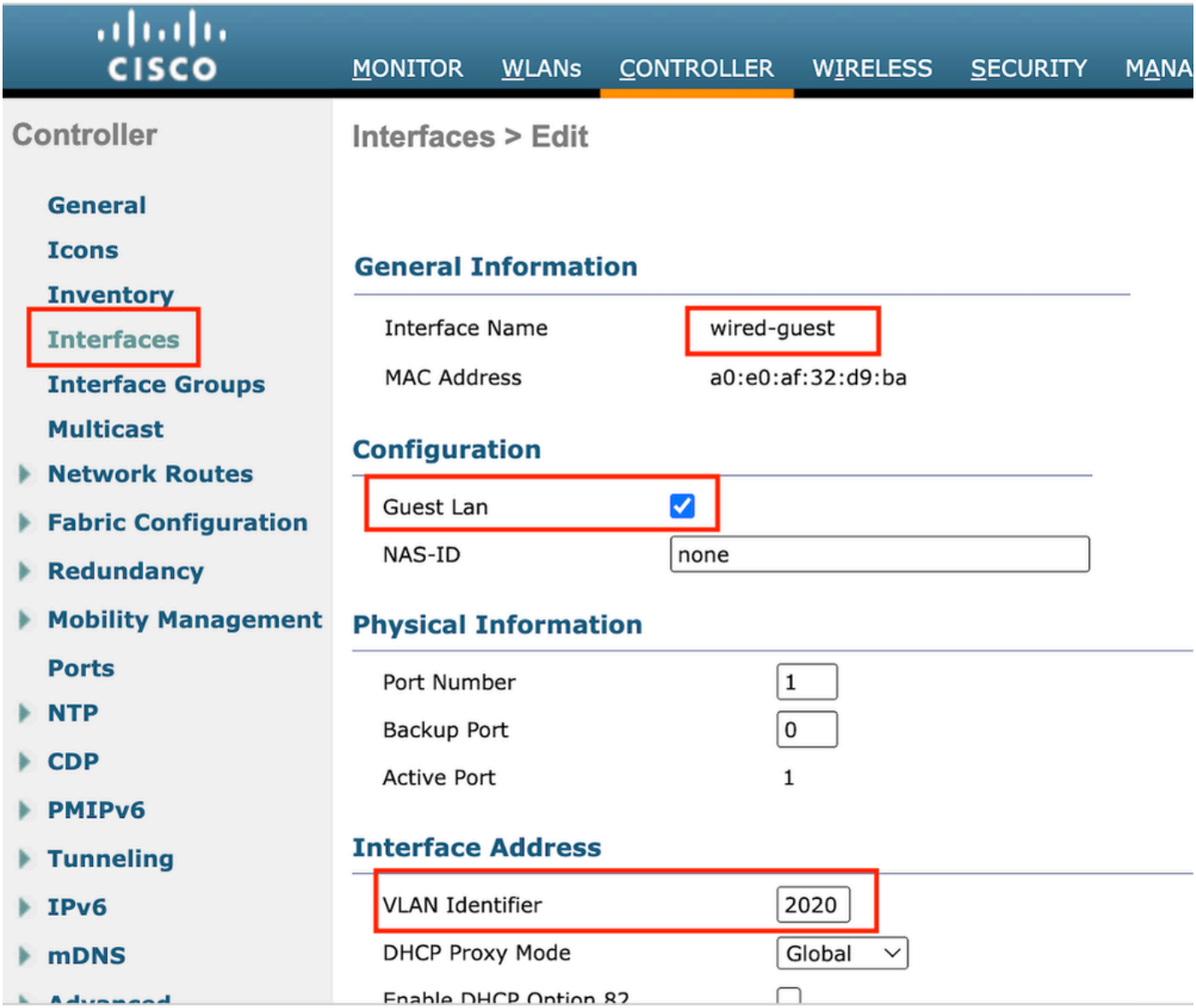
外部5520 WLC上的配置

控制器接口配置

第1步：导航到控制器>接口>新建。配置接口名称、VLAN ID并启用访客LAN。

有线访客需要两个动态接口。

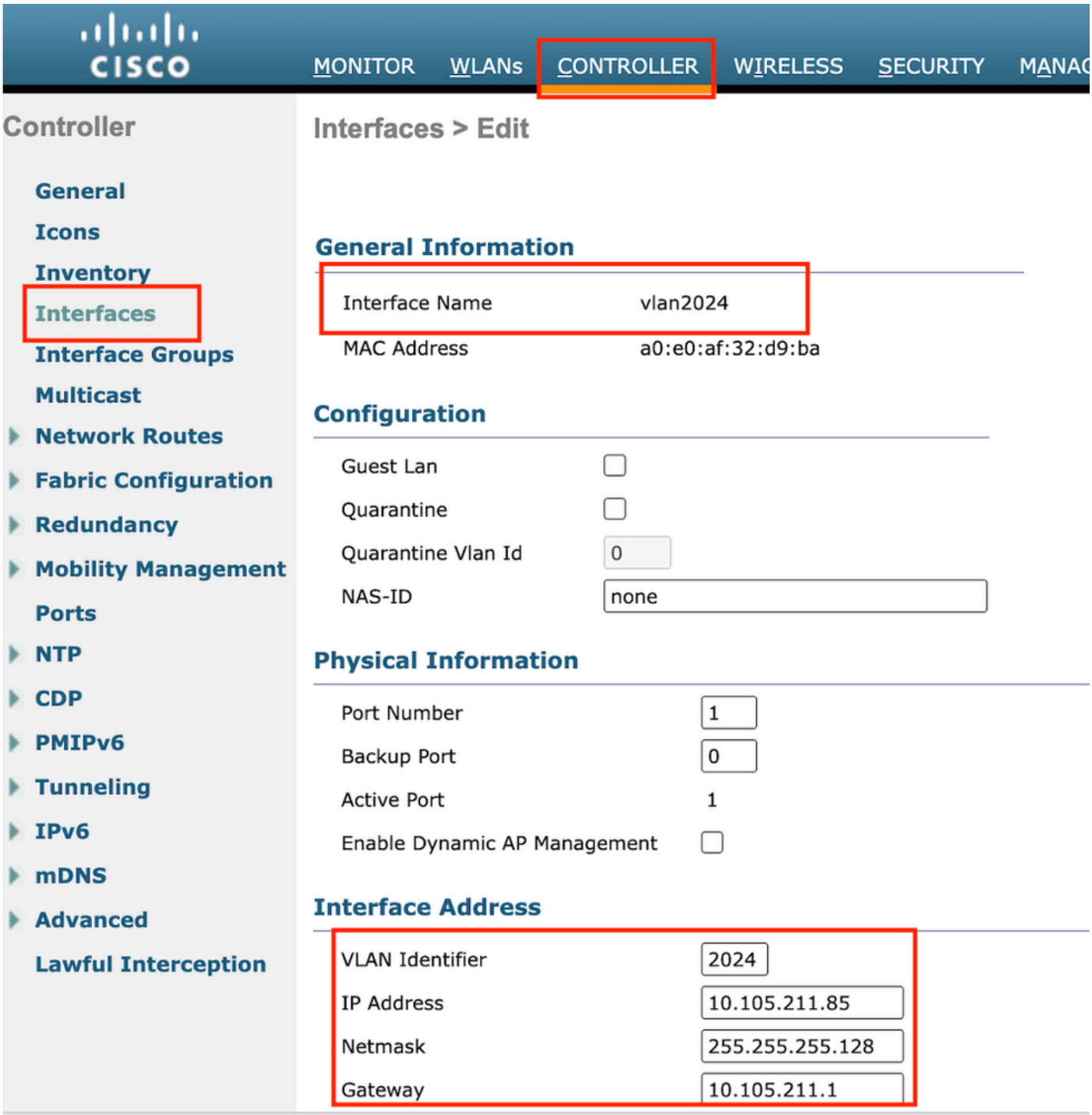
首先，创建一个第2层动态接口并将其指定为访客LAN。此接口用作访客LAN的入口接口，其中有线客户端以物理方式连接。



Ingress 接口

第2步：导航到控制器>接口>新建。配置接口名称、VLAN ID。

第二个动态接口必须是控制器上的第3层接口，有线客户端从此vlan子网接收IP地址。此接口用作访客LAN配置文件的出口接口。



Egress 接口

交换机端口配置

有线访客用户连接到接入层交换机，这些指定端口必须配置为具有在控制器上启用访客LAN的VLAN

接入层交换机端口配置

interface gigabitEthernet <x/x/x>

有线访客接入说明

switchport access vlan 2020

switchport mode access

结束

外部控制器上行链路端口配置

interface TenGigabitEthernet<x/x/x>

描述连接到外部WLC的中继端口

switchport mode trunk

switchport trunk native vlan 2081

switchport trunk allowed vlan 2081,2020

结束

锚点控制器上行链路端口配置

interface TenGigabitEthernet<x/x/x>

描述连接到锚点WLC的中继端口

switchport mode trunk

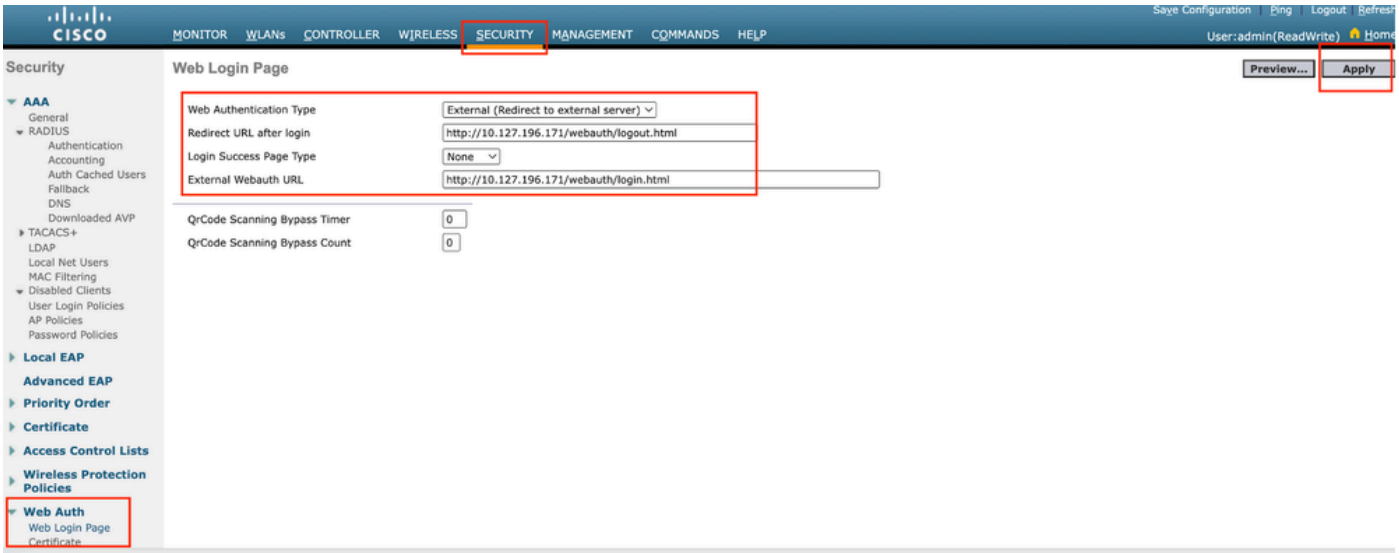
switchport trunk native vlan 2081

switchport trunk allowed vlan 2081,2024

结束

配置Web身份验证

第1步：导航到安全>网络身份验证>网络登录页面。将Web身份验证类型设置为External (Redirect to external server)，并配置外部Web身份验证URL。登录后重定向URL是可选的，并且可以在客户端需要在身份验证成功之后重定向到专用页时进行配置。



Web身份验证设置

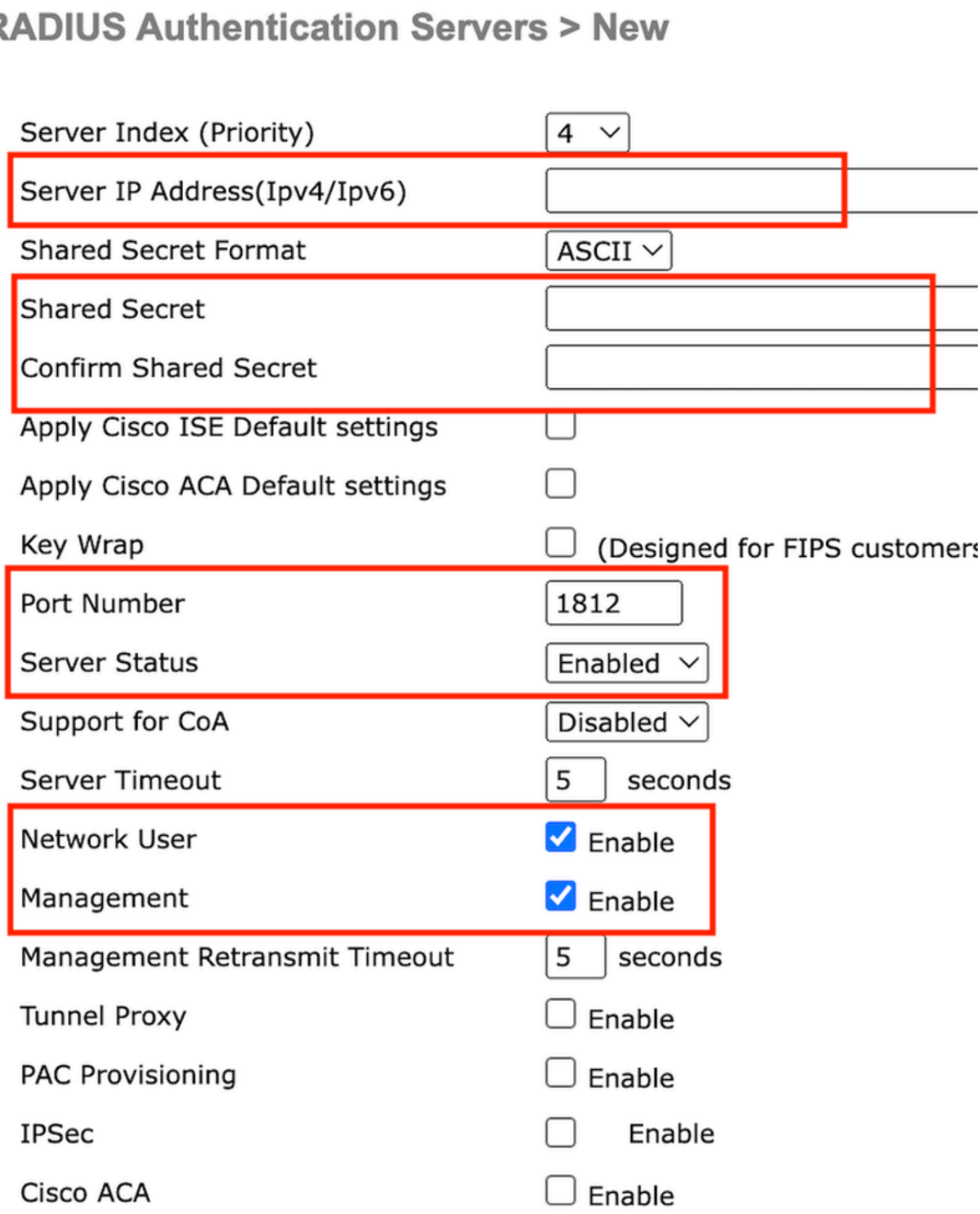
AAA设置：

第1步：配置RADIUS服务器

导航到Security > Radius > Authentication > New。

RADIUS 服务器

第2步：在控制器上配置RADIUS服务器IP和共享密钥。将服务器状态切换到已启用并选中网络用户复选框。

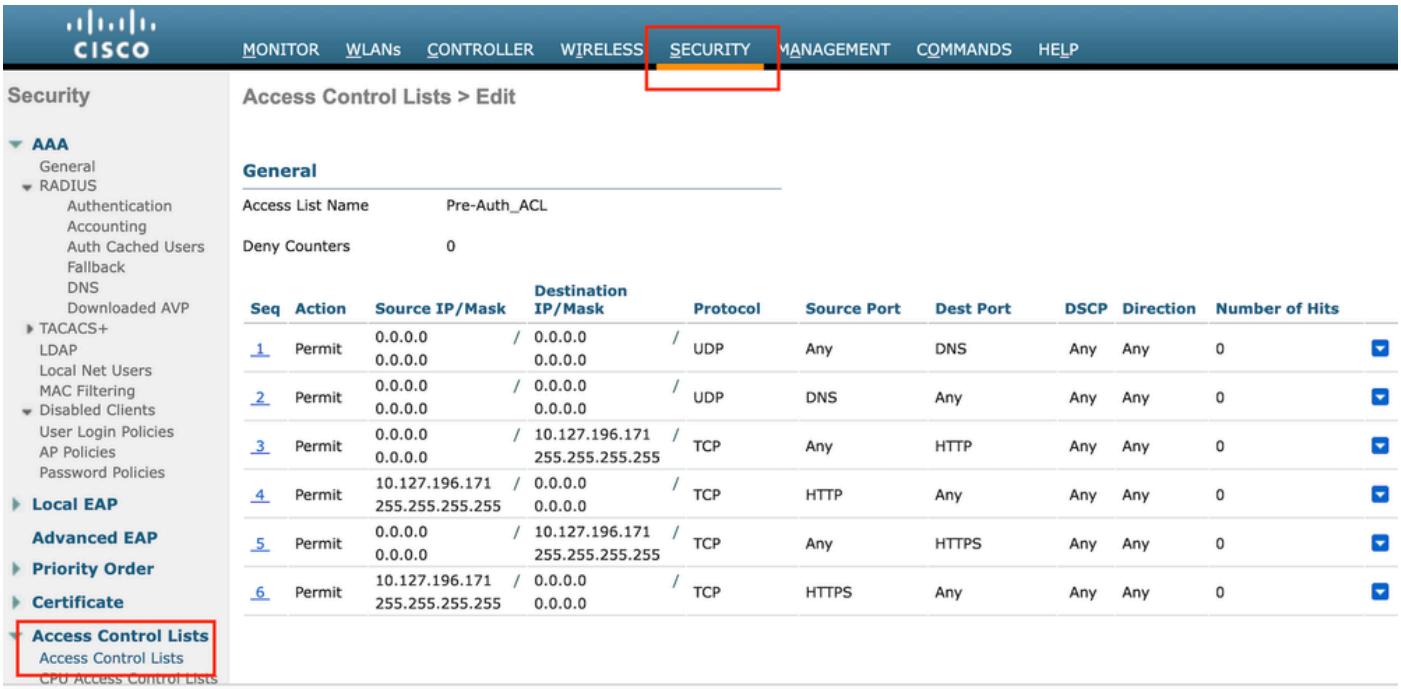


服务器配置

配置访问控制列表

第1步：导航到安全>访问控制列表，然后选择新建。创建预身份验证ACL，允许流量流向DNS和外

部Web服务器。



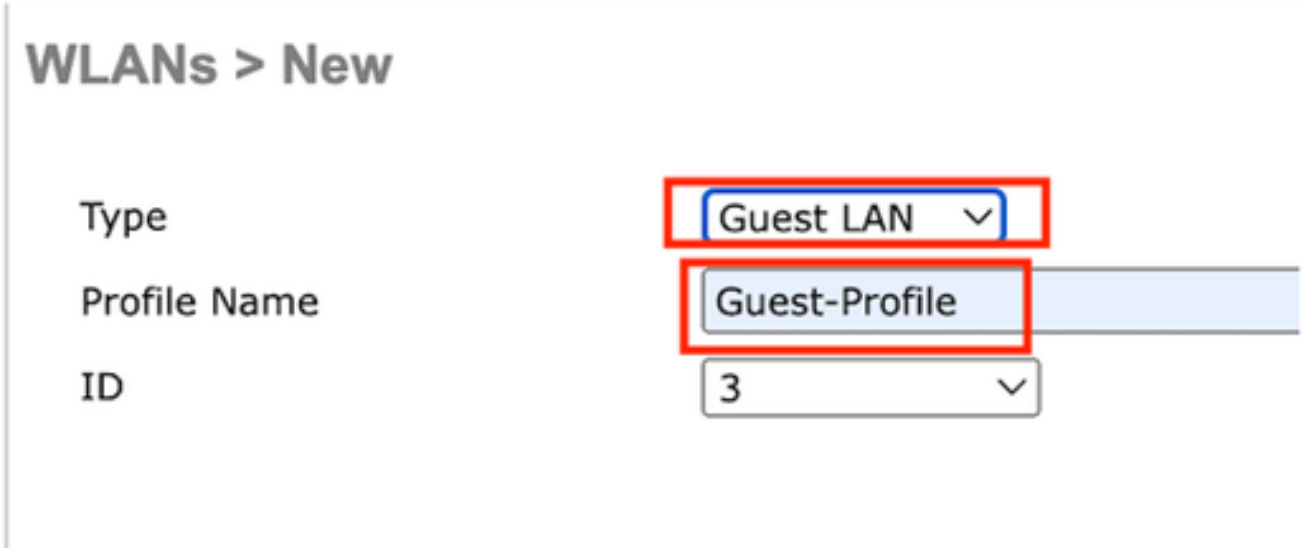
允许流量流向Web服务器的访问列表

配置访客LAN配置文件

第1步：导航到WLAN >新建>转到。

访客LAN配置文件

选择Type as Guest LAN并配置配置文件名称。必须在9800锚点控制器的策略配置文件和访客LAN配置文件上配置相同的名称。

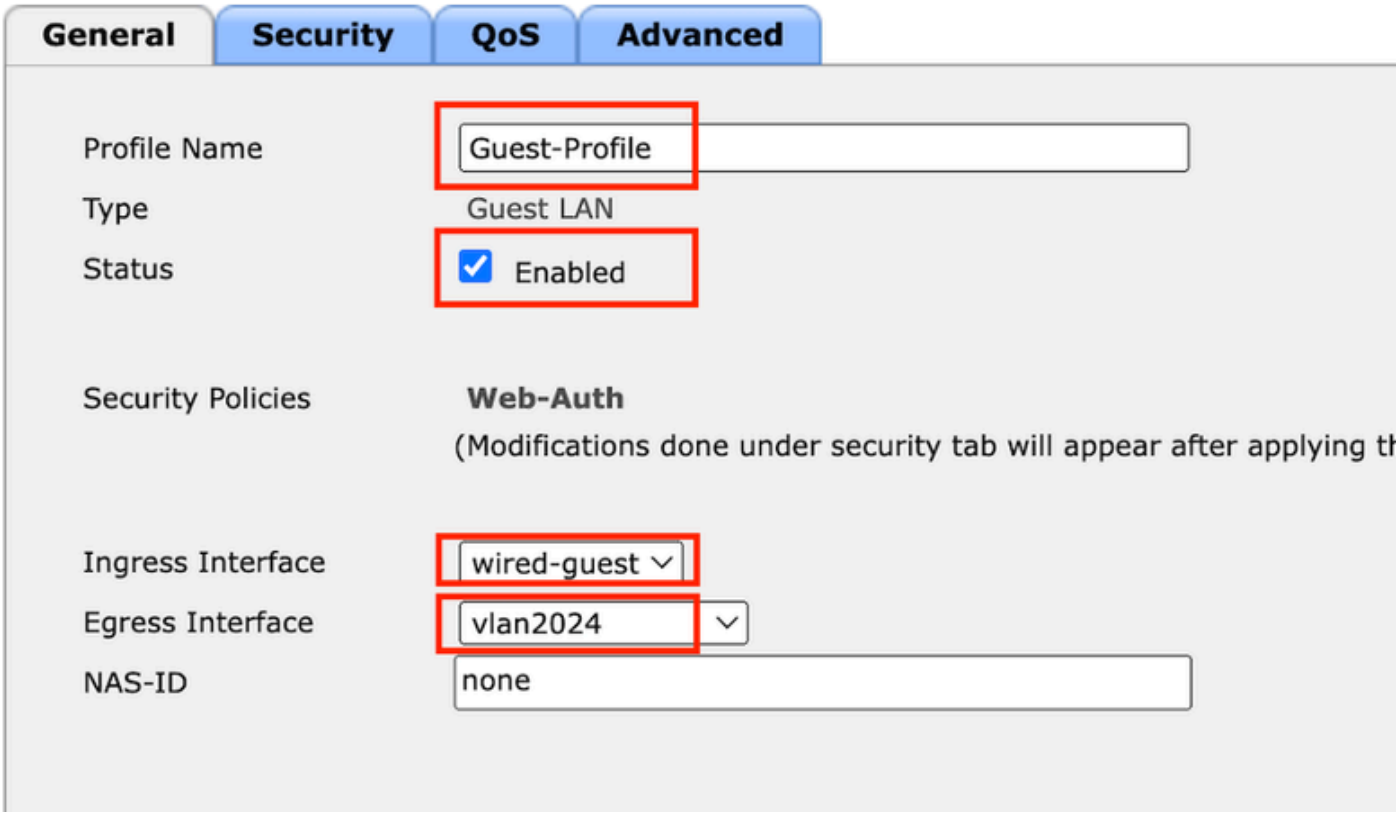


访客LAN配置文件

第2步：在常规(General)选项卡下，在访客LAN配置文件中映射入口和出口接口。

入口接口是有线客户端物理连接到的vlan。

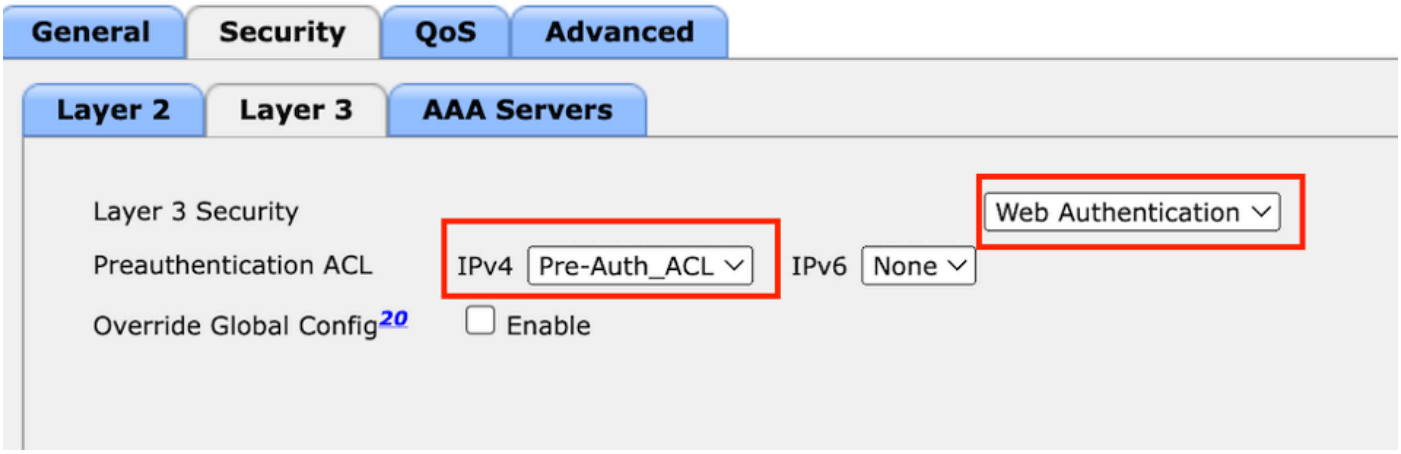
出口接口是客户端请求IP地址的VLAN子网。



访客LAN配置文件

第3步：导航到安全>第3层。

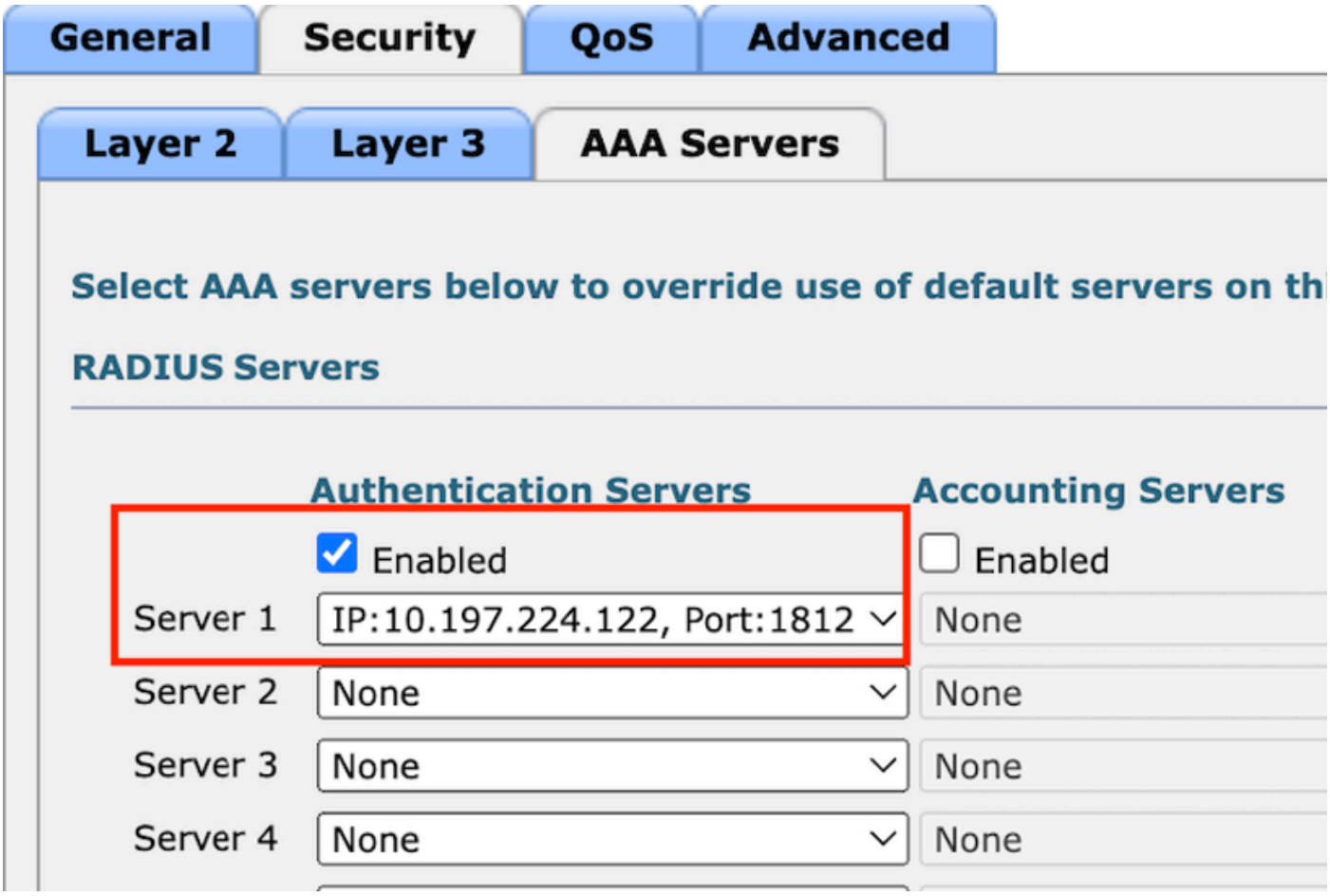
选择Layer 3 Security作为Web Authentication，并映射预身份验证ACL。



Layer 3 Security选项卡

步骤4：

在AAA servers选项卡下，映射RADIUS服务器并选中Enabled复选框。



将RADIUS服务器映射到访客LAN配置文件

第5步：导航到WLAN页面并将鼠标悬停在访客LAN配置文件的下拉图标上，然后选择移动锚点。

移动锚点

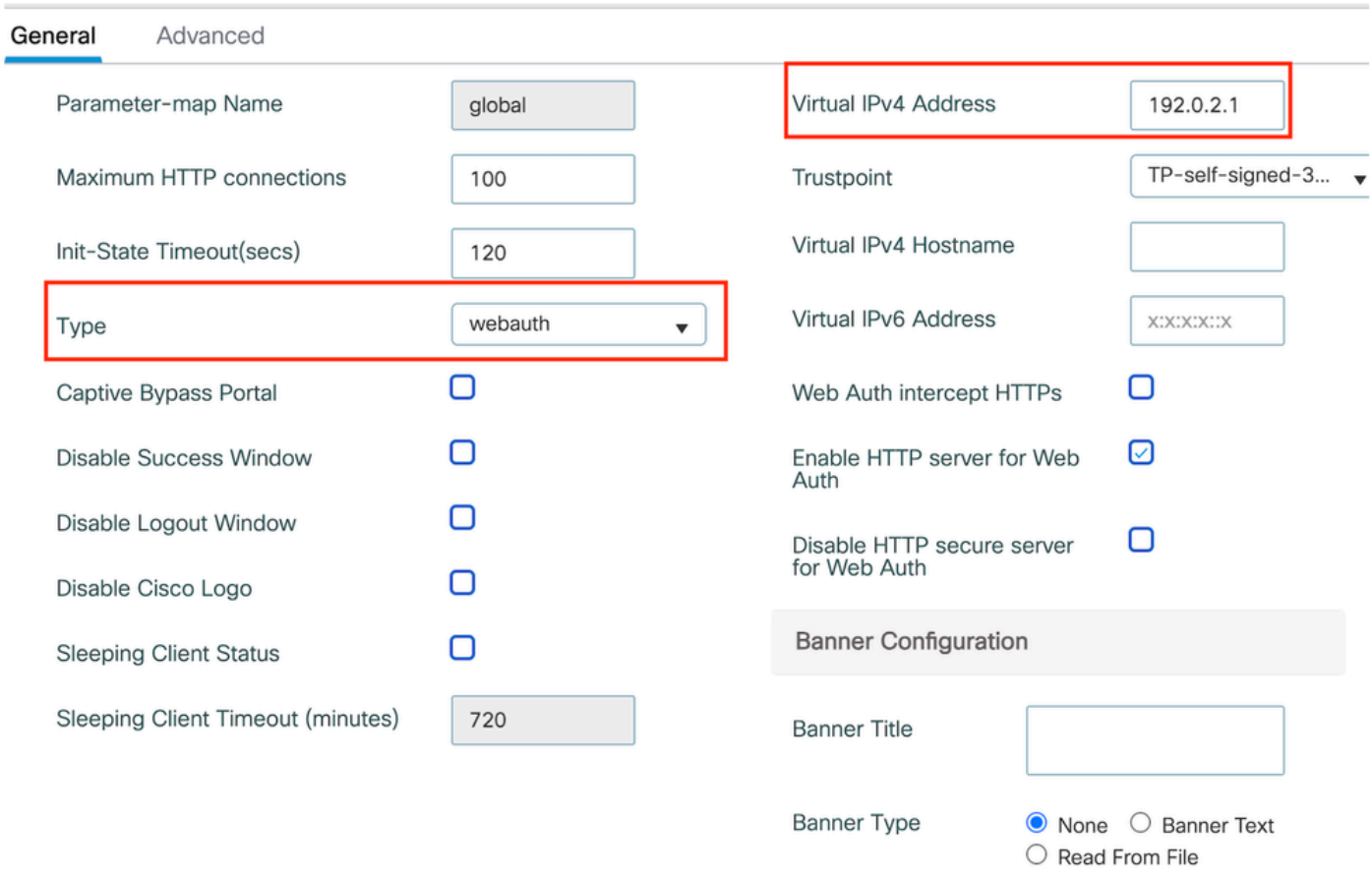
第6步：将移动锚点从下拉列表映射到访客LAN配置文件。

将移动锚点映射到访客LAN

锚点9800 WLC上的配置

配置Web参数映射

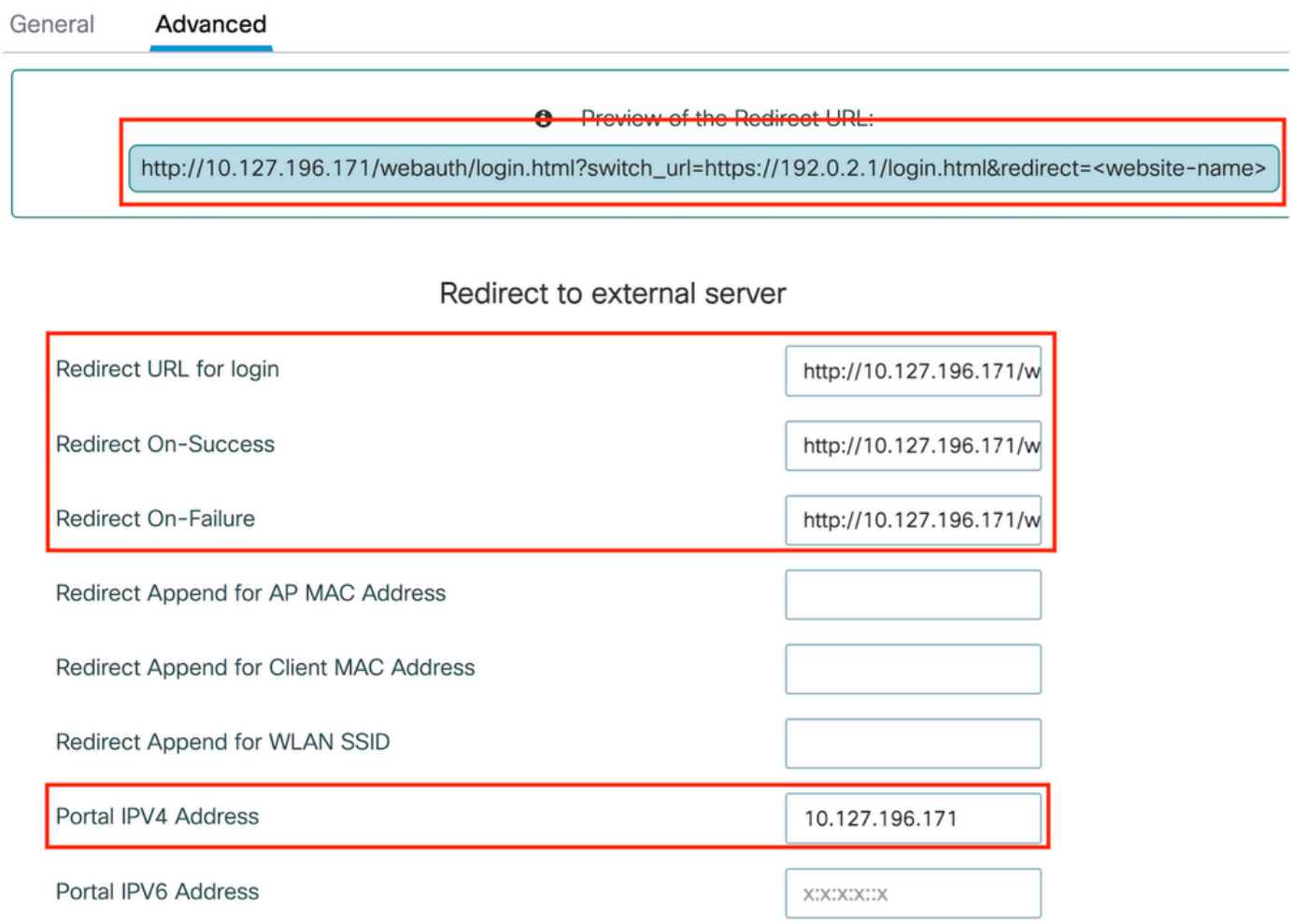
第1步：导航到配置>安全> Web身份验证，然后选择全局。验证控制器的虚拟IP地址和信任点是否正确映射到配置文件(类型设置为webauth)。



Web参数映射

第2步：在高级选项卡下，指定客户端必须重定向到的外部网页URL。配置Redirect URL for

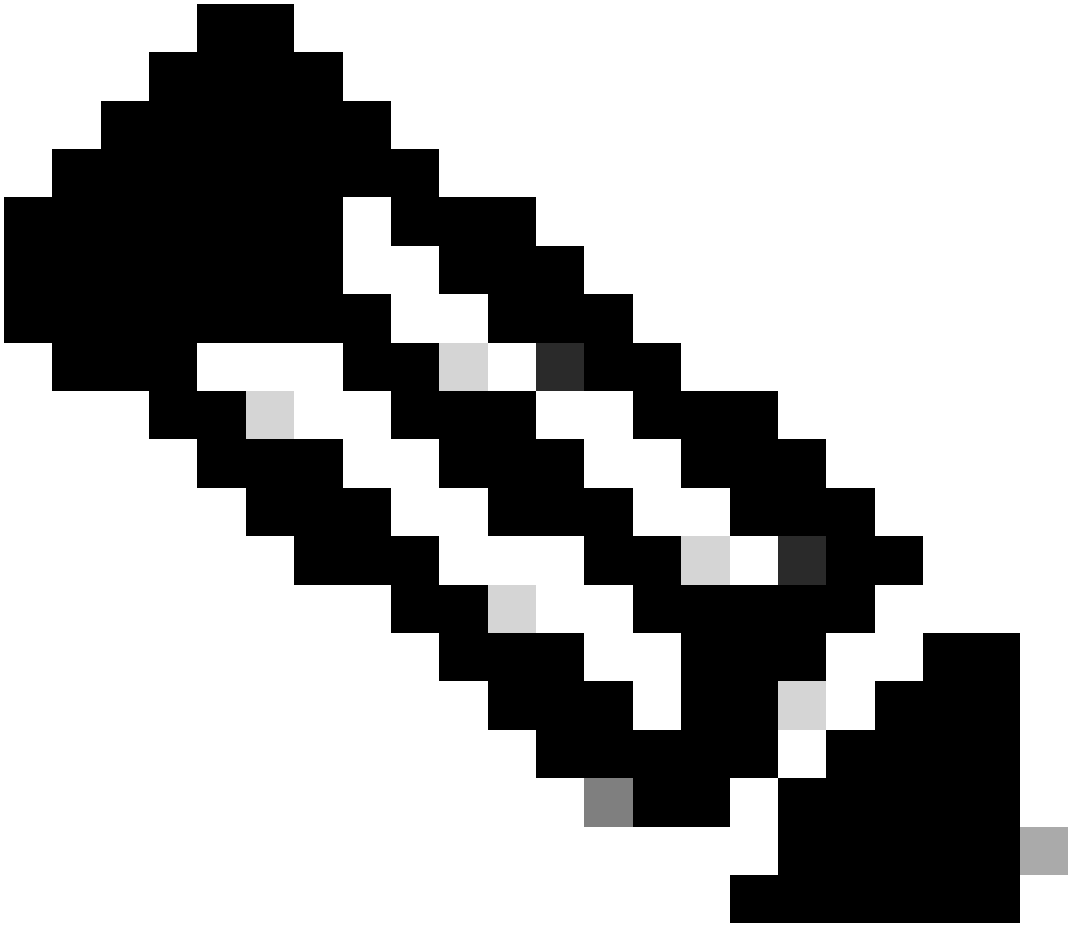
Login和Redirect On-Failure。Redirect On-Success设置是可选配置。



Advanced选项卡

CLI 配置

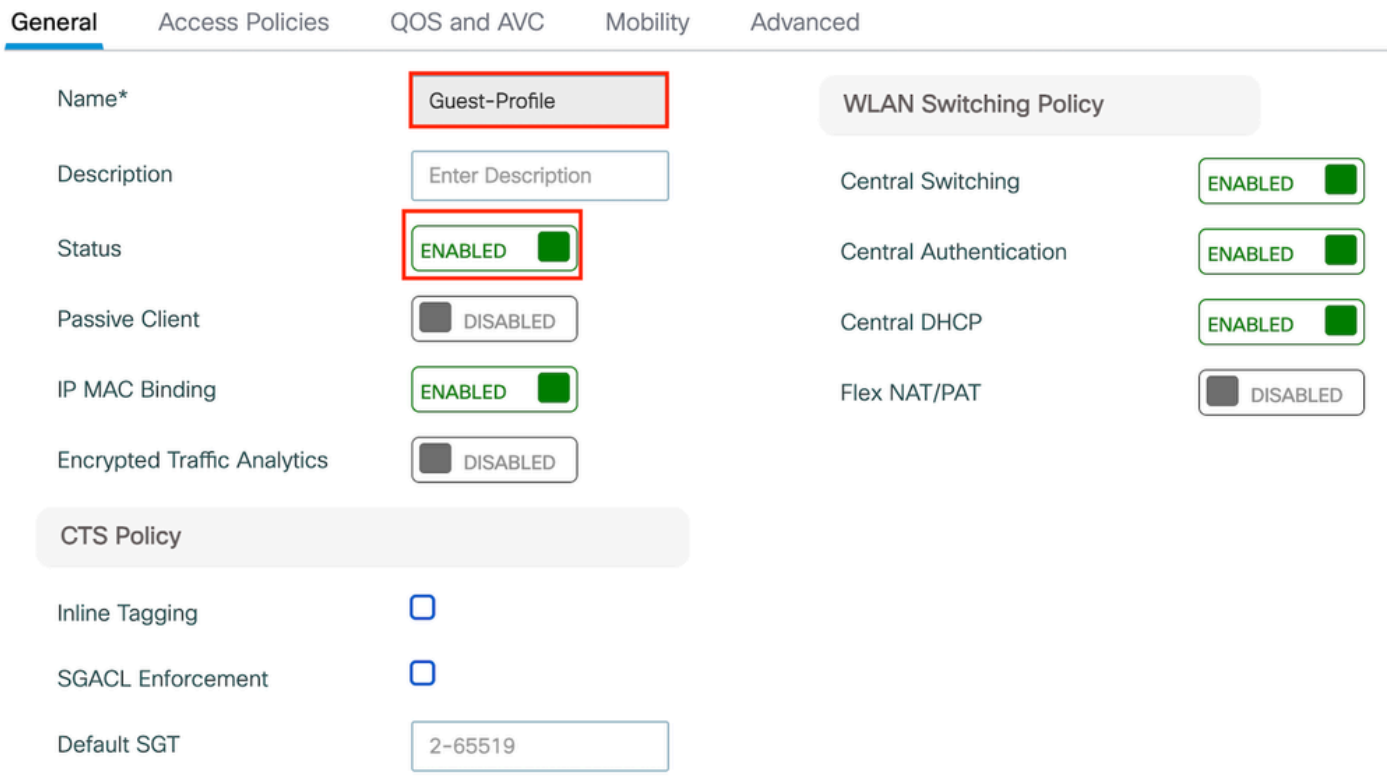
```
parameter-map type webauth global
 type webauth
 virtual-ip ipv4 192.0.2.1
 redirect for-login http://10.127.196.171/webauth/login.html
 redirect on-success http://10.127.196.171/webauth/logout.html
 redirect on-failure http://10.127.196.171/webauth/failed.html
 redirect portal ipv4 10.127.196.171
 trustpoint TP-self-signed-3010594951
 webauth-http-enable
```



注：有关AAA配置，请参阅外部9800 WLC的“在Catalyst 9800上配置锚定到其他Catalyst 9800的有线访客”部分中提供的配置详细信息。

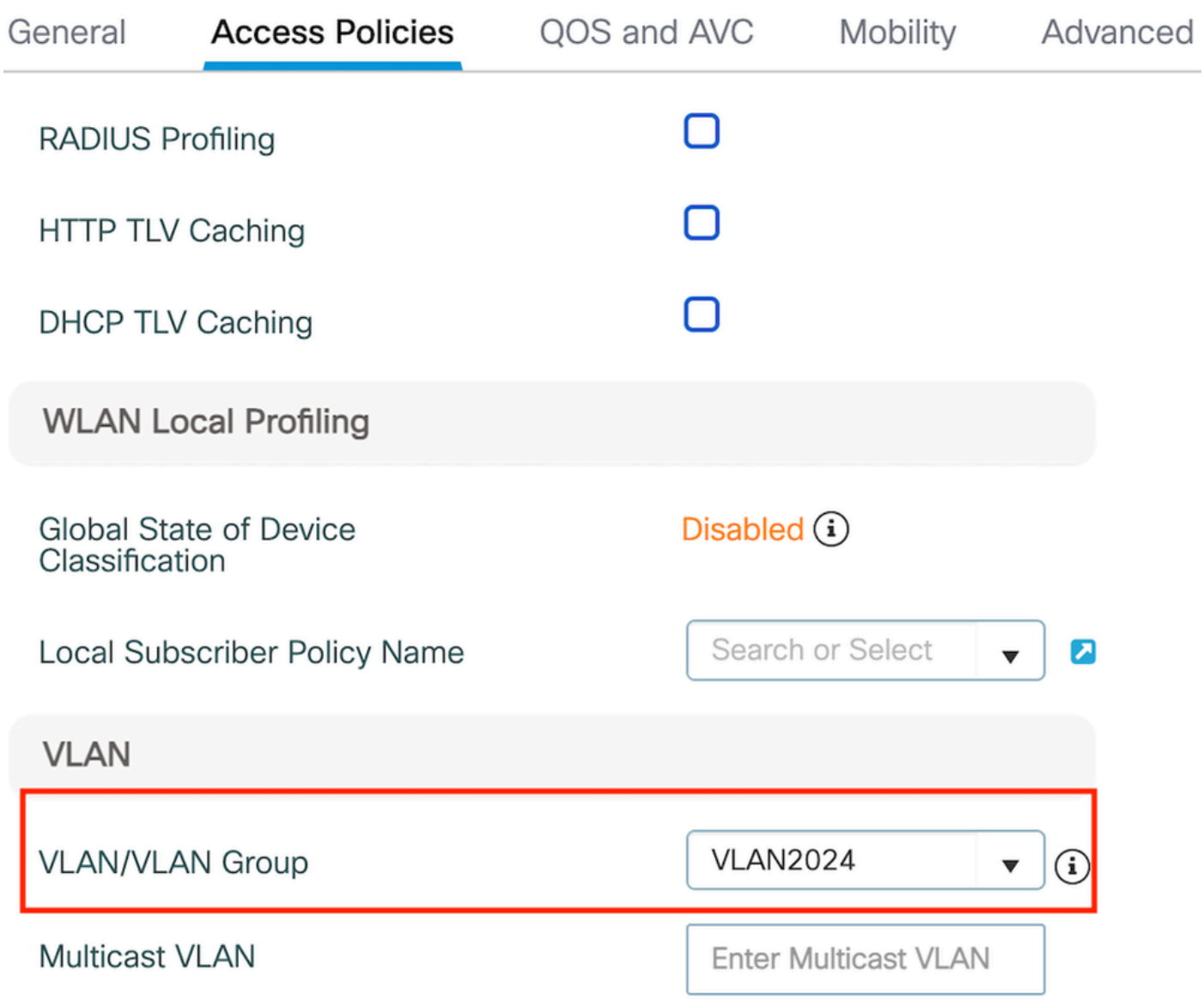
配置策略配置文件

第1步：导航到配置>标签和配置文件>策略。使用与外部控制器的访客LAN配置文件相同的名称配置策略配置文件。



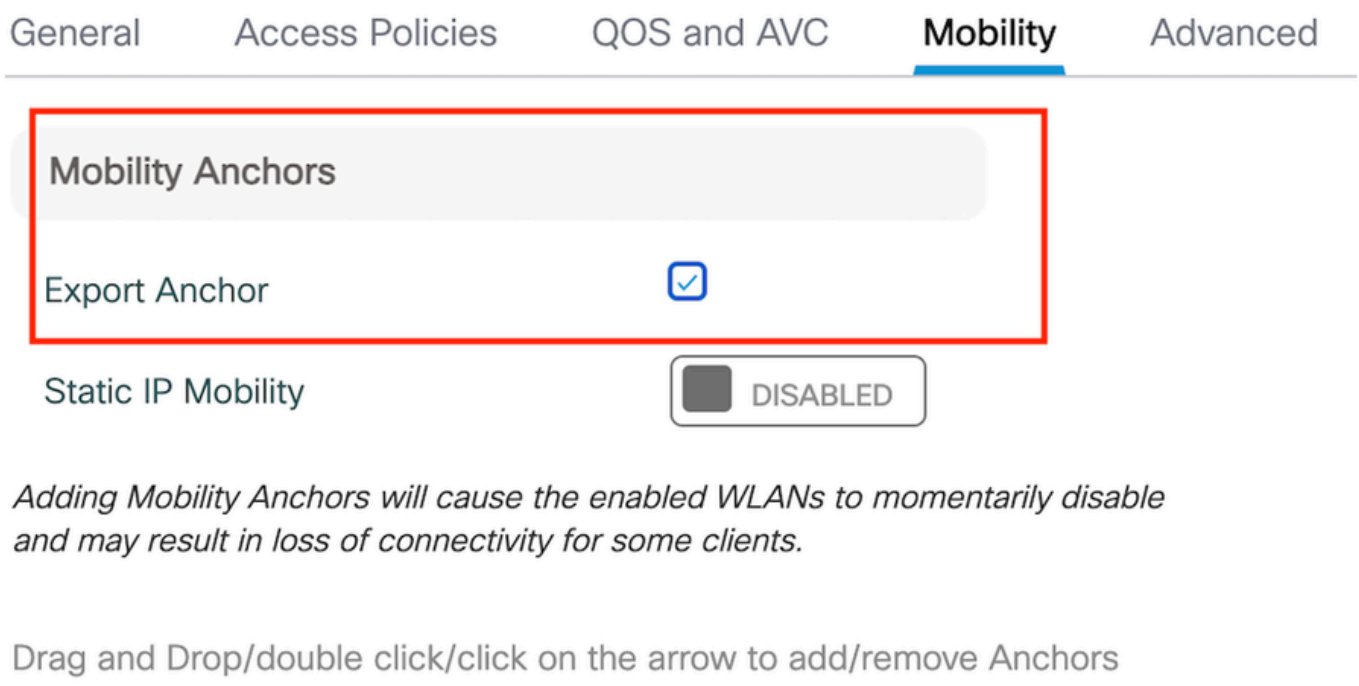
策略配置文件

第2步：在访问策略(Access Policies)选项卡下，从下拉列表中映射有线客户端VLAN



访问策略

第3步：在移动选项卡下，选中导出锚点复选框。



Mobility选项卡

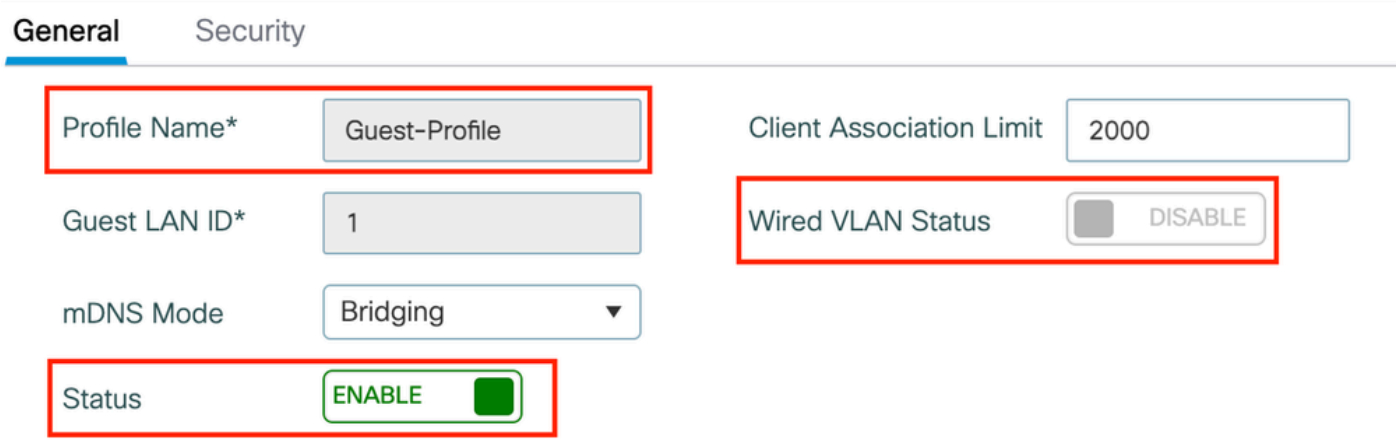
CLI 配置

```
wireless profile policy Guest-Profile
 no accounting-interim
 exclusionlist timeout 180
 no flex umbrella dhcp-dns-option
 mobility anchor
 vlan VLAN2024
 no shutdown
```

配置访客LAN配置文件

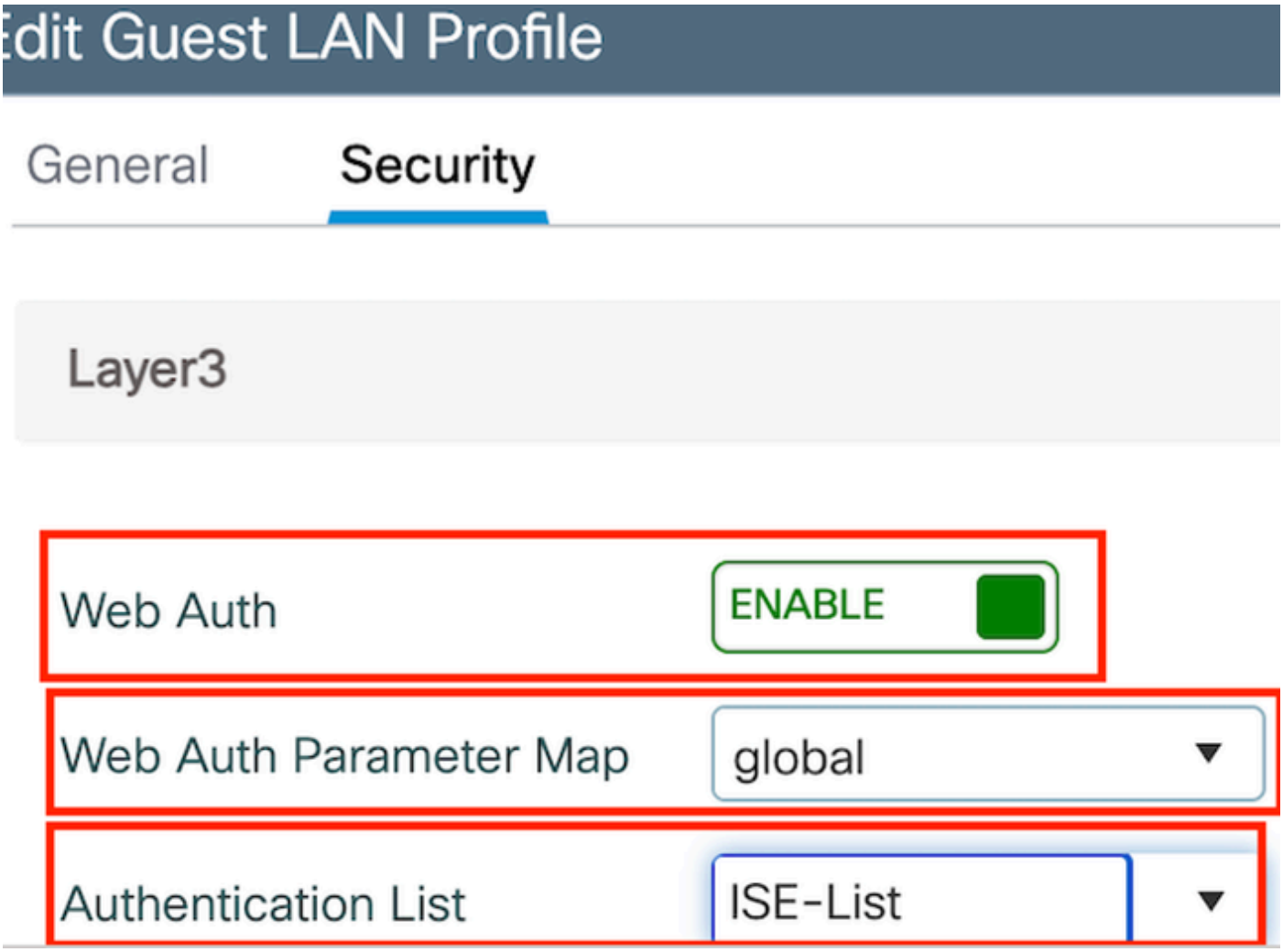
第1步：导航到配置>无线>访客LAN，选择添加配置访客LAN配置文件并禁用有线VLAN状态。

锚点上的访客LAN配置文件名称必须与外部WLC上的访客LAN配置文件相同。



访客LAN配置文件

第2步：在安全选项卡下，启用网络身份验证。 从下拉列表中选择Web Auth参数映射和Authentication List



访客LAN安全选项卡

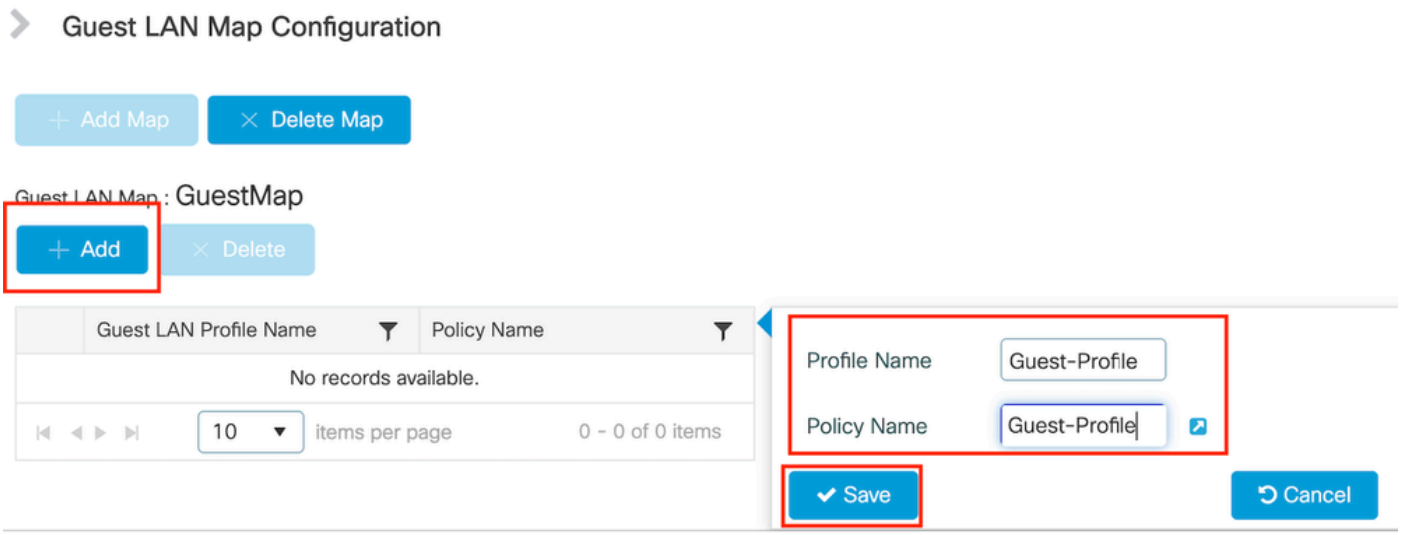
CLI 配置

```
guest-lan profile-name Guest-Profile 1
```

```
security web-auth authentication-list ISE-List
security web-auth parameter-map global
```

访客LAN映射

第1步：导航到配置>无线>访客LAN。在访客LAN映射配置部分中，选择添加，并将策略配置文件映射到访客LAN配置文件。



访客LAN映射

验证

验证控制器配置

#show guest-lan summary

```
GLAN  GLAN Profile Name                  Status
-----------------------------------------------
1     Guest-Profile                      UP
2     Guest                              UP
```

#show guest-lan id 1

<#root>

```
Guest-LAN Profile Name      : Guest
===============================================
Guest-LAN ID                                  : 2
Wired-Vlan                                    :
```

11

```
Status                                        :
```

```
Enabled

Number of Active Clients                        : 0
Max Associated Clients                          : 2000
Security
    WebAuth                                     :

Enabled

    Webauth Parameter Map                       : global
    Webauth Authentication List                 :

ISE-List

    Webauth Authorization List                  : Not configured
mDNS Gateway Status                             : Bridge
```

#show parameter-map type webauth global

<#root>

```
Parameter Map Name                : global
  Type                            :

webauth

  Redirect:
    For Login                     :

http://10.127.196.171/webauth/login.html

    On Success                    :

http://10.127.196.171/webauth/logout.html

    On Failure                    :

http://10.127.196.171/webauth/failed.html

    Portal ipv4                   :

10.127.196.171

        Virtual-ipv4                    :

192.0.2.1
```

#show parameter-map type webauth name <profile name>（如果使用自定义web参数配置文件）

#show wireless guest-lan-map summary

```
GLAN Profile Name                   Policy Name
-------------------------------------------------------------------------------
Guest                               Guest
```

#show无线移动性摘要

```
IP                                          Public Ip                                   MAC Address
-------------------------------------------------------------------------------------------------------
10.76.118.70                                 10.76.118.70                                f4bd.9e59.314b
```

#show ip http server status

```
HTTP server status: Enabled
HTTP server port: 80
HTTP server active supplementary listener ports: 21111
HTTP server authentication method: local

HTTP secure server capability: Present
HTTP secure server status: Enabled
HTTP secure server port: 443
HTTP secure server trustpoint: TP-self-signed-3010594951
```

>show guest-lan summary

```
Number of Guest LANs............................ 1

GLAN ID  GLAN Profile Name                       Status    Interface Name
-------  -------------------------------------  --------  --------------------
2        Guest                                  Enabled  wired-vlan-11
```

>show guest-lan 2

```
Guest LAN Identifier............................ 2
Profile Name.................................... Guest
Status.......................................... Enabled
Interface....................................... wired-vlan-11
Radius Servers
   Authentication............................... 10.197.224.122 1812 *
    Web Based Authentication..................... Enabled
   Web Authentication Timeout................... 300
        IPv4 ACL..................................... Pre-Auth_ACL
                Mobility Anchor List
 GLAN ID     IP Address            Status
 -------     ---------------       ------
 2           10.76.118.74          Up
```

>show custom-web all

```
Radius Authentication Method..................... PAP
Cisco Logo....................................... Enabled
CustomLogo....................................... None
Custom Title..................................... None
Custom Message................................... None
Custom Redirect URL.............................. http://10.127.196.171/webauth/logout.html
Web Authentication Login Success Page Mode....... None
Web Authentication Type.......................... External
Logout-popup..................................... Enabled
External Web Authentication URL.................. http://10.127.196.171/webauth/login.html
QR Code Scanning Bypass Timer.................... 0
QR Code Scanning Bypass Count.................... 0
```

>show custom-web guest-lan 2

```
Guest LAN Status............................... Enabled
Web Security Policy............................ Web Based Authentication
WebAuth Type................................... External
Global Status.................................. Enabled
```

验证客户端策略状态

外国、

#show无线客户端摘要

客户端成功关联后，外部控制器上的客户端策略管理器状态为RUN。

<#root>

```
MAC Address    AP Name                                          Type ID   State             Protocol Meth
-----------------------------------------------------------------------------------------------------------
a0ce.c8c3.a9b5 N/A
```

GLAN 1

Run

802.3

Web Auth

Export Foreign

>show client detail a0ce.c8c3.a9b5

<#root>

```
Client MAC Address............................. a0:ce:c8:c3:a9:b5
Client Username ............................... N/A
Client Webauth Username ....................... N/A
Client State................................... Associated
User Authenticated by ......................... None
Client User Group...............................
Client NAC OOB State........................... Access
guest-lan...................................... 1
Wireless LAN Profile Name...................... Guest-Profile
Mobility State..................................
```

Export Foreign

```
Mobility Anchor IP Address......................
```

10.76.118.70

```
Security Policy Completed.......................
```

Yes

```
Policy Manager State............................
```

RUN

```
Pre-auth IPv4 ACL Name......................... Pre-Auth_ACL
EAP Type....................................... Unknown
Interface.......................................
```

wired-guest-egress

```
VLAN........................................... 2024
Quarantine VLAN................................ 0
```

在锚点上，

必须在锚点控制器上监控客户端状态转换。

客户端策略管理器状态为Web Auth pending（网络身份验证挂起）。

<#root>

```
MAC Address    AP Name                                        Type ID   State             Protocol Meth
-----------------------------------------------------------------------------------------------------
a0ce.c8c3.a9b5 10.76.6.156
```

GLAN 1

```
    Webauth Pending
```

802.3

```
    Web Auth
```

Export Anchor

客户端进行身份验证后，策略管理器状态会转换为RUN状态。

```
MAC Address    AP Name                                          Type ID   State             Protocol Meth
-----------------------------------------------------------------------------------------------------------
a0ce.c8c3.a9b5 10.76.6.156                                      GLAN 1    Run               802.3    Web A
```

#show无线客户端mac-address a0ce.c8c3.a9b5 detail

<#root>

```
Client MAC Address : a0ce.c8c3.a9b5
Client MAC Type : Universally Administered Address
Client DUID: NA
Client IPv4 Address :
```

10.105.211.69

```
Client State : Associated
Policy Profile : Guest-Profile
Flex Profile : N/A
Guest Lan:
  GLAN Id: 1
  GLAN Name: Guest-Profile

Mobility:
  Foreign IP Address          :
```

10.76.118.74

```
  Point of Attachment         : 0xA0000003
  Point of Presence           : 0
  Move Count                  : 1
  Mobility Role               :
```

Export Anchor

```
  Mobility Roam Type          :
```

L3 Requested

```
Policy Manager State:
```

Webauth Pending

```
Last Policy Manager State :
```

IP Learn Complete

```
Client Entry Create Time : 35 seconds

VLAN : VLAN2024

Session Manager:
  Point of Attachment : mobility_a0000003
  IIF ID              : 0xA0000003
  Authorized          : FALSE
  Session timeout     : 28800
  Common Session ID: 4a764c0a0000008ea0285466
  Acct Session ID  : 0x00000000
  Auth Method Status List
        Method : Web Auth
```

```
                Webauth State    :
```

Login

```
                Webauth Method   :
```

Webauth

```
Server Policies:
  Resultant Policies:
                URL Redirect ACL :
```

WA-v4-int-10.127.196.171

```
                Preauth ACL      :
```

WA-sec-10.127.196.171

```
                VLAN Name        : VLAN2024
                VLAN             :
```

2024

```
                Absolute-Timer   : 28800
```

客户端在成功进行Web身份验证后进入RUN状态。

show wireless client mac-address a0ce.c8c3.a9b5 detail

<#root>

```
Client MAC Address : a0ce.c8c3.a9b5
Client MAC Type : Universally Administered Address
Client DUID: NA
Client IPv4 Address :
```

10.105.211.69

```
Client Username :
```

testuser

```
Client State : Associated
Policy Profile : Guest-Profile
Flex Profile : N/A
Guest Lan:
  GLAN Id: 1
  GLAN Name: Guest-Profile
Wireless LAN Network Name (SSID) : N/A
BSSID : N/A
Connected For : 81 seconds
Protocol : 802.3

Policy Manager State:
```

Run

```
Last Policy Manager State :
```

Webauth Pending

```
Client Entry Create Time : 81 seconds
VLAN : VLAN2024

Last Tried Aaa Server Details:
        Server IP :
```

10.197.224.122

```
  Auth Method Status List
        Method : Web Auth
                Webauth State    : Authz
                Webauth Method   : Webauth

  Resultant Policies:
                URL Redirect ACL :
```

IP-Adm-V4-LOGOUT-ACL

```
                VLAN Name        : VLAN2024
                VLAN             :
```

2024

```
                Absolute-Timer   : 28800
```

>show client detail a0 : ce : c8 : c3 : a9 : b5

<#root>

```
Client MAC Address............................... a0:ce:c8:c3:a9:b5
Client Username ................................. N/A
Client Webauth Username ......................... N/A
Client State..................................... Associated
Wireless LAN Profile Name........................ Guest
WLAN Profile check for roaming................... Disabled
Hotspot (802.11u)................................ Not Supported
Connected For ................................... 90 secs
IP Address....................................... 10.105.211.75
Gateway Address.................................. 10.105.211.1
Netmask.......................................... 255.255.255.128
Mobility State...................................
```

Export Anchor

```
Mobility Foreign IP Address......................
```

10.76.118.70

```
Security Policy Completed........................ No
Policy Manager State............................
```

WEBAUTH_REQD

```
Pre-auth IPv4 ACL Name...........................
```

Pre-Auth_ACLPre-auth

```
IPv4 ACL Applied Status................. Yes
Pre-auth IPv4 ACL Applied Status................
```

Yes

身份验证客户端转换到RUN状态后。

<#root>

```
show client detail a0:ce:c8:c3:a9:b5
Client MAC Address............................... a0:ce:c8:c3:a9:b5
Client Username ................................
```

testuser

```
Client Webauth Username ........................
```

testuser

```
Client State....................................
```

Associated

```
User Authenticated by ..........................
```

RADIUS Server

```
Client User Group............................... testuser
Client NAC OOB State............................ Access
Connected For .................................. 37 secs
IP Address......................................
```

10.105.211.75

```
Gateway Address................................. 10.105.211.1
Netmask......................................... 255.255.255.128
Mobility State..................................
```

Export Anchor

```
Mobility Foreign IP Address..................... 10.76.118.70
Security Policy Completed....................... Yes
Policy Manager State............................
```

RUN

```
Pre-auth IPv4 ACL Name.......................... Pre-Auth_ACL
Pre-auth IPv4 ACL Applied Status................ Yes
EAP Type........................................ Unknown
Interface.......................................
```

wired-vlan-11

```
VLAN............................................
```

11

```
Quarantine VLAN................................. 0
```

故障排除

AireOS控制器调试

启用客户端调试

>debug client <H.H.H>

验证是否启用了调试

>show debugging

要禁用调试

debug disable-all

9800放射性痕迹

激活Radio Active Tracing以在CLI中为指定的MAC地址生成客户端调试跟踪。

启用放射性跟踪的步骤：

确保禁用所有条件调试。

```
clear platform condition all
```

启用对指定mac地址的调试。

```
debug wireless mac <H.H.H> monitor-time <Time is seconds>
```

重现问题后，请禁用调试以停止RA跟踪收集。

```
no debug wireless mac <H.H.H>
```

一旦RA跟踪停止，将在控制器的bootflash中生成调试文件。

```
show bootflash: | include ra_trace
2728        179 Jul 17 2024 15:13:54.0000000000 +00:00 ra_trace_MAC_aaaabbbbcccc_HHMMSS.XXX_timezone_Da
```

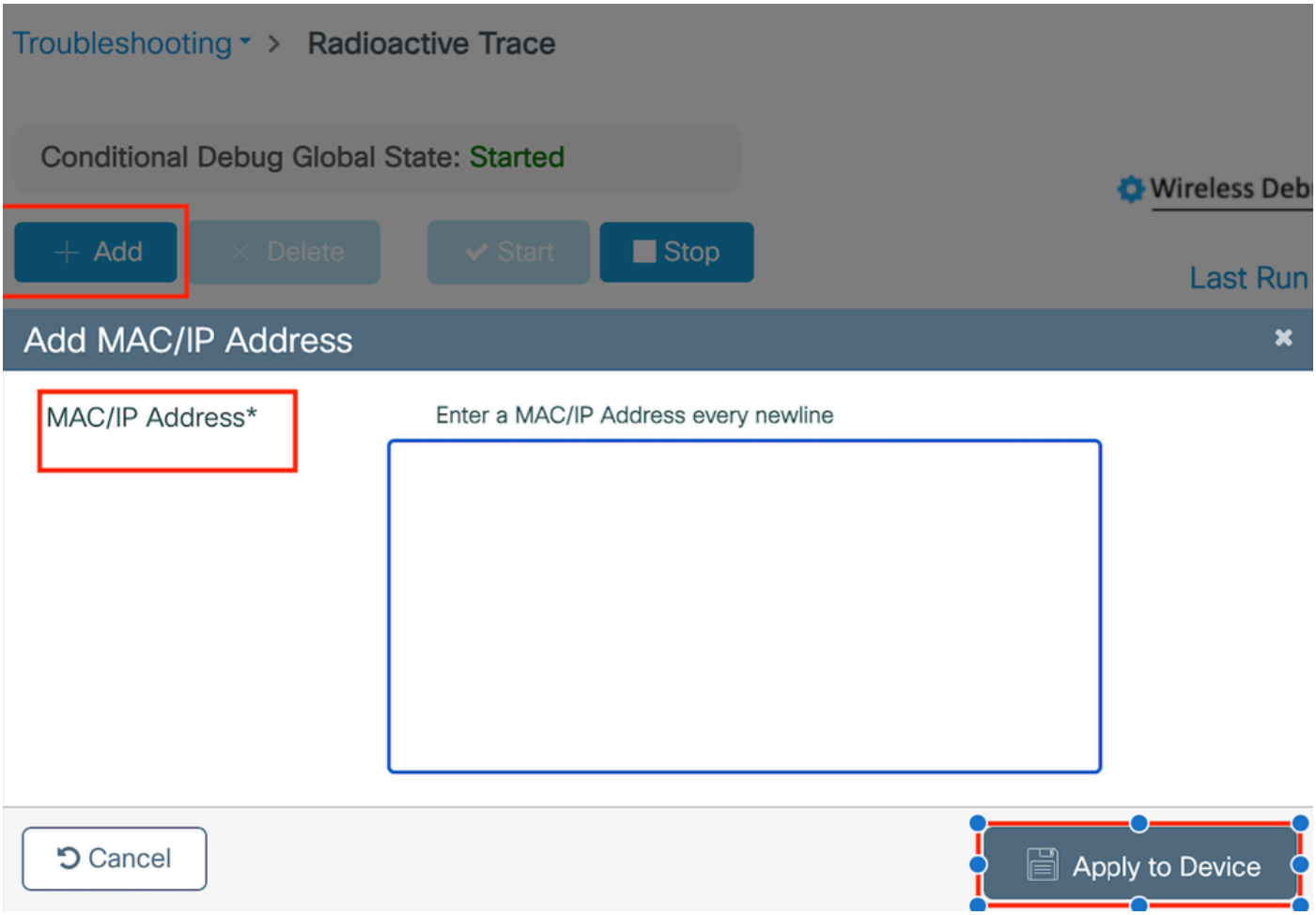
将文件复制到外部服务器。

```
copy bootflash:ra_trace_MAC_aaaabbbbcccc_HHMMSS.XXX_timezone_DayWeek_Month_Day_year.log tftp://<IP addr
```

显示调试日志：

```
more bootflash:ra_trace_MAC_aaaabbbbcccc_HHMMSS.XXX_timezone_DayWeek_Month_Day_year.log
```

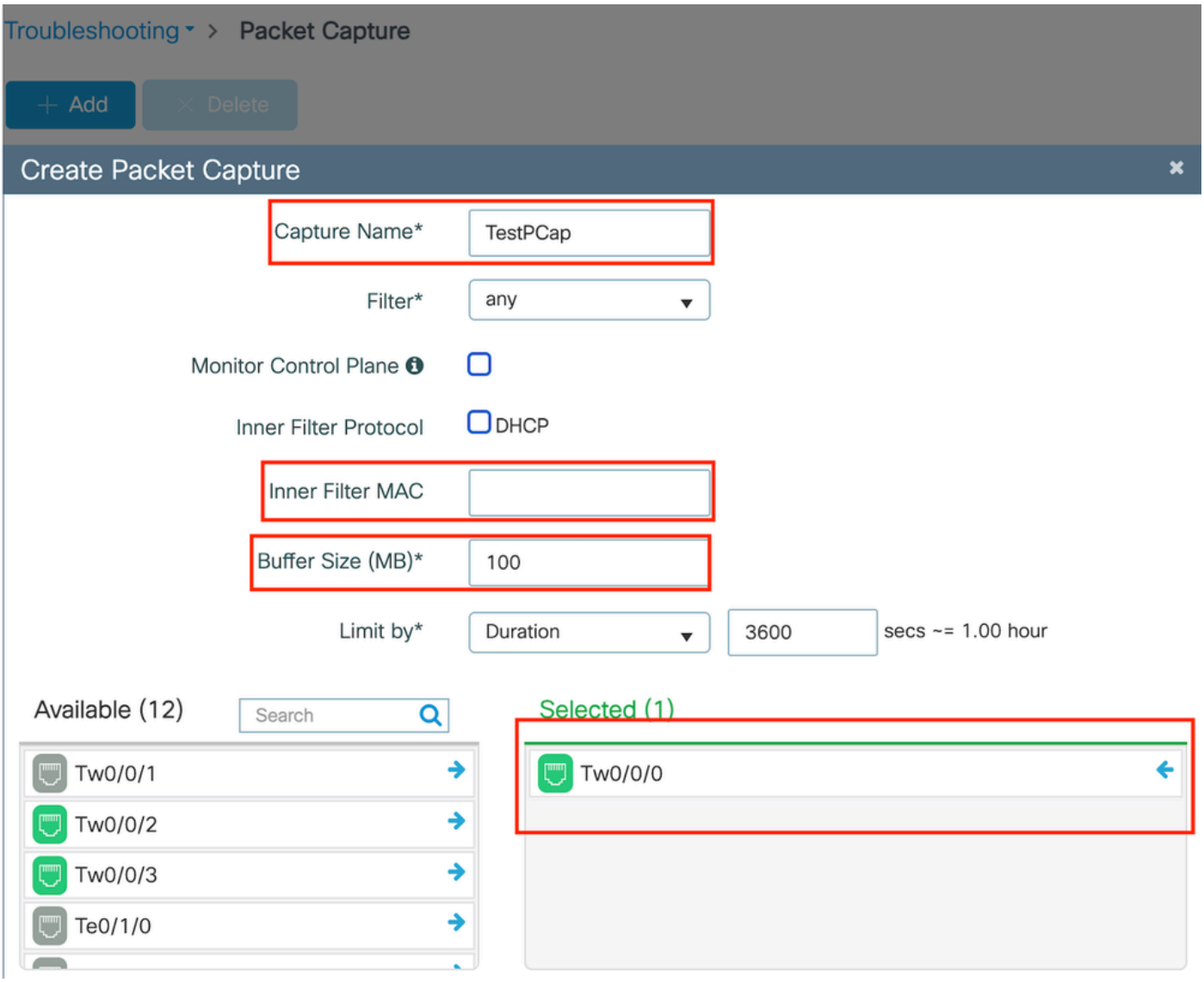
在GUI中启用RA跟踪，



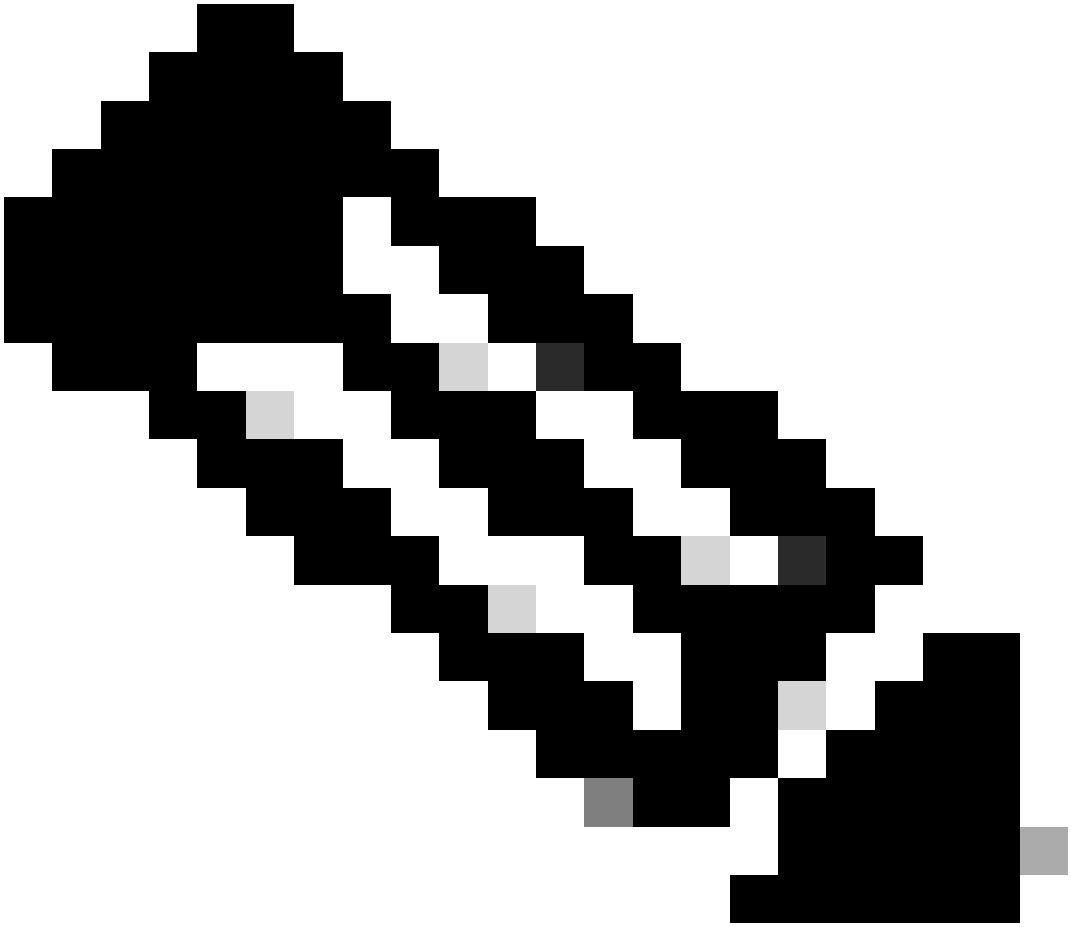
在WebUI上启用RA跟踪

嵌入式数据包捕获

导航到故障排除>数据包捕获。输入捕获名称并指定客户端的MAC地址作为内部过滤器MAC。将缓冲区大小设置为100并选择上行链路接口来监控传入和传出数据包。

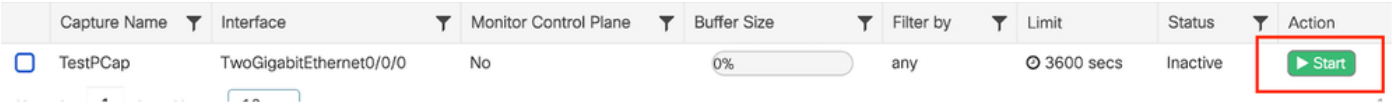

Troubleshooting > Packet Capture
+ Add
Delete
Create Packet Capture
Capture Name*
TestPCap
Filter*
any
Monitor Control Plane
Inner Filter Protocol
DHCP
Inner Filter MAC
Buffer Size (MB)*
100
Limit by*
Duration
3600
secs ~= 1.00 hour
Available (12)
Search
Tw0/0/1
Tw0/0/2
Tw0/0/3
Te0/1/0
Selected (1)
Tw0/0/0

嵌入式数据包捕获



注意：选择“监控控制流量”选项以查看重定向到系统CPU并重新注入数据平面的流量。

导航到故障排除>数据包捕获，选择开始捕获数据包。



开始数据包捕获

CLI 配置

```
monitor capture TestPCap inner mac <H.H.H>
monitor capture TestPCap buffer size 100
monitor capture TestPCap interface twoGigabitEthernet 0/0/0 both
monitor capture TestPCap start

<Reporduce the issue>
```

```
monitor capture TestPCap stop
```

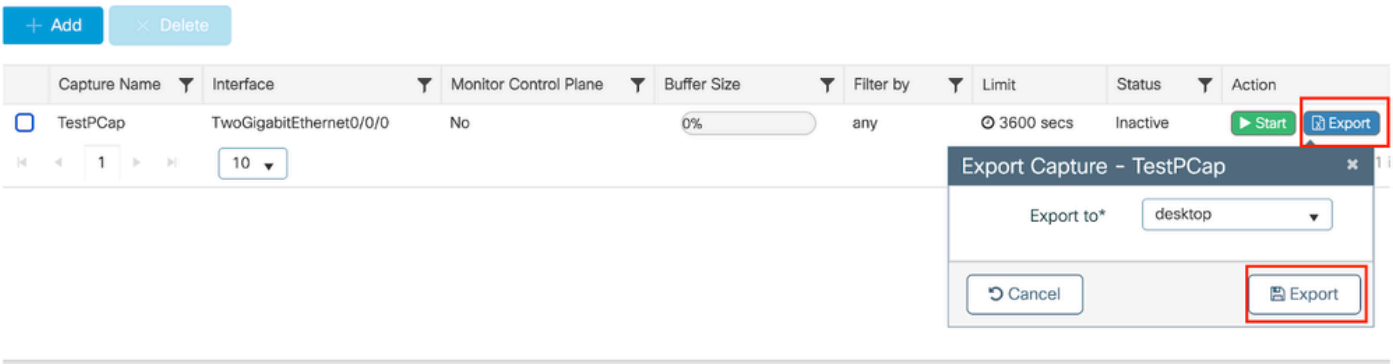
```
show monitor capture TestPCap

Status Information for Capture TestPCap
  Target Type:
 Interface: TwoGigabitEthernet0/0/0, Direction: BOTH
  Status : Inactive
  Filter Details:
  Capture all packets
  Inner Filter Details:
  Mac: 6c7e.67e3.6db9
  Continuous capture: disabled
  Buffer Details:
  Buffer Type: LINEAR (default)
  Buffer Size (in MB): 100
  Limit Details:
  Number of Packets to capture: 0 (no limit)
  Packet Capture duration: 3600
  Packet Size to capture: 0 (no limit)
  Maximum number of packets to capture per second: 1000
  Packet sampling rate: 0 (no sampling)
```

将数据包捕获导出到外部TFTP服务器。

```
monitor capture TestPCap export tftp://<IP address>/ TestPCap.pcap
```

导航到故障排除>数据包捕获，然后选择导出将捕获文件下载到本地计算机上。



下载EPC

工作日志片段

AireOS外部控制器客户端调试日志

从有线客户端接收的有线数据包

```
*apfReceiveTask: May 27 12:00:55.127: a0:ce:c8:c3:a9:b5  Wired Guest packet from 10.105.211.69 on mobil
```

外部控制器构建导出锚点请求

```
*apfReceiveTask: May 27 12:00:56.083: a0:ce:c8:c3:a9:b5 Attempting anchor export for mobile a0:ce:c8:c3
*apfReceiveTask: May 27 12:00:56.083: a0:ce:c8:c3:a9:b5 mmAnchorExportSend: Building ExportForeignLradM
*apfReceiveTask: May 27 12:00:56.083: a0:ce:c8:c3:a9:b5 SGT Payload built in Export Anchor Req 0
```

外部控制器向锚点控制器发送导出锚点请求。

```
*apfReceiveTask: May 27 12:00:56.083: a0:ce:c8:c3:a9:b5 Export Anchor request sent to 10.76.118.70
```

锚点控制器为客户端的锚点请求发送确认

```
*Dot1x_NW_MsgTask_5: May 27 12:00:56.091: a0:ce:c8:c3:a9:b5 Recvd Exp Anchor Ack for mobile  a0:ce:c8:c
```

外部控制器上的客户端的移动角色更新为导出外部。

```
*apfReceiveTask: May 27 12:00:56.091: a0:ce:c8:c3:a9:b5 0.0.0.0 DHCP_REQD (7) mobility role update requ
  Peer = 10.76.118.70, Old Anchor = 10.76.118.70, New Anchor = 10.76.118.70
```

客户端转换到RUN状态。

```
*apfReceiveTask: May 27 12:00:56.091: a0:ce:c8:c3:a9:b5 0.0.0.0 DHCP_REQD (7) State Update from Mobilit
*apfReceiveTask: May 27 12:00:56.091: a0:ce:c8:c3:a9:b5 Stopping deletion of Mobile Station: (callerId:
*apfReceiveTask: May 27 12:00:56.091: a0:ce:c8:c3:a9:b5 Moving client to run state
```

9800放射性追踪仪

客户端与控制器关联。

```
2024/07/15 04:10:29.087608331 {wncd_x_R0-0}{1}: [client-orch-state] [17765]: (note): MAC: a0ce.c8c3.a9b
```

关联后正在进行移动性发现。

```
2024/07/15 04:10:29.091585813 {wncd_x_R0-0}{1}: [client-orch-state] [17765]: (note): MAC: a0ce.c8c3.a9b
2024/07/15 04:10:29.091605761 {wncd_x_R0-0}{1}: [client-orch-state] [17765]: (note): MAC: a0ce.c8c3.a9b
```

处理移动性发现后，客户端漫游类型即更新为请求的第3层。

```
2024/07/15 04:10:29.091664605 {wncd_x_R0-0}{1}: [mm-transition] [17765]: (info): MAC: a0ce.c8c3.a9b5 MM
2024/07/15 04:10:29.091693445 {wncd_x_R0-0}{1}: [mm-client] [17765]: (info): MAC: a0ce.c8c3.a9b5 Roam t
```

外部控制器正在向锚点WLC发送导出锚点请求。

```
2024/07/15 04:10:32.093245394 {mobilityd_R0-0}{1}: [mm-client] [18316]: (debug): MAC: a0ce.c8c3.a9b5 Ex
2024/07/15 04:10:32.093253788 {mobilityd_R0-0}{1}: [mm-client] [18316]: (debug): MAC: a0ce.c8c3.a9b5 Fo
2024/07/15 04:10:32.093274405 {mobilityd_R0-0}{1}: [mm-client] [18316]: (info): MAC: a0ce.c8c3.a9b5 For
```

从锚点控制器接收导出锚点响应，并从用户配置文件应用vlan。

```
2024/07/15 04:10:32.106775213 {mobilityd_R0-0}{1}: [mm-transition] [18316]: (info): MAC: a0ce.c8c3.a9b5
2024/07/15 04:10:32.106811183 {mobilityd_R0-0}{1}: [mm-client] [18316]: (debug): MAC: a0ce.c8c3.a9b5 Ex
2024/07/15 04:10:32.107183692 {wncd_x_R0-0}{1}: [epm-misc] [17765]: (info): [a0ce.c8c3.a9b5:Tw0/0/0] An
2024/07/15 04:10:32.107247304 {wncd_x_R0-0}{1}: [svm] [17765]: (info): [a0ce.c8c3.a9b5] Applied User Pr
2024/07/15 04:10:32.107250258 {wncd_x_R0-0}{1}: [aaa-attr-inf] [17765]: (info): Applied User Profile:
```

处理导出锚点请求后，客户端移动角色将更新为导出外部。

```
2024/07/15 04:10:32.107490972 {wncd_x_R0-0}{1}: [mm-client] [17765]: (debug): MAC: a0ce.c8c3.a9b5 Proce
2024/07/15 04:10:32.107502336 {wncd_x_R0-0}{1}: [mm-client] [17765]: (info): MAC: a0ce.c8c3.a9b5 Mobili
2024/07/15 04:10:32.107533732 {wncd_x_R0-0}{1}: [sanet-shim-translate] [17765]: (info): Anchor Vlan: 20
2024/07/15 04:10:32.107592251 {wncd_x_R0-0}{1}: [mm-client] [17765]: (note): MAC: a0ce.c8c3.a9b5 Mobili
```

客户端转换为IP learn状态。

```
2024/07/15 04:10:32.108210365 {wncd_x_R0-0}{1}: [client-orch-state] [17765]: (note): MAC: a0ce.c8c3.a9b
2024/07/15 04:10:32.108293096 {wncd_x_R0-0}{1}: [client-orch-sm] [17765]: (debug): MAC: a0ce.c8c3.a9b5
```

在IP学习后，客户端在外部WLC上变为运行状态。

```
2024/07/15 04:10:32.108521618 {wncd_x_R0-0}{1}: [client-orch-state] [17765]: (note): MAC: a0ce.c8c3.a9b
```

AireOS锚点控制器客户端调试日志

从外部控制器检索导出锚点请求。

```
*Dot1x_NW_MsgTask_5: May 28 10:46:27.831: a0:ce:c8:c3:a9:b5 Anchor Export Request Recvd for mobile a0:c
*Dot1x_NW_MsgTask_5: May 28 10:46:27.831: a0:ce:c8:c3:a9:b5 mmAnchorExportRcv: Extracting mmPayloadExpo
*Dot1x_NW_MsgTask_5: May 28 10:46:27.831: a0:ce:c8:c3:a9:b5 mmAnchorExportRcv  Ssid=Guest  useProfileNa
```

为客户端应用本地桥接vlan。

```
*Dot1x_NW_MsgTask_5: May 28 10:46:27.831: a0:ce:c8:c3:a9:b5 Updated local bridging VLAN to 11 while app
*Dot1x_NW_MsgTask_5: May 28 10:46:27.831: a0:ce:c8:c3:a9:b5 Applying Interface(wired-vlan-11) policy on
*Dot1x_NW_MsgTask_5: May 28 10:46:27.831: a0:ce:c8:c3:a9:b5 After applying Interface(wired-vlan-11) pol
```

移动角色更新为“导出锚点”(Export Anchor)和“已转换关联的客户端状态”(client state translated Associated)。

```
*Dot1x_NW_MsgTask_5: May 28 10:46:27.831: a0:ce:c8:c3:a9:b5 0.0.0.0 START (0) mobility role update requ
  Peer = 10.76.118.70, Old Anchor = 0.0.0.0, New Anchor = 10.76.118.74
Dot1x_NW_MsgTask_5: May 28 10:46:27.831: a0:ce:c8:c3:a9:b5
                                                          add client MAC a0:ce:c8:c3:a9:b5 IP 10.76.1
*Dot1x_NW_MsgTask_5: May 28 10:46:27.831: a0:ce:c8:c3:a9:b5
                                                          Sent message to add a0:ce:c8:c3:a9:b5 on me
*Dot1x_NW_MsgTask_5: May 28 10:46:27.832: a0:ce:c8:c3:a9:b5 mmAnchorExportRcv (mm_listen.c:7933) Changi
```

移动性完成，客户端状态关联，移动角色为导出锚点。

```
*Dot1x_NW_MsgTask_5: May 28 10:46:27.832: a0:ce:c8:c3:a9:b5 0.0.0.0 DHCP_REQD (7) State Update from Mob
```

客户端IP地址在控制器上获知，并且状态从所需的DHCP转换为所需的网络身份验证。

```
*dtlArpTask: May 28 10:46:58.356: a0:ce:c8:c3:a9:b5 Static IP client associated to interface wired-vlan
```

```
*dtlArpTask: May 28 10:46:58.356: a0:ce:c8:c3:a9:b5 dtlArpSetType: Changing ARP Type from 0 ---> 1 for
*dtlArpTask: May 28 10:46:58.356: a0:ce:c8:c3:a9:b5 10.105.211.75 DHCP_REQD (7) Change state to WEBAUTH
```

正在通过添加外部重定向URL和控制器虚拟IP地址来制定Web身份验证URL。

```
*webauthRedirect: May 28 10:46:58.500: a0:ce:c8:c3:a9:b5- Preparing redirect URL according to configure
*webauthRedirect: May 28 10:46:58.500: a0:ce:c8:c3:a9:b5- Web-auth type External, using URL:http://10.1
*webauthRedirect: May 28 10:46:58.500: a0:ce:c8:c3:a9:b5- Added switch_url, redirect URL is now http://
```

已将客户端MAC地址和WLAN添加到URL。

```
*webauthRedirect: May 28 10:46:58.500: a0:ce:c8:c3:a9:b5- Added client_mac , redirect URL is now http:/
*webauthRedirect: May 28 10:46:58.500: a0:ce:c8:c3:a9:b5- Added wlan, redirect URL is now
*webauthRedirect: May 28 10:46:58.500: a0:ce:c8:c3:a9:b5- Added wlan, redirect URL is now http://10.127
```

对主机10.105.211.1的HTTP GET进行解析后的最终URL

```
*webauthRedirect: May 28 10:46:58.500: a0:ce:c8:c3:a9:b5-  parser host is 10.105.211.1
*webauthRedirect: May 28 10:46:58.500: a0:ce:c8:c3:a9:b5- parser path is /auth/discovery
*webauthRedirect: May 28 10:46:58.500: a0:ce:c8:c3:a9:b5-added redirect=, URL is now http://10.127.196.
```

重定向URL发送到200 OK响应数据包中的客户端。

```
*webauthRedirect: May 28 10:46:58.500: a0:ce:c8:c3:a9:b5- 200 send_data =HTTP/1.1 200 OK
Location:http://10.127.196.171/webauth/login.html?switch_url=https://192.0.2.1/login.html&client_mac=a0
```

客户端与重定向url主机建立TCP连接。客户端在门户上提交登录用户名和密码后，控制器会向radius服务器发送radius请求

控制器收到Access-Accept后，客户端关闭TCP会话并进入RUN状态。

```
*aaaQueueReader: May 28 10:46:59:077: a0:ce:c8:c3:a9:b5 Sending the packet to v4 host 10.197.224.122:18
*aaaQueueReader: May 28 10:46:59:077: a0:ce:c8:c3:a9:b5 Successful transmission of Authentication Packe

*aaaQueueReader: May 28 10:46:59:077:         AVP[01] User-Name.............................testuser
*aaaQueueReader: May 28 10:46:59:077:         AVP[03] Calling-Station-Id....................a0-ce-c8
*aaaQueueReader: May 28 10:46:59:077:         AVP[04] Nas-Port..............................0x000000
*aaaQueueReader: May 28 10:46:59:077:         AVP[05] Nas-Ip-Address........................0x0a4c76
*aaaQueueReader: May 28 10:46:59:077:         AVP[06] NAS-Identifier........................POD1586-
```

```
*aaaQueueReader: May 28 10:46:59:500: a0:ce:c8:c3:a9:b5 radiusServerFallbackPassiveStateUpdate: RADIUS
*radiusTransportThread: May 28 10:46:59:500: a0:ce:c8:c3:a9:b5  Access-Accept received from RADIUS serv

*Dot1x_NW_MsgTask_5: May 28 10:46:59:500: a0:ce:c8:c3:a9:b5 Processing Access-Accept for mobile a0:ce:c

*apfReceiveTask: May 28 10:46:59:500: a0:ce:c8:c3:a9:b5 Moving client to run state
```

9800锚控制器放射性跟踪

从外部控制器向客户端发送移动通告消息。

```
2024/07/15 15:10:20.614677358 {mobilityd_R0-0}{1}: [mm-client] [15259]: (debug): MAC: a0ce.c8c3.a9b5 Re
```

当客户端正在关联时从外部控制器接收的导出锚点请求，该请求的导出锚点响应由锚点控制器发送，可在外部控制器RA跟踪上进行验证。

```
2024/07/15 15:10:22.615246594 {mobilityd_R0-0}{1}: [mm-transition] [15259]: (info): MAC: a0ce.c8c3.a9b5
```

客户端已移至关联状态，并且移动角色已转换为导出锚点。

```
2024/07/15 15:10:22.616156811 {wncd_x_R0-0}{1}: [client-orch-state] [14709]: (note): MAC: a0ce.c8c3.a9b
2024/07/15 15:10:22.627358367 {wncd_x_R0-0}{1}: [mm-client] [14709]: (note): MAC: a0ce.c8c3.a9b5 Mobili
```

```
2024/07/15 15:10:22.627462963 {wncd_x_R0-0}{1}: [dot11] [14709]: (note): MAC: a0ce.c8c3.a9b5  Client da
2024/07/15 15:10:22.627490485 {mobilityd_R0-0}{1}: [mm-client] [15259]: (debug): MAC: a0ce.c8c3.a9b5 Ex
2024/07/15 15:10:22.627494963 {mobilityd_R0-0}{1}: [mm-client] [15259]: (debug): MAC: a0ce.c8c3.a9b5 Fo
```

IP学习完成，客户端IP通过ARP学习。

```
2024/07/15 15:10:22.628124206 {wncd_x_R0-0}{1}: [client-iplearn] [14709]: (info): MAC: a0ce.c8c3.a9b5
2024/07/15 15:10:23.627064171 {wncd_x_R0-0}{1}: [sisf-packet] [14709]: (info): RX: ARP from interface m
2024/07/15 15:10:24.469704913 {wncd_x_R0-0}{1}: [client-iplearn] [14709]: (note): MAC: a0ce.c8c3.a9b5
2024/07/15 15:10:24.470527056 {wncd_x_R0-0}{1}: [client-iplearn] [14709]: (info): MAC: a0ce.c8c3.a9b5
2024/07/15 15:10:24.470587596 {wncd_x_R0-0}{1}: [client-orch-sm] [14709]: (debug): MAC: a0ce.c8c3.a9b5
2024/07/15 15:10:24.470613094 {wncd_x_R0-0}{1}: [client-orch-sm] [14709]: (debug): MAC: a0ce.c8c3.a9b5
```

客户端策略状态为Web身份验证挂起。

```
2024/07/15 15:10:24.470748350 {wncd_x_R0-0}{1}: [client-auth] [14709]: (info): MAC: a0ce.c8c3.a9b5  Cli
```

TCP握手被控制器欺骗。当客户端发送HTTP GET时，会发送200 OK响应帧，其中包含重定向URL。

客户端必须与重定向URL建立TCP握手并加载页面。

```
2024/07/15 15:11:37.579177010 {wncd_x_R0-0}{1}: [webauth-httpd] [14709]: (info): mobility_a0000001[a0ce
2024/07/15 15:11:37.579190912 {wncd_x_R0-0}{1}: [webauth-httpd] [14709]: (info): mobility_a0000001[a0ce
2024/07/15 15:11:37.579226658 {wncd_x_R0-0}{1}: [webauth-state] [14709]: (info): mobility_a0000001[a0ce
2024/07/15 15:11:37.579230650 {wncd_x_R0-0}{1}: [webauth-state] [14709]: (info): mobility_a0000001[a0ce
2024/07/15 15:11:47.123072893 {wncd_x_R0-0}{1}: [webauth-httpd] [14709]: (info): mobility_a0000001[a0ce
2024/07/15 15:11:47.123082753 {wnc2024/07/15 15:12:04.280574375 {wncd_x_R0-0}{1}: [webauth-httpd] [1470
```

当客户端在Web门户页面提交登录凭证时，Access-Request数据包将发送到RADIUS服务器进行身份验证。

```
2024/07/15 15:12:04.281076844 {wncd_x_R0-0}{1}: [radius] [14709]: (info): RADIUS: Send Access-Request t
2024/07/15 15:12:04.281087672 {wncd_x_R0-0}{1}: [radius] [14709]: (info): RADIUS:  authenticator e3 01
2024/07/15 15:12:04.281093278 {wncd_x_R0-0}{1}: [radius] [14709]: (info): RADIUS:  Calling-Station-Id
2024/07/15 15:12:04.281097034 {wncd_x_R0-0}{1}: [radius] [14709]: (info): RADIUS:  User-Name
2024/07/15 15:12:04.281148298 {wncd_x_R0-0}{1}: [radius] [14709]: (info): RADIUS:   Cisco AVpair
```

从radius服务器收到Access-Accept，webauth成功。

```
2024/07/15 15:12:04.683597101 {wncd_x_R0-0}{1}: [radius] [14709]: (info): RADIUS: Received from id 1812
2024/07/15 15:12:04.683607762 {wncd_x_R0-0}{1}: [radius] [14709]: (info): RADIUS:  authenticator 52 3e
2024/07/15 15:12:04.683614780 {wncd_x_R0-0}{1}: [radius] [14709]: (info): RADIUS:  User-Name
```

身份验证成功，客户端策略状态为RUN。

```
2024/07/15 15:12:04.683901842 {wncd_x_R0-0}{1}: [webauth-state] [14709]: (info): mobility_a0000001[a0ce
2024/07/15 15:12:04.690643388 {wncd_x_R0-0}{1}: [errmsg] [14709]: (info): %CLIENT_ORCH_LOG-6-CLIENT_ADD
2024/07/15 15:12:04.690726966 {wncd_x_R0-0}{1}: [aaa-attr-inf] [14709]: (info): [ Applied attribute :bs
2024/07/15 15:12:04.691064276 {wncd_x_R0-0}{1}: [client-orch-state] [14709]: (note): MAC: a0ce.c8c3.a9b
```

嵌入式数据包捕获分析

No.	Time	Source	Destination	Length	Protocol	Info
804	15:10:24.826953	10.105.211.69	10.105.211.1		HTTP	GET /auth/discovery?architecture=9 HTTP/1.1
806	15:10:24.826953	10.105.211.1	10.105.211.69		HTTP	HTTP/1.1 200 OK (text/html)

```
> Frame 806: 863 bytes on wire (6904 bits), 863 bytes captured (6904 bits)
> Ethernet II, Src: Cisco_59:31:4b (f4:bd:9e:59:31:4b), Dst: Cisco_34:90:cb (6c:5e:3b:34:90:cb)
> Internet Protocol Version 4, Src: 10.76.118.70, Dst: 10.76.6.156
> User Datagram Protocol, Src Port: 16667, Dst Port: 16667
> Control And Provisioning of Wireless Access Points - Data
> Ethernet II, Src: Cisco_34:90:d4 (6c:5e:3b:34:90:d4), Dst: CeLink_c3:a9:b5 (a0:ce:c8:c3:a9:b5)
> 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 4095
> Internet Protocol Version 4, Src: 10.105.211.1, Dst: 10.105.211.69
> Transmission Control Protocol, Src Port: 80, Dst Port: 54351, Seq: 1, Ack: 108, Len: 743
v Hypertext Transfer Protocol
  > HTTP/1.1 200 OK\r\n
    Location: http://10.127.196.171/webauth/login.html?switch_url=https://192.0.2.1/login.html&redirect=http://10.105.211.1/auth/discovery?architecture=9\r\n
    Content-Type: text/html\r\n
  > Content-Length: 527\r\n
    \r\n
    [HTTP response 1/1]
    [Time since request: 0.000000000 seconds]
    [Request in frame: 804]
    [Request URI: http://10.105.211.1/auth/discovery?architecture=9]
    File Data: 527 bytes
```

客户端被重定向到门户页面

收到重定向URL后，会话关闭。

804	15:10:24.826953	10.105.211.69	10.105.211.1	HTTP	GET /auth/discovery?architecture=9 HTTP/1.1
805	15:10:24.826953	10.105.211.1	10.105.211.69	TCP	80 → 54351 [ACK] Seq=1 Ack=108 Win=65152 Len=0 TSval=2124108437 TSecr=2231352500
806	15:10:24.826953	10.105.211.1	10.105.211.69	HTTP	HTTP/1.1 200 OK (text/html)
807	15:10:24.826953	10.105.211.69	10.105.211.1	TCP	54351 → 80 [ACK] Seq=108 Ack=744 Win=131008 Len=0 TSval=2231352500 TSecr=2124108437
812	15:10:24.835955	10.105.211.69	10.105.211.1	TCP	54351 → 80 [FIN, ACK] Seq=108 Ack=744 Win=131072 Len=0 TSval=2231352510 TSecr=2124108437
813	15:10:24.836947	10.105.211.1	10.105.211.69	TCP	80 → 54351 [FIN, ACK] Seq=744 Ack=109 Win=65152 Len=0 TSval=2124108447 TSecr=2231352510
814	15:10:24.836947	10.105.211.69	10.105.211.1	TCP	54351 → 80 [ACK] Seq=109 Ack=745 Win=131072 Len=0 TSval=2231352510 TSecr=2124108447

收到重定向URL后，TCP会话关闭

客户端向重定向URL主机发起TCP三次握手，并发送HTTP GET请求。

页面加载后，登录凭证在门户上提交，控制器向radius服务器发送访问请求以对客户端进行身份验证。

身份验证成功后，与Web服务器的TCP会话关闭，并且在控制器上，客户端策略管理器状态转换为RUN。

2348	15:11:38.598968	10.105.211.69	10.127.196.171	TCP	54381 → 80 [SYN, ECE, CWR] Seq=0 Win=65535 Len=0 MSS=1460 WS=64 TSval=2678067533 TSecr=0
2349	15:11:38.599959	10.127.196.171	10.105.211.69	TCP	80 → 54381 [SYN, ACK, ECE] Seq=0 Ack=1 Win=65535 Len=0 MSS=1380 WS=256 SACK_PERM
2350	15:11:38.599959	10.105.211.69	10.127.196.171	TCP	54381 → 80 [ACK] Seq=1 Ack=1 Win=262144 Len=0
2351	15:11:38.600966	10.105.211.69	10.127.196.171	HTTP	GET /webauth/login.html?switch_url=https://192.0.2.1/login.html&redirect=http://3.3.3.3/
2352	15:11:38.602965	10.127.196.171	10.105.211.69	HTTP	[TCP Previous segment not captured] Continuation
2354	15:11:38.602965	10.127.196.171	10.105.211.69	TCP	[TCP Out-Of-Order] 80 → 54381 [ACK] Seq=1 Ack=485 Win=2097408 Len=1380
2355	15:11:38.603957	10.105.211.69	10.127.196.171	TCP	[TCP Dup ACK 2350#1] 54381 → 80 [ACK] Seq=485 Ack=1 Win=262144 Len=0 SLE=1381 SRE=1737
2356	15:11:38.603957	10.105.211.69	10.127.196.171	TCP	54381 → 80 [ACK] Seq=485 Ack=1737 Win=260352 Len=0
2358	15:11:38.615965	10.105.211.69	10.127.196.171	HTTP	GET /webauth/yourlogo.jpg HTTP/1.1
2359	15:11:38.616957	10.127.196.171	10.105.211.69	HTTP	HTTP/1.1 304 Not Modified
2360	15:11:38.616957	10.105.211.69	10.127.196.171	TCP	54381 → 80 [ACK] Seq=1113 Ack=1880 Win=261952 Len=0
2362	15:11:38.621961	10.105.211.69	10.127.196.171	HTTP	GET /webauth/aup.html HTTP/1.1
2363	15:11:38.623960	10.127.196.171	10.105.211.69	HTTP	HTTP/1.1 304 Not Modified
2364	15:11:38.623960	10.105.211.69	10.127.196.171	TCP	54381 → 80 [ACK] Seq=1706 Ack=2023 Win=261952 Len=0
2747	15:12:04.280976	10.76.118.70	10.197.224.122	RADIUS	Access-Request id=0
2751	15:12:04.682963	10.197.224.122	10.76.118.70	RADIUS	Access-Accept id=0
2836	15:12:09.729957	10.105.211.69	10.127.196.171	HTTP	GET /webauth/logout.html HTTP/1.1
2837	15:12:09.731956	10.127.196.171	10.105.211.69	HTTP	HTTP/1.1 304 Not Modified
2838	15:12:09.731956	10.105.211.69	10.127.196.171	TCP	54381 → 80 [ACK] Seq=2186 Ack=2166 Win=261952 Len=0
4496	15:13:07.964946	10.105.211.69	10.127.196.171	TCP	54381 → 80 [FIN, ACK] Seq=2186 Ack=2166 Win=262144 Len=0
4497	15:13:07.964946	10.127.196.171	10.105.211.69	TCP	80 → 54381 [FIN, ACK] Seq=2166 Ack=2187 Win=2097408 Len=0
4498	15:13:07.965938	10.105.211.69	10.127.196.171	TCP	54381 → 80 [ACK] Seq=2187 Ack=2167 Win=262144 Len=0

客户端向门户页面发送HTTP GET请求并成功完成身份验证

Radius访问请求数据包

```
2747 15:12:04.280976 10.76.118.70      10.197.224.122          RADIUS      Access-Request id=0
> Frame 2747: 405 bytes on wire (3240 bits), 405 bytes captured (3240 bits)
> Ethernet II, Src: Cisco_59:31:4b (f4:bd:9e:59:31:4b), Dst: Cisco_34:90:cb (6c:5e:3b:34:90:cb)
> Internet Protocol Version 4, Src: 10.76.118.70, Dst: 10.197.224.122
> User Datagram Protocol, Src Port: 60222, Dst Port: 1812
v RADIUS Protocol
    Code: Access-Request (1)
    Packet identifier: 0x0 (0)
    Length: 363
    Authenticator: e3018f5d8e52fccbe0d703dac1a209e6
    [The response to this request is in frame 2751]
  v Attribute Value Pairs
    > AVP: t=Calling-Station-Id(31) l=19 val=a0-ce-c8-c3-a9-b5
    > AVP: t=User-Name(1) l=10 val=testuser
    > AVP: t=Vendor-Specific(26) l=49 vnd=ciscoSystems(9)
    > AVP: t=Framed-IP-Address(8) l=6 val=10.105.211.69
    > AVP: t=Message-Authenticator(80) l=18 val=6f469fa30834350d2aed4e4b226cddf7
    > AVP: t=Service-Type(6) l=6 val=Dialout-Framed-User(5)
    > AVP: t=Vendor-Specific(26) l=29 vnd=ciscoSystems(9)
    > AVP: t=Vendor-Specific(26) l=22 vnd=ciscoSystems(9)
    > AVP: t=User-Password(2) l=18 val=Encrypted
    > AVP: t=Vendor-Specific(26) l=32 vnd=ciscoSystems(9)
    > AVP: t=Vendor-Specific(26) l=20 vnd=ciscoSystems(9)
    > AVP: t=NAS-IP-Address(4) l=6 val=10.76.118.70
    > AVP: t=NAS-Port-Type(61) l=6 val=Virtual(5)
```

访问请求数据包

Radius访问接受数据包

```
2751 15:12:04.682963 10.197.224.122     10.76.118.70                RADIUS      Access-Accept id=0
Frame 2751: 151 bytes on wire (1208 bits), 151 bytes captured (1208 bits)
Ethernet II, Src: Cisco_34:90:cb (6c:5e:3b:34:90:cb), Dst: Cisco_59:31:4b (f4:bd:9e:59:31:4b)
802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 2081
Internet Protocol Version 4, Src: 10.197.224.122, Dst: 10.76.118.70
User Datagram Protocol, Src Port: 1812, Dst Port: 60222
RADIUS Protocol
  Code: Access-Accept (2)
  Packet identifier: 0x0 (0)
  Length: 105
  Authenticator: 523eb01399aba715577647a1fbe3b899
  [This is a response to a request in frame 2747]
  [Time from request: 0.401987000 seconds]
v Attribute Value Pairs
  > AVP: t=User-Name(1) l=10 val=testuser
  > AVP: t=Class(25) l=57 val=434143533a303030303030303030303030373342354243343437423a697365333167…
  > AVP: t=Message-Authenticator(80) l=18 val=223df8645f1387d7137428b20df9e0c1
```

访问接受数据包

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