

# Cisco Mobility Express 实战

## 乾颐堂与思科服务社区联合推出

翻越下一座技术的高峰

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# 内容简介

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2. ME1832I 初始化
3. Mobility Express 8.5 介绍
4. 配置 WLAN 通过 ISE 授权
5. 使用 Cisco Wireless APP 管理





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# Cisco Mobility Express 介绍



# Mobility Express 介绍

- Mobility Express 无线网络解决方案是思科最新推出的针对中、小企业快速部署的无线网络。
- 在 MobilityExpress 网络中，在 802.11ac Wave2 AP 上运行虚拟控制器来管理整个网络中的其他 AP，完成企业网络的快速部署，并且不需要实体的控制器设备，降低用户网络建设成本。

## Simplify Wi-Fi: Mobility Express Solution For Small-Medium Wi-Fi Deployments

Manage Up to 500 Clients and 25 Access Points Without A Controller Appliance

(802.11n, 802.11ac Wave 1 or 802.11ac Wave2)



## 部署 Mobility Express 须知 - 1

- 其中 AP1830/AP1850/AP2800/AP3800 都可以作为 Mobility Express 的 Master AP (只有 802.11 ac wave2 的 AP 才能运行虚拟控制器软件)

支持作为主 AP 的接入点	支持的型号
Cisco Aironet 1850 系列	<ul style="list-style-type: none"><li>• AIR-AP1852I-UXK9C</li><li>• AIR-AP1852E-UXK9C</li><li>• AIR-AP1852I-x-K9C</li><li>• AIR-AP1852E-x-K9C</li></ul>
Cisco Aironet 1830 系列	<ul style="list-style-type: none"><li>• AIR-AP1832I-UXK9C</li><li>• AIR-AP1832I-x-K9C</li></ul>

## 部署 Mobility Express 须知 - 2

支持作为从属 AP 的接入点	支持的型号
Cisco Aironet 700i 系列	<ul style="list-style-type: none"> <li>• AIR-CAP702I- x-K9</li> </ul>
Cisco Aironet 700w 系列	<ul style="list-style-type: none"> <li>• AIR-CAP702W- x-K9</li> </ul>
Cisco Aironet 1600 系列	<ul style="list-style-type: none"> <li>• AIR-CAP1602I-x-K9</li> <li>• AIR-CAP1602E-x-K9</li> </ul>
Cisco Aironet 1700 系列	<ul style="list-style-type: none"> <li>• AIR-CAP1702I- x-K9</li> </ul>

支持作为从属 AP 的接入点	支持的型号
Cisco Aironet 1800 系列	<ul style="list-style-type: none"> <li>• AIR-AP1832I-UXX9C</li> <li>• AIR-AP1832I-x-K9C</li> <li>• AIR-AP1852I-UXX9C</li> <li>• AIR-AP1852E-UXX9C</li> <li>• AIR-AP1852I-x-K9C</li> <li>• AIR-AP1852E-x-K9C</li> </ul>
Cisco Aironet 2600 系列	<ul style="list-style-type: none"> <li>• AIR-CAP2602I-x-K9</li> <li>• AIR-CAP2602E-x-K9</li> </ul>
Cisco Aironet 2700 系列	<ul style="list-style-type: none"> <li>• AIR-CAP2702I-x-K9</li> <li>• AIR-CAP2702E-x-K9</li> </ul>
Cisco Aironet 3600 系列	<ul style="list-style-type: none"> <li>• AIR-CAP3602I-x-K9</li> <li>• AIR-CAP3602E-x-K9</li> </ul>
Cisco Aironet 3700 系列	<ul style="list-style-type: none"> <li>• AIR-CAP3702I-x-K9</li> <li>• AIR-CAP3702E-x-K9</li> </ul>

## 部署 Mobility Express 须知 - 3

- 部署 Mobility Express 只需要买 AP 即可，没有任何软件许可费用。
- 部署 Mobility Express 网络 AP 与传统控制器管理的 CAPWAP AP 可以通过 AP 软件的方式进行相互转换，此过程不需要任何支付软件许可费用。
- Mobility Express 的组网规模为管理 25 个 AP，支持 500 无线客户端，如果超过此规模，建议使用实体控制器无线部署。

# Mobility Express 室内 AP 系列



## Cisco Aironet 1815 Series

- Low-cost AP for small to medium-sized networks
- Supports 802.11ac Wave 2
- Supports Mobility Express deployment
- With controller, network can expand



## Cisco Aironet 1830 Series

- Designed for small to medium-sized networks
- Supports 802.11ac Wave 2
- 3x3 MU-MIMO, 2 spatial streams
- Supports Mobility Express deployment



## Cisco Aironet 1850 Series

- Designed for small to medium-sized networks
- Supports 802.11ac Wave 2
- 4x4 MU-MIMO, 3 spatial streams
- Supports Mobility Express deployment



## ME1832I 介绍

- ME1832I 虽然有 USB 和 AUX 开孔，但是并不支持这两个接口。



## MODE 键

- “模式”按钮用于将接入点重置为出厂默认设置。
- 要重置，请按下该按钮并给 AP 通电。按住按钮 20 秒然后松开该按钮。松开按钮时，以下信息将出现在控制台中。AP 将重新启动并重置为出厂默认设置。

```
Button is pressed. Configuration reset activated..  
Keep the button pressed for > 20 seconds for full reset  
  
Wait for the button to be released ....  
Button pressed for 22 seconds
```

- 如果 AP 具有 MobilityExpress 控制器映像，在重新启动时，它将广播 **CiscoAirProvision** SSID。

## 关于ME系统启动

1. 首先进入AP系统
2. 如果不能关联到控制器,就会快速切换到控制器系统,并且进入初始化
3. 如果不对系统进行初始化,而且出现了其他控制器,会马上重启,然后进入AP系统,并且注册到其他控制器



# 下载系统文件 1

The screenshot shows the Cisco Software Download page for Aironet 1830 Series Access Points. The breadcrumb trail is: Downloads Home / Wireless / Access Points / Aironet 1830 Series Access Points / Aironet 1830i Access Point. A dropdown menu titled 'Select a Software Type' is open, showing 'Cisco Mobility Express Lightweight AP Software' as the selected option. A red annotation '只有ME系统和瘦AP系统' is overlaid on the dropdown. The footer contains links for Contacts, Feedback, Help, Site Map, Terms & Conditions, Privacy Statement, Cookie Policy, and Trademarks.

# 下载系统文件 2

Products & Services
Support
How to Buy
Training & Events
Partners

🔍
🔖
🔄
🏠
?

## Software Download

Downloads Home / Wireless / Access Points / Aironet 1830 Series Access Points / Aironet 1830i Access Point / Cisco Mobility Express - 8.7.102.0

Expand All
Collapse All

Latest Release ▼

**8.7.102.0**

8.3.141.0

8.5.120.0

8.6.101.0

All Release ▼

8.7 >

8.6 >

8.5 >

8.4 >

### Aironet 1830i Access Point

Release 8.7.102.0

🔔 Notifications
Related Links and Documentation

[Release Notes for 8.7.102.0](#)

## 从瘦AP到ME

File Information	Release Date	Size	
Cisco 1830 Series Mobility Express Release 8.7 Software, to be used for conversion from Lightweight Access Points only. AIR-AP1830-K9-8-7-102-0.tar	20-APR-2018	46.51 MB	
Cisco 1830 Series Mobility Express Release 8.7 Software. Access Point image bundle, to be used for software update and/or supported access points images. AIR-AP1830-K9-ME-8-7-102-0.zip	20-APR-2018	201.82 MB	

### AP系统包,用于 升级支持的AP

Contacts
Feedback
Help
Site Map
Terms & Conditions
Privacy Statement
Cookie Policy
Trademarks

# 系统文件介绍

名称	修改日期	类型	大小
ap_supp_list.inc	2018/7/21 2:01	INC 文件	1 KB
ap1g1	2018/7/21 2:02	文件	13,310 KB
ap1g2	2018/7/21 2:02	文件	13,630 KB
ap1g4	2018/7/21 2:02	文件	44,490 KB
ap1g4-capwap	2018/7/21 2:02	文件	26,410 KB
ap1g5	2018/7/21 2:02	文件	43,160 KB
ap3g1	2018/7/21 2:02	文件	10,150 KB
ap3g2	2018/7/21 2:02	文件	15,360 KB
ap3g3	2018/7/21 2:02	文件	54,880 KB
apname_decoder.inc	2018/7/21 2:01	INC 文件	1 KB
c3700	2018/7/21 2:01	文件	14,350 KB
version.info	2018/7/21 2:02	INFO 文件	1 KB

Cisco 1830 Series Mobility Express Release 8.5 Software. Access Point image bundle, to be used for software update and/or supported access points images.  
AIR-AP1830-K9-ME-8-5-135-0.zip

## platform-featureset-tar.version.tar

- **platform** - the access point hardware model or family supported by the image
  - **ap1g1** - 700 series (702w beginning with 15.2(4)JB5)
  - **ap1g2** - 1600 series
  - **ap1g3** - 1530 series, AP803 embedded in IR829 router
  - **ap1g4** - 1850/1830/1810 series (COS not IOS)
  - **ap1g5** - 1800/1815/1540 series (COS not IOS)
  - **ap3g1** - 3500/1260 series
  - **ap3g2** - 3700/3600/2700/2600/1700 series (up through 8.4/15.3(3)JE branch)
  - **ap3g3** - 3800/2800/1560 series (COS not IOS)
  - **ap802** - AP embedded in 819, 812, 886VA-W/887VA-W, and C88x routers
  - **ap801** - AP embedded in 861W, 891W, 1911W routers and most 88xW routers
  - **apw5100** - Rockwell Stratix 5100 WAPAK9, WAPCK9, WAPEK9, WAPZK9
  - **c3700** - 1700/2700/3700 series APs (8.5/15.3(3)JF and above)
  - **c1570** - 1570 series outdoor APs
  - **c1550** - 1550 (128MB model) series outdoor APs
  - **c1520** - 1520 and 1550 (64MB model) series mesh APs
  - **c1410** - BR1410
  - **c1310** - BR1310
  - **c1250** - 1250 series APs
  - **c1240** - 1240 series APs
  - **c1200** - 1200 series (1200/1210/1220/1230)
  - **c1140** - 1140 and 1040 series APs
  - **c1130** - 1130 series APs
  - **c1100** - 1100 series APs (i.e. the AP1121)
  - **c520** - 521 AP
  - **c350** - 350 series APs

<https://software.cisco.com/download/home/286288446/type/286289839/release/8.5.135.0?i=!pp>



## 互相切换命令

- ME到瘦AP:

```
ap#ap-type capwap
```

- 瘦AP到ME:

```
#ap-type mobility-express tftp://<TFTP Server IP>/<path to tar file>
```

# 协助AP升级

正在监控  
无线设置  
管理  
接入  
管理员帐户  
时间  
**软件更新**  
高级

CISCO Cisco Aironet 1830 Series Mobility Express

软件更新  
版本 8.5.135.0

传输模式 TFTP  
IP 地址 (IPv4) \* 10.1.1.1  
文件路径 \* IOS/

Schedule Update

设置更新时间

自动重新启动

Save 更新 退出

» 预下载映像状态





2

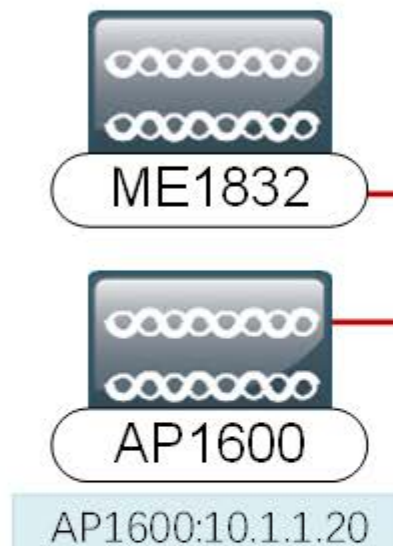
# ME1832I 初始化



# 拓扑介绍

ME-WLC:10.1.1.200

ME-AP:10.1.1.10



G1/0/11

G1/0/12



G1/0/1

Fa0/1



Fa0/24





## SW3650-1 初始化

```
hostname 3650-1
!
vlan 10
vlan 20
!
ip dhcp pool meclients
  network 20.1.1.0 255.255.255.0
  default-router 20.1.1.254
!
ip dhcp pool meadmin
  network 10.1.1.0 255.255.255.0
  default-router 10.1.1.254
!
interface GigabitEthernet1/0/1
  switchport mode trunk
  spanning-tree portfast trunk
```

```
interface GigabitEthernet1/0/11
  switchport trunk native vlan 10
  switchport mode trunk
!
interface GigabitEthernet1/0/12
  switchport trunk native vlan 10
  switchport mode trunk
!
interface Vlan10
  ip address 10.1.1.254 255.255.255.0
!
interface Vlan20
  ip address 20.1.1.254 255.255.255.0
```



## SW3560 初始化

```
hostname SW3560
!
vlan 10
!
vlan 20
!
interface FastEthernet0/1
  switchport trunk encapsulation dot1q
  switchport mode trunk
!
interface FastEthernet0/24
  switchport access vlan 10
  switchport mode access
  spanning-tree portfast
```

## 通过向导初始化 ME 控制器 - 1

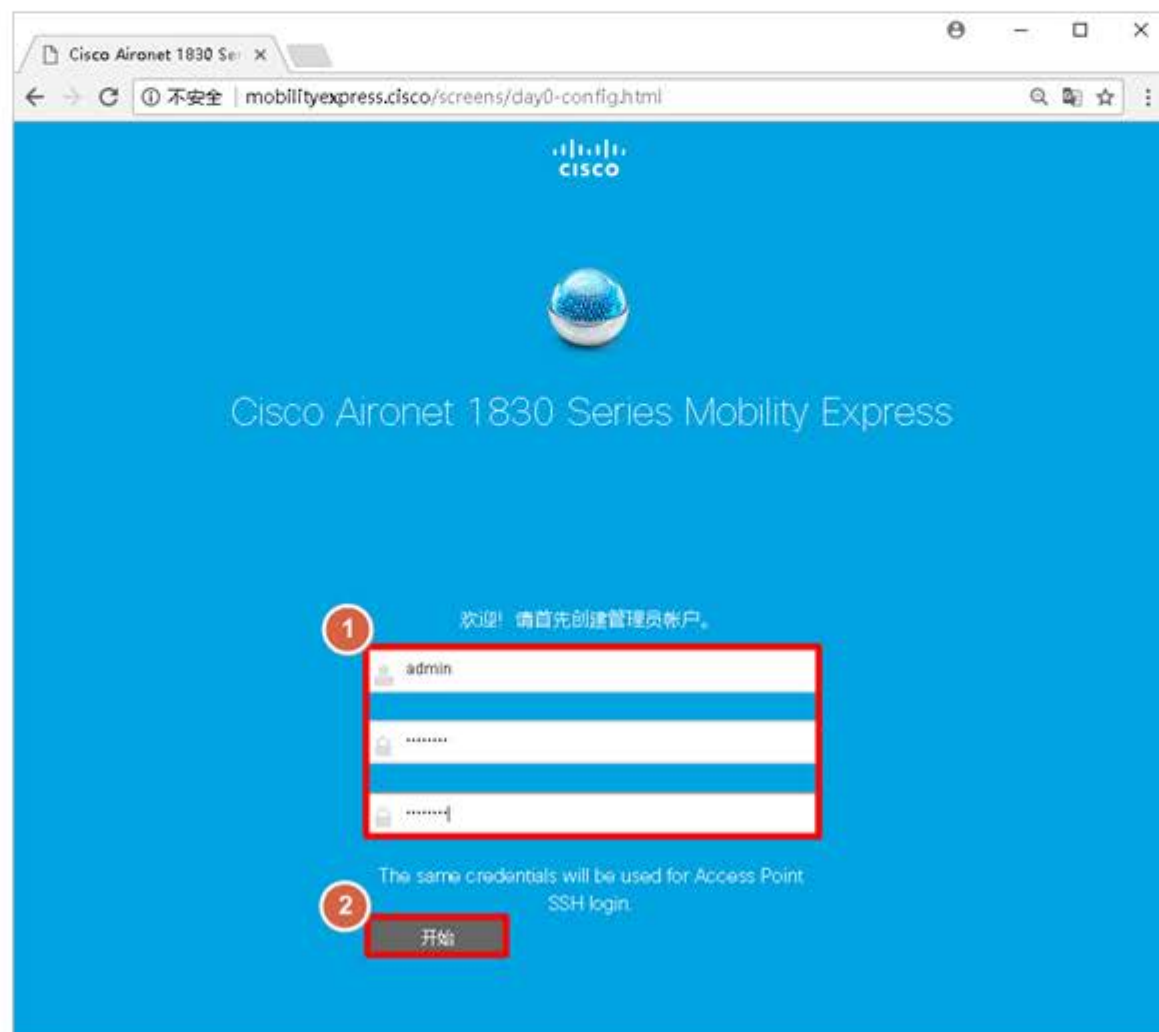
- 清空 ME1832 配置，通过 Wi-Fi 连接 SSID **CiscoAirProvision**，获取到 192.168.1.0/24 的地址段。

密码为:password



## 通过向导初始化 ME 控制器 - 2

- 通过浏览器打开任意连接，会被重定向到初始化向导页面（如果没有重定向可以更换浏览器）。



设置控制器用户名密码

## 通过向导初始化 ME 控制器 - 3

- 配置控制器名称；设置 IP 地址，掩码，网关。

Cisco Aironet 1830 Series Mobility Express

1 设置控制器

系统名称 ME-WLC

国家/地区 China (CN)

日期和时间 08/27/2018 17:15:38

时区 香港、北京、重庆

NTP 服务器 (可选的)

启用 IP 管理 (管理网络)

管理 IP 地址 10.1.1.200

子网掩码 255.255.255.0

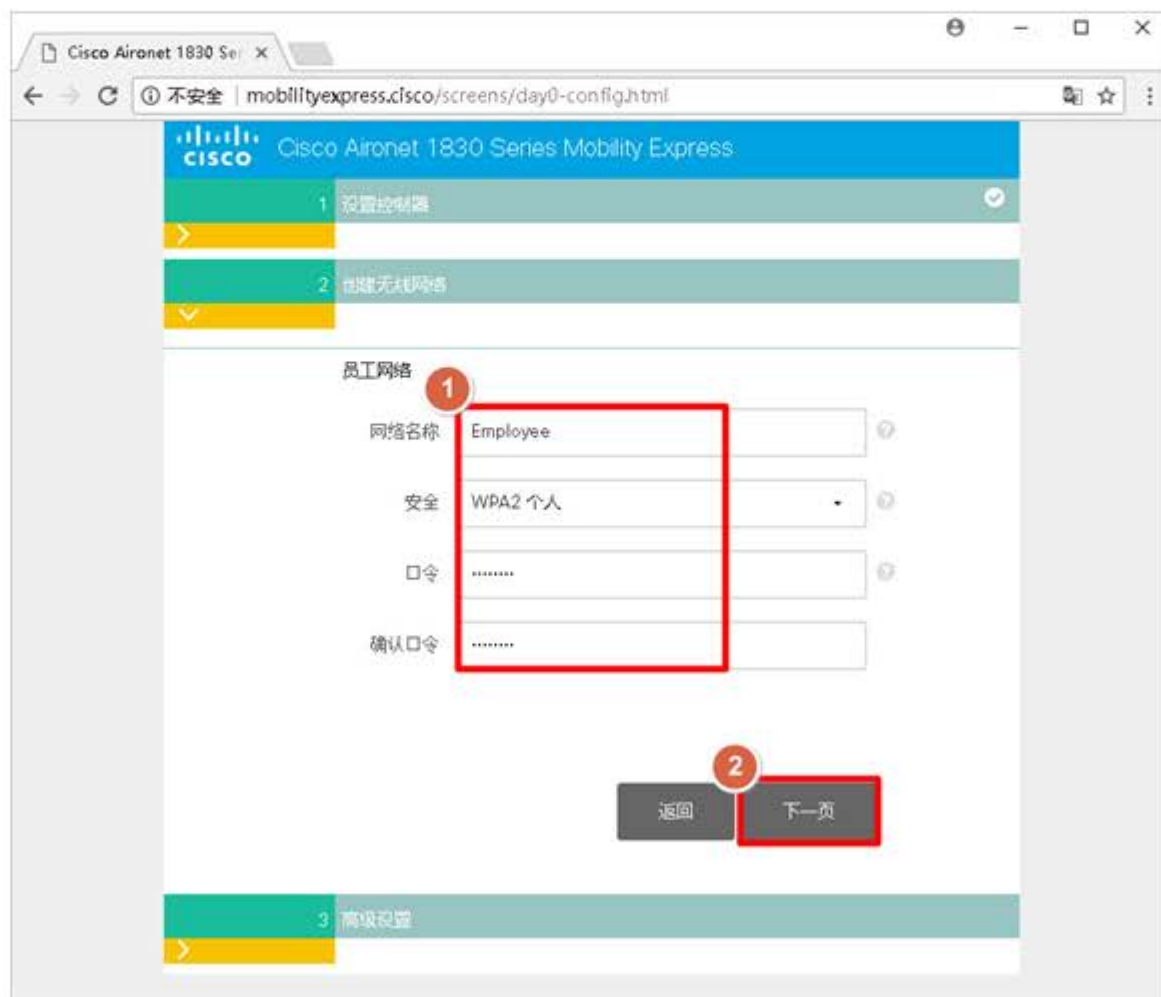
默认网关 10.1.1.254

启用 DHCP 服务器 (管理网络)

返回 下一页

## 通过向导初始化 ME 控制器 - 4

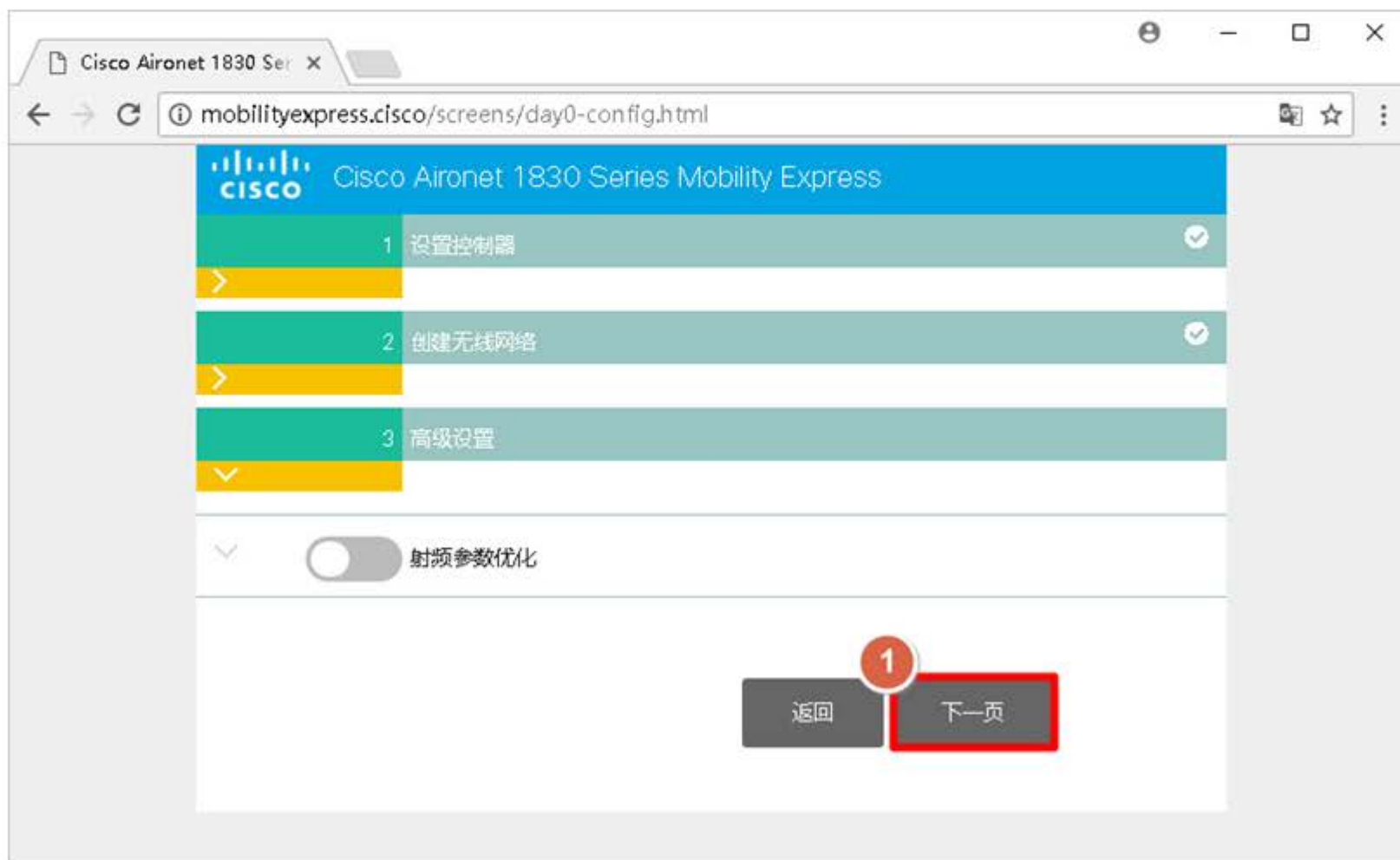
- 跟随向导设置 SSID 为“Employee”，使用预共享密钥认证。





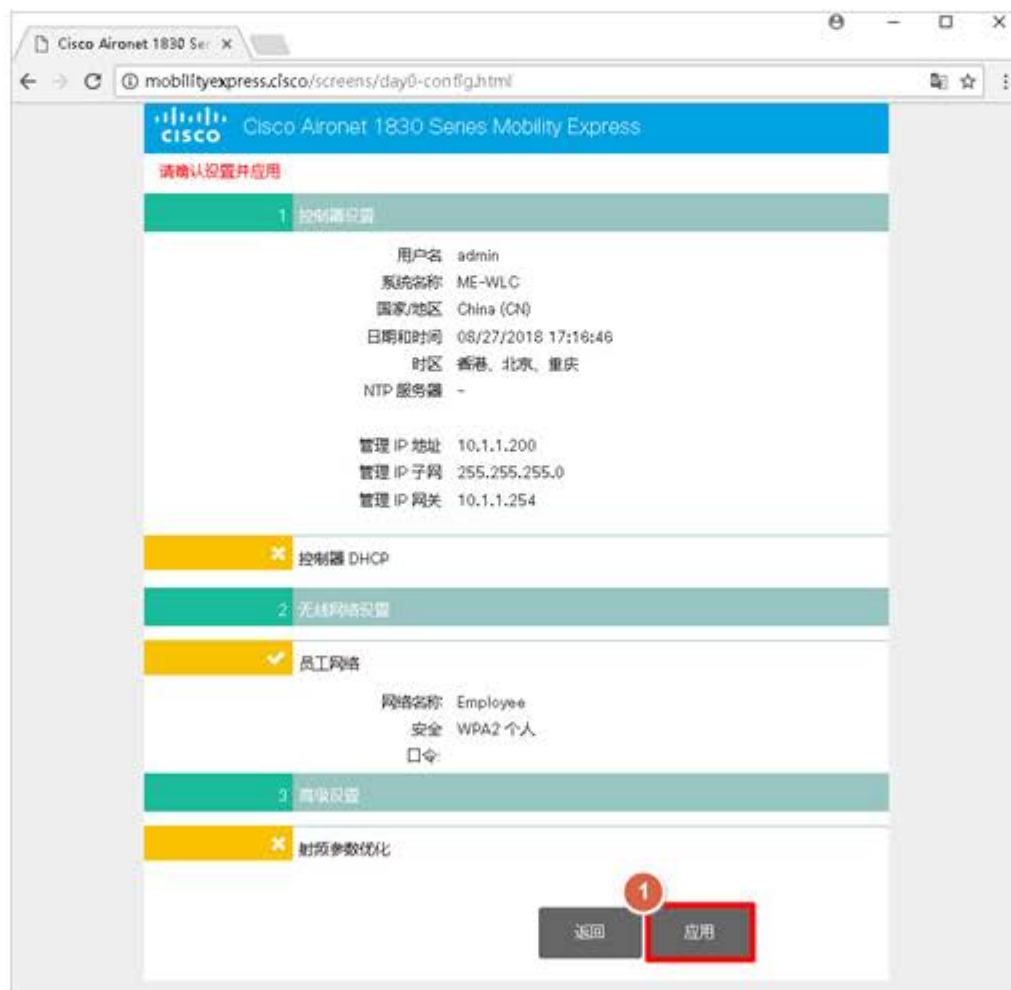
## 通过向导初始化 ME 控制器 - 5

- 完成设置



## 通过向导初始化 ME 控制器 - 6

- 应用配置，控制器会重启（3~4分钟。）此处不要应用，转到 CLI 演示 CLI 初始化。





## 通过 CLI 初始化 ME 控制器 - 1

```
Cisco Aironet 1830 Series Mobility Express
Welcome to the Cisco Wizard Configuration Tool
Use the '-' character to backup

Would you like to terminate autoinstall? [yes]:
Enter Administrative User Name (24 characters max): admin
Enter Administrative Password (3 to 24 characters): Cisc0123
Re-enter Administrative Password                : Cisc0123

System Name [Cisco_fa:48:40] (31 characters max): ME-WLC

Enter Country Code list (enter 'help' for a list of countries) [US]: CN

Configure a NTP server now? [YES][no]: no
Configure the system time now? [YES][no]: no

Note! Default NTP servers will be used
```



## 通过 CLI 初始化 ME 控制器 - 2

Management Interface IP Address: 10.1.1.200

Management Interface IP Address Configuration [STATIC][dhcp]: 回车

Management Interface IP Address: 10.1.1.200

Management Interface Netmask: 255.255.255.0

Management Interface Default Router: 10.1.1.254

Create Management DHCP Scope? [yes][NO]: 回车

Employee Network Name (SSID)? : Employee

Employee Network Security? [PSK][enterprise]: 回车

Employee PSK Passphrase (8-63 characters)? : Cisc0123

Re-enter Employee PSK Passphrase: Cisc0123

Enable RF Parameter Optimization? [YES][no]: no

Configuration correct? If yes, system will save it and reset. [yes][NO]: yes

Cleaning up Provisioning SSID



## CLI 查看控制器接口信息

(Cisco Controller)

Enter User Name (or 'Recover-Config' this one-time only to reset configuration to factory defaults)

User: **admin**

Password: **Cisc0123**

(Cisco Controller) >**show interface summary**

Number of Interfaces..... 2

Interface Name	Port	Vlan Id	IP Address	Type	Ap Mgr	Guest
<b>management</b>	<b>1</b>	<b>untagged</b>	<b>10.1.1.200</b>	<b>Static</b>	<b>Yes</b>	<b>No</b>
virtual	N/A	N/A	192.0.2.1	Static	No	No



## Console 模式切换

- WLC Console 切换到 AP Console

```
(Cisco Controller) >apcishell
```

```
!!Warning!!: You are entering ap shell. This will stop you from establishing new telnet/SSH/Web sessions to controller.
```

```
Also the existing sessions will be suspended till you exit the ap shell.
```

```
To exit the ap shell, use 'logout'
```

```
User Access Verification
```

```
Username: admin
```

```
Password: Cisc0123
```

```
ME-AP>enable
```

```
ME-AP#
```

- AP Console 切换到 WLC Console

```
ME-AP>logout
```

```
(Cisco Controller) >
```



3

# Mobility Express 8.5 介绍



# 登录 ME-WLC





## 配置 ME-AP 为静态 IP

- 配置 ME-AP 使用静态 IP，地址为 10.1.1.10。

The screenshot displays the Cisco Aironet 1830 Series Mobility Express configuration interface. The left sidebar shows navigation options: 正在监控, 无线设置, 无线局域网, 无线接入点 (highlighted with a red box and '1'), 无线局域网用户, 访客无线局域网, DHCP 服务器, 管理, and 高级. The main panel shows '无线接入点管理' with a '无线接入点' button (highlighted with a red box and '2'). A modal window titled 'ME-AP (活动的控制器)' is open, showing configuration options: 常规, 控制器, 收音机 1 (2.4 GHz), and 无线电 2 (5GHz) (highlighted with a red box and '3'). The configuration fields include: 运行模式 (无线接入点控制器), 无线接入点 Mac (00:0f:77:fa:49:30), 无线接入点型号 (AIR-AP1832I-K-K9), IP 配置 (静态 IP, highlighted with a red box and '4'), IP 地址 (10.1.1.10), 子网掩码 (255.255.255.0), 网关 (10.1.1.254), 无线接入点名称 (ME-AP), and 位置 (default location). At the bottom of the modal, the '应用' button is highlighted with a red box and '5', and the '取消' button is also visible.

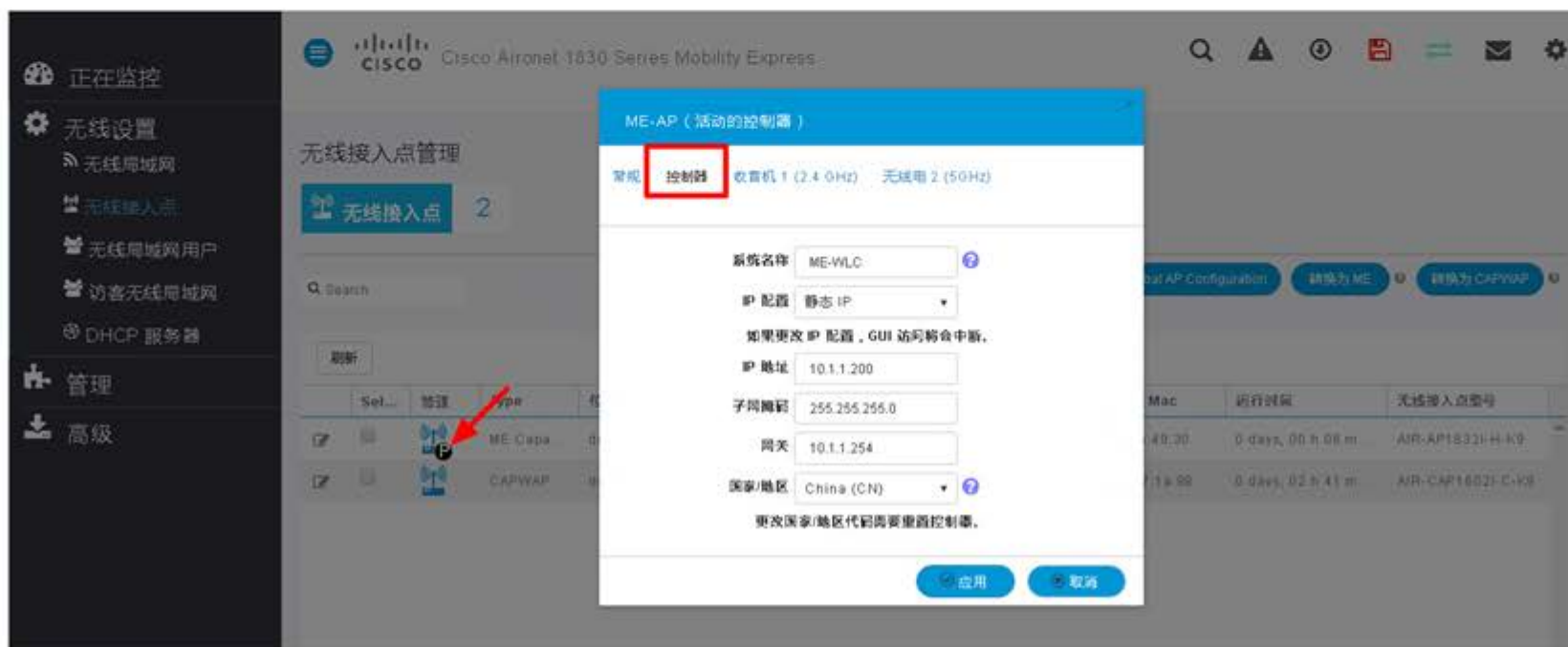
## 配置 AP1600 为静态 IP

- 配置 ME-AP 使用静态 IP，地址为 10.1.1.20。

The screenshot displays the Cisco Aironet 1830 Series Mobility Express configuration interface. The left sidebar shows the navigation menu with the following items: 正在监控, 无线设置, 无线局域网, 无线接入点 (highlighted with a red box and a '1'), 无线局域网用户, 访客无线局域网, DHCP 服务器, 管理, and 高级. The main content area is titled '无线接入点管理' and shows a table of wireless access points. The table has columns for 'Sel...', '管理', and 'Type'. Two rows are visible: 'ME Capable' and 'CAPWAP'. The 'CAPWAP' row is highlighted with a red box and a '2'. A configuration modal window for 'AP1' is open, showing the following settings: '常规' (highlighted with a red box and a '3'), '收音机 1 (2.4 GHz)', '无线电 2 (5.0Hz)', '运行模式' (默认无线接入点), '无线接入点 Mac' (8:5b:38:37:1a:98), '无线接入点型号' (AIR-CT5502-K9, highlighted with a red box and a '4'), 'IP 配置' (静态 IP), 'IP 地址' (10.1.1.20), '子网掩码' (255.255.255.0), '网关' (10.1.1.254), '无线接入点名称' (AP1600), and '位置' (default location). At the bottom of the modal, the '应用' button is highlighted with a red box and a '5', and the '取消' button is also visible.

## 主 AP 介绍

- ME-AP 运行的是支持控制器功能的镜像，它的状态是主 AP（右下角P）。
- 在 Cisco Mobility Express 网络中，运行无线控制器功能的 AP 被指定为主 AP。通过此主 AP 管理的其他接入点称为从属 AP。
- 主 AP 有两个角色：
  - 它可用作无线 LAN 控制器管理和控制从属 AP。从属 AP 用作轻型接入点来服务客户端。
  - 主 AP 用作接入点来服务客户端。



## AP 默认支持的登录方式

- AP 默认支持 SSH 登录。

正在监控  
无线设置  
管理  
接入  
管理员帐户  
时间  
软件更新  
高级

CISCO Cisco Aironet 1830 Series Mobility Express

管理访问

1 已启用 2

HTTP 接入	已禁用 (默认值)
HTTPS 访问	已启用 (默认值)
远程登录访问	已禁用 (默认值)
SSHv2 访问	已启用 (默认值)

应用

## 通过 SSH 登录 ME-AP





## 通过 SSH 登录 ME1832-1

- 查看 ME1832-1 角色

```
ME-AP>enable
```

```
Password: Cisco123
```

```
ME-AP#
```

```
ME-AP#show version
```

```
AP Image type      : MOBILITY EXPRESS IMAGE
```

```
AP Configuration  : MOBILITY EXPRESS CAPABLE
```

AP Configuration: **MOBILITY EXPRESS CAPABLE**, 则表示它同时充当控制器和接入点。

AP Configuration: **NOT MOBILITY EXPRESS CAPABLE**, 表示它仅充当接入点, 不参与发生故障转移时的主 AP 选择过程



## 通过 Console 查看 AP1600

- 查看 AP1600 角色

### AP1600#show version

```
cisco AIR-CAP1602I-C-K9 (PowerPC) processor (revision B0) with 187386K/74672K bytes of memory.
Processor board ID FGL1837X3GB
PowerPC CPU at 533Mhz, revision number 0x2151
Last reset from power-on
LWAPP image version 8.5.135.0
1 Gigabit Ethernet interface
2 802.11 Radios

32K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address: FC:5B:39:37:1A:98
Part Number                : 73-14671-04
PCB Serial Number          : FOC18360Y5V
Top Assembly Part Number   : 800-38552-01
Top Assembly Serial Number : FGL1837X3GB
Top Revision Number        : A0
Product/Model Number       : AIR-CAP1602I-C-K9
```

通过show version, 没有“AP Configuration”输出的, 表示 AP 运行CAPWAP 镜像。



4

# 编辑 WLAN 演示







## 配置需求

- 配置 WLAN 名称为“Employee”
  - 启用 NBAR 深度报文检查
  - 启用基于 HTTP 和 DHCP 协议分析
  - 使用 ISE 对无线客户进行认证和授权，无线客户授权到 VLAN20 中。
  - 射频策略同时工作在 2.4G 和 5G。
- 配置 2.4G 信道为“6”，5G 信道为“149”

## 编辑 WLAN - 1

- 配置SSID为“Employee”，启用本地特征分析。

The screenshot shows the Cisco Aironet 1830 Series Mobility Express configuration interface. The left sidebar contains navigation options: 正在监控 (Monitoring), 无线设置 (Wireless Settings), 管理 (Management), and 高级 (Advanced). Under 无线设置, 无线局域网 (WLAN) is highlighted with a red box and a '1' in a circle. The main area shows '无线局域网配置' (Wireless LAN Configuration) with a '活动的无线局域网' (Active Wireless LANs) section. A '添加新的无线局域网' (Add New Wireless LAN) button is visible. A modal dialog box titled '编辑无线局域网' (Edit Wireless LAN) is open, showing the configuration for WLAN ID 1. The dialog has tabs for '常规' (General), '无线局域网安全' (Wireless LAN Security), 'VLAN 和防火墙' (VLAN and Firewall), and '流量整形' (Traffic Shaping). The '常规' tab is selected. The configuration fields are: 'WLAN ID' (1), '配置文件名称' (Employee), 'SSID' (Employee), '管理状态' (已启用), and '射频策略' (所有). The '广播 SSID' and '本地特征分析' options are both checked. The '应用' (Apply) and '取消' (Cancel) buttons are at the bottom. Red boxes and numbers 1-4 highlight the '无线局域网' menu item, the '添加新的无线局域网' button, the '常规' tab, and the '配置文件名称' and 'SSID' fields respectively.

## 编辑 WLAN - 2

- 认证方式为“WPA-2 企业版”，添加认证服务器为 ISE 的地址，设置预共享密钥。

编辑无线局域网

常规 **无线局域网安全** VLAN 和防火墙 流量整形

访客网络

MAC 过滤

当启用 MAC 过滤时，不允许开放式安全类型。

安全类型 **WPA2 企业版**

验证服务器 外部 Radius

**添加 RADIUS 身份验证服务器** ?

状态	服务器 IP 地址	端口

外部 Radius 配置适用于所有无线局域网

应用 取消

添加/编辑 Radius 身份验证服务器。

服务器索引 1

状态 **已启用**

服务器 IP 地址 **10.1.1.12**

共享秘密 **Cisc0123** ?

确认共享密钥 **Cisc0123**

显示密码

端口号 1812

服务器超时 5 秒

**应用** 取消

## 编辑 WLAN - 3

- 配置本地 VLAN ID 为10 (Native VLAN) , VLAN ID 为20。

编辑无线局域网

常规 无线局域网安全 **VLAN 和防火墙** 流量整形

客户端 IP 管理 策略 (默认)

使用 VLAN 标记 是

本地 VLAN ID 10

DHCP 作用域 无 VLAN ID \*

20

没有与 VLAN ID 关联的 DHCP 范围

启用防火墙 否

VLAN 和防火墙配置适用于所有无线局域网 配置使用了相同的 VLAN

应用 取消

## 编辑 WLAN - 4

- 启用“应用可视性控制器”（应用识别），应用配置

编辑无线网络

常规 无线网络安全 VLAN 和防火墙 **流量整形**

QoS 银级 (尽力)

Fastlane 已禁用

更改 Fastlane 配置会暂时中断该网络，并且在启用 QoS 时其值会更新为白金级。

应用可视性控制 **已启用**

AVC 配置文件 Employee

添加规则

S.I 编号	应用	操作
--------	----	----

应用 取消

Detailed description: The screenshot shows the '流量整形' (Traffic Shaping) tab in the WLAN configuration interface. It features several dropdown menus: 'QoS' is set to '银级 (尽力)', 'Fastlane' is '已禁用', and '应用可视性控制' (Application Visibility Control) is '已启用'. A note below the Fastlane dropdown states that changing it will temporarily interrupt the network and that its value will update to '白金级' (Platinum) when QoS is enabled. Below these settings is an 'AVC 配置文件' (AVC Profile) dropdown set to 'Employee' and a '添加规则' (Add Rule) button. At the bottom, there is an empty table with columns for 'S.I 编号', '应用', and '操作'. The '应用' (Apply) button is highlighted with a red box and a circled '3'.

## 配置 ME-AP 2.4G信道

- 配置ME-AP 2.4G 信道为6

The screenshot shows the configuration interface for a Cisco Aironet 1830 Series wireless access point. The interface is divided into several sections:

- Left Sidebar:** Contains navigation options such as "正在监控" (Monitoring), "无线设置" (Wireless Settings), "无线局域网" (WLAN), "无线接入点" (Wireless Access Points), "无线局域网用户" (WLAN Users), "访客无线局域网" (Guest WLAN), "DHCP 服务器" (DHCP Servers), "管理" (Management), and "高级" (Advanced). The "无线接入点" option is highlighted with a red box and a circled "1".
- Main Configuration Area:** Displays the configuration for a specific wireless access point. The "无线接入点管理" (Wireless Access Point Management) section shows a "无线接入点" (Wireless Access Point) with a circled "2" next to it. Below this is a search bar and a "刷新" (Refresh) button.
- ME-AP Configuration Modal:** A modal window titled "ME-AP (活动的控制器)" (ME-AP (Active Controller)) is open. It shows the configuration for the 2.4 GHz radio. The "收音机 1 (2.4 GHz)" (Radio 1 (2.4 GHz)) is selected, highlighted with a red box, and circled "3". The "通道" (Channel) is set to "6", highlighted with a red box and circled "4". Other settings include "管理模式" (Management Mode) set to "已启用" (Enabled), "通道带宽" (Channel Width) set to "20 MHz", and "传输功率" (Transmit Power) set to "Automatic". A blue box displays "2.4 GHz 802.11 b/g/n". Buttons for "应用" (Apply) and "取消" (Cancel) are visible at the bottom.
- Table:** A table at the bottom lists the configured wireless access points. The first row is highlighted with a red box and a circled "2".

Sel...	管理	Type	位置	IP 地址	MAC 地址	运行时间	无线接入点型号
<input checked="" type="checkbox"/>		ME Capa...	default location	10.1.1.10	00:bf:77:fa:49:30	0 days, 01 h 05 m ...	AIR-AP1832I-H-K9
<input type="checkbox"/>		CAPWAP	default location	10.1.1.20	fc:5b:39:37:1a:98	0 days, 00 h 56 m ...	AIR-CAP1602I-C-K9

# 配置 ME-AP 5G信道

- 配置ME-AP 5G 信道为149

The screenshot shows the Cisco Aironet 1830 Series Management Center interface. A modal window titled "ME-AP (活动的控制器)" is open, showing configuration for "无线电 2 (5GHz)".

Configuration details in the modal window:

- 1. Tab: 无线电 2 (5GHz)
- 2. 管理模式: 禁用
- 3. 信道: 149
- 通道带宽: 20 MHz
- 传输功率: Automatic
- Buttons: 应用, 取消

Background interface elements:

- Left sidebar: 正在监控, 无线设置, 无线局域网, 无线接入点, 无线局域网用户, 访客无线局域网, DHCP 服务器, 管理, 高级
- Top: Cisco Aironet 1830 Series Mo
- Section: 无线接入点管理
- Sub-section: 无线接入点 2
- Table (partially visible):

Sel...	管理	Type	位置				运行时间	无线接入点型号
<input type="checkbox"/>		ME Capa...	default location	ME-AP	10.1.1.10	00:bf:77:fa:49:30	0 days, 01 h 06 m ...	AIR-AP1832I-H-K9
<input type="checkbox"/>		CAPWAP	default location	AP1600	10.1.1.20	fc:5b:39:37:1a:98	0 days, 00 h 57 m ...	AIR-CAP1602I-C-K9

## 配置 AP1600 2.4G信道

- 配置 AP1600 2.4G 信道为6

The screenshot shows the Cisco Aironet 1830 Series Mobility Express configuration interface. The left sidebar contains navigation options: 正在监控, 无线设置, 无线局域网, 无线接入点 (highlighted with a red box and a '1'), 无线局域网用户, 访客无线局域网, DHCP 服务器, 管理, and 高级. The main area displays '无线接入点管理' (Wireless Access Point Management) with a '无线接入点' (Wireless Access Point) button (highlighted with a '2') and a search bar. A table lists APs with columns for selection, management, type, and location. A dialog box for 'AP 1600' is open, showing configuration for '收音机 1 (2.4 GHz)' (highlighted with a '3'). The '管理模式' (Management Mode) is set to '官方' (highlighted with a '4'), and the '信道' (Channel) is set to '6' (highlighted with a '4'). The '信道带宽' (Channel Bandwidth) is '30 MHz' and the '传输功率' (Transmit Power) is 'Automatic'. A summary box shows '2.4 GHz' and '802.11 b/g/n'. The dialog has '应用' (Apply) and '取消' (Cancel) buttons (highlighted with a '5').

Sel...	管理	Type	位置
<input type="checkbox"/>		ME Capa...	defau
<input type="checkbox"/>		CAPWAP	defau



## 配置 AP1600 5G信道

- 配置 AP1600 5G 信道为149

The screenshot shows the Cisco Aironet 1830 Series Mobility Express configuration interface. The main window is titled "AP1600" and displays the configuration for the 5GHz radio. The configuration is as follows:

- 管理模式: 启用 (Enabled)
- 信道: 149 (Channel 149)
- 信道带宽: 40 MHz (Channel Bandwidth 40 MHz)
- 传输功率: Automatic (Transmit Power Automatic)

The interface also shows a table of AP configurations:

AP ID	运行时间	无线接入点型号
30	0 days, 01 h 06 m ...	AIR-AP1832I-H-K9
98	0 days, 00 h 57 m ...	AIR-CAP1602I-C-K9

Red boxes and numbers 1, 2, and 3 highlight the "无线电 2 (5GHz)" tab, the "信道" dropdown menu, and the "应用" (Apply) button, respectively.

# ISE 配置 - 1

- 添加 ME-WLC

The screenshot shows the Cisco Identity Services Engine (ISE) configuration interface. The navigation menu at the top includes Home, Context Visibility, Operations, Policy, Administration, and Work Centers. The 'Administration' menu is expanded, showing Network Resources, Device Portal Management, pxGrid Services, Feed Service, PassiveID, and Threat Centric NAC. The 'Network Resources' menu is further expanded to show Network Devices, Network Device Groups, Network Device Profiles, External RADIUS Servers, RADIUS Server Sequences, NAC Managers, External MDM, and Location Services. The 'Network Devices' menu is selected, and the 'New Network Device' page is displayed. The page title is 'Network Devices List > New Network Device'. The 'Network Devices' section contains the following fields:

- \* Name: ME-WLC
- Description: (empty)
- \* IP Address: 10.1.1.200 / 32
- \* Device Profile: Cisco
- Model Name: (empty)
- Software Version: (empty)
- \* Network Device Group: (empty)
- Device Type: All Device Types (Set To Default)
- Location: All Locations (Set To Default)

The 'RADIUS Authentication Settings' section is expanded, showing the following configuration:

- Enable Authentication Settings: (checked)
- Protocol: RADIUS
- \* Shared Secret: Cisc0123 (Hide)
- Enable KeyWrap: (unchecked)
- \* Key Encryption Key: (empty) (Show)

## ISE 配置 - 2

- 创建用户名密码

The screenshot shows the Cisco Identity Services Engine (ISE) configuration interface. The navigation menu at the top includes 'Administration' and 'Identities'. The 'Identities' menu is expanded, showing 'Groups', 'External Identity Sources', 'Identity Source Sequences', and 'Settings'. The 'Users' section is selected, and the 'New Network Access User' form is displayed. The form includes the following fields and options:

- Network Access User**
  - \* Name:
  - Status:  Enabled
  - Email:
- Passwords**
  - Password Type:
  - \* Login Password:    ⓘ
  - Enable Password:    ⓘ

## ISE 配置 - 3

- 创建授权结果

The screenshot shows the Cisco Identity Services Engine (ISE) configuration interface. The navigation menu on the left includes Authentication, Authorization, Profiling, Posture, and Client Provisioning. Under Authorization, the 'Authorization Profiles' option is selected. The main content area displays the 'New Authorization Profile' configuration page. The profile name is 'ME\_Client\_VLAN20' and the access type is 'ACCESS\_ACCEPT'. The network device profile is set to 'Cisco'. The 'Common Tasks' section includes options for DACL Name, ACL (Filter-ID), and VLAN. The 'VLAN' option is checked, and the 'Tag ID' is set to '1' and the 'ID/Name' is set to '20'. The 'Voice Domain Permission' option is unchecked.

Identity Services Engine Home Context Visibility Operations Policy Administration Work Centers

Authentication Authorization Profiling Posture Client Provisioning Policy Elements

Dictionary Conditions Results

Authorization Profiles > New Authorization Profile

Authorization Profile

\* Name ME\_Client\_VLAN20

Description

\* Access Type ACCESS\_ACCEPT

Network Device Profile Cisco

Service Template

Track Movement

Passive Identity Tracking

Common Tasks

DACL Name

ACL (Filter-ID)

VLAN Tag ID 1 Edit Tag ID/Name 20

Voice Domain Permission

## ISE 配置 - 4

- 使用默认认证策，配置授权策略。

**Identity Services Engine** Home ▶ Context Visibility ▶ Operations ▶ **Policy** ▶ Administration ▶ Work Centers

Authentication **Authorization** Profiling Posture Client Provisioning ▶ Policy Elements

### Authorization Policy

Define the Authorization Policy by configuring rules based on identity groups and/or other conditions. Drag and drop rules to change the order.  
For Policy Export go to [Administration > System > Backup & Restore > Policy Export Page](#)

First Matched Rule Applies ▼

▶ Exceptions (0)

Standard

Status	Rule Name	Conditions (identity groups and other conditions)	Permissions
✓	ME_Client_Author_VLAN20	if: Radius:NAS-IP-Address EQUALS 10.1.1.200	then: ME_Client_VLAN20

## 无线客户端连接测试

Cisco AnyConnect

Enter information for the connection.

Media: Wi-Fi  
 Hidden Network

Descriptive Name:

SSID:

Security: WPA2 Enterprise AES

802.1X Configuration

Cisco AnyConnect | Employee

Please enter your username and password for the network: Employee

Username:

Password:   
 Show Password

Cisco AnyConnect

The server certificate for the network 'Employee' has failed validation. Do you want to trust it?

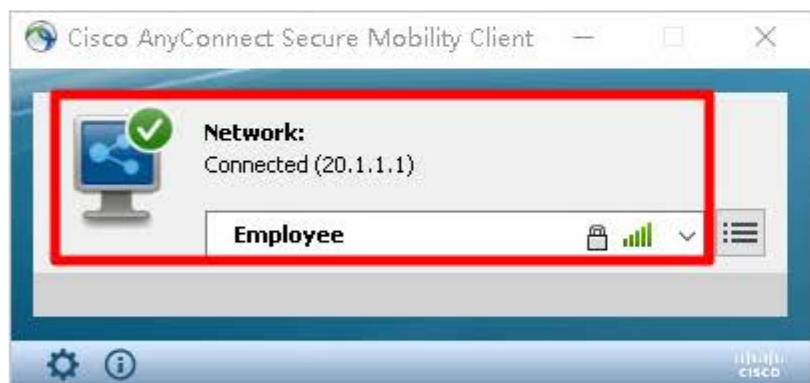
Certificate Name: QYTISE.qytang.com@

Issued To: QYTISE.qytang.com

Issued By: QYTISE.qytang.com

Expiration Date: 2018-01-02 02:49:46 UTC

## 连通性测试



```
C:\>ipconfig

Windows IP 配置

无线局域网适配器 WLAN:

    连接特定的 DNS 后缀 . . . . . :
    本地连接 IPv6 地址 . . . . . : fe80::c992:e66f:7c3f:aca7%15
    IPv4 地址 . . . . . : 20.1.1.1
    子网掩码 . . . . . : 255.255.255.0
    默认网关 . . . . . : 20.1.1.254

C:\>ping 10.1.1.254

正在 Ping 10.1.1.254 具有 32 字节的数据:
来自 10.1.1.254 的回复: 字节=32 时间=3ms TTL=255
来自 10.1.1.254 的回复: 字节=32 时间=4ms TTL=255
来自 10.1.1.254 的回复: 字节=32 时间=6ms TTL=255
来自 10.1.1.254 的回复: 字节=32 时间=4ms TTL=255

10.1.1.254 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
    往返行程的估计时间(以毫秒为单位):
        最短 = 3ms, 最长 = 6ms, 平均 = 4ms
```

## 查看ISE授权日志

Identity Services Engine

Home > Context Visibility > Operations > Policy > Administration > Work Centers

RADIUS TC-NAC Live Logs > TACACS Reports > Troubleshoot > Adaptive Network Control

Live Logs Live Sessions

Misconfigured Supplicants 0 Misconfigured Network Devices 0 RADIUS Drops 0 Client Stopped Responding 0 Repeat Counter 0

Refresh Every 1 minute Show Latest 20 records Within Last 24 hours

Refresh Reset Repeat Counts Export To Filter

Time	Status	Details	Repeat ...	Identity	Endpoint ID	Endpoint P...	Authenticat...	Authorizati...	Authorizati...	IP Address	Netw
Aug 27, 2018 04:25:06.616 PM			0	meclient	A0:63:91:A6:B5:FB	Netgear-Dev...	Default >> D...	Default >> M...	ME_Client_...		
Aug 27, 2018 04:25:06.616 PM				meclient	A0:63:91:A6:B5:FB	Netgear-Dev...	Default >> D...	Default >> M...	ME_Client_...		ME-V



## 查看ISE授权日志

Identity Services Engine

Home | Context Visibility | Operations | Policy | Administration | Work Centers

RADIUS | TC-NAC Live Logs | TACACS | Reports | Troubleshoot | Adaptive Network Control

Live Logs | Live Sessions

Misconfigured Supplicants 0 | Misconfigured Network Devices 0 | RADIUS Drops 0 | Client Stopped Responding 0 | Repeat Counter 0

Refresh Every 1 minute Show Latest 20 records Within Last 24 hours

Refresh Reset Repeat Counts Export To Filter

Time	Status	Details	Repeat ...	Identity	Endpoint ID	Endpoint P...	Authenticat...	Authorizati...	Authorizati...	IP Address	Netw
Aug 27, 2018 04:25:06.616 PM			0	meclient	A0:63:91:A6:B5:FB	Netgear-Dev...	Default >> D...	Default >> M...	ME_Client_...		
Aug 27, 2018 04:25:06.616 PM				meclient	A0:63:91:A6:B5:FB	Netgear-Dev...	Default >> D...	Default >> M...	ME_Client_...		ME-V

# 查看客户端详细信息 - 1

The screenshot shows the Cisco Aironet 1830 Series Mobility Express interface. The left sidebar contains navigation options: 正在监控 (highlighted), 网络摘要, 无线接入点, 客户端 (highlighted), 应用程序, 欺诈, 无线接入点, and 客户端. The main content area is titled '客户端' and displays a table of client information. The table has columns for 用户名, 无线接入点名称, 协议, 连接速度, 状态, 信号..., and 信号... The first row shows a client named 'meclient' connected to 'ME-AP' using '802.11ac' protocol, with a connection speed of '173', status 'Online', and signal strength of '57' and '-33'. A red box highlights the 'meclient' and 'ME-AP' cells, and a yellow circle highlights the mouse cursor over the 'ME-AP' cell. The table footer indicates '25 个项目(每页)' and '第 1 - 1, 共 1 项'.

用户名	无线接入点名称	协议	连接速度	状态	信号...	信号...	M
meclient	ME-AP	802.11ac	173	Online	57	-33	a

## 查看客户端详细信息 - 2

**正在监控**

- 网络摘要
  - 无线接入点
  - 客户端
- 应用程序
- 欺诈
  - 无线接入点
  - 客户端
- 干扰源
- 无线控制面板
  - 无线接入点性能
  - 客户端性能
- 最佳实践
- 无线设置**
- 管理
- 高级

Cisco Aironet 1830 Series Mobility Express

### 客户端视图

**常规**

用户名  
**meclient**

主机名  
**Meraki\_WIN10**

---

MAC 地址  
a0:63:91:a6:b5:fb

运行时间  
自 8 分钟 7 秒 后已关联

SSID  
Employee

无线接入点名称  
ME-AP. (Ch. 149)

最近的无线接入点  
AP1800(-36 dBm)

设备类型  
Microsoft-Workstation

性能  
信号强度: -33 dBm 信号质量: 57 dB 连接速度: 173 Mbps 通道带宽: 20 MHz

能力  
802.11ac (5GHz) 空闲流: 2

思科兼容  
不受支持

连接分散  
100%

**连接**

**排名靠前的应用程序**

名称	使用	使用率百...
unclassified	2.5 MB	90.89%
dns	244.5 KB	8.8%
netbios-ns	5.4 KB	0.19%
dhcp	2.6 KB	0.09%
ping	780.0 B	0.03%
ipv6-icmp	0	0%

# 流量拓扑

## 移动性状态





5

# 使用 Cisco Wireless APP 管理



## 创建 WLAN ME-Admin

- 创建WLAN“ME-Admin”，使用 PSK 认证，关联 VLAN10。

添加新的无线局域网

常规 无线局域网安全 VLAN 和防火墙 流量整形

WLAN ID 2

配置文件名称 ME-Admin

SSID ME-Admin

管理状态 已启用

射频策略 所有

广播 SSID

本地特征分析

应用 取消

添加新的无线局域网

常规 无线局域网安全 VLAN 和防火墙 流量整形

访客网络

MAC 过滤

当启用 MAC 过滤时，不允许开放式安全类型。

安全类型 WPA2 个人

口令 .....

确认口令 .....

显示口令

应用 取消

编辑无线局域网

常规 无线局域网安全 VLAN 和防火墙 流量整形

客户端 IP 管理 网络 (默认)

使用 VLAN 标记 是

本地 VLAN ID 10

DHCP 作用域 10

没有与 VLAN ID 关联的 DHCP 范围

启用防火墙 否

VLAN 和防火墙配置适用于所有无线局域网 配置使用了相同的 VLAN

应用 取消

# 下载 Cisco Wireless APP

- 需要在 Google Play 下载。



## 连接 ME-Admin

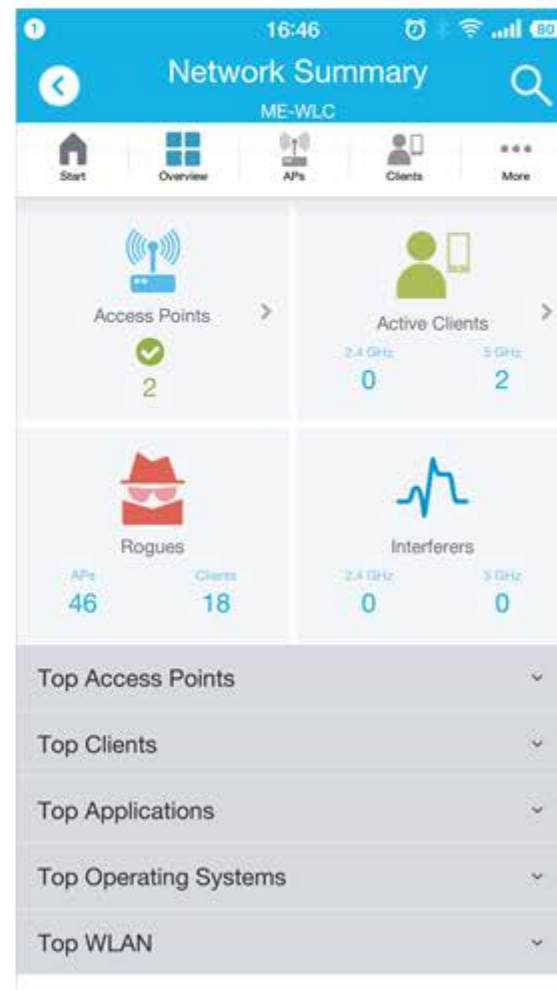
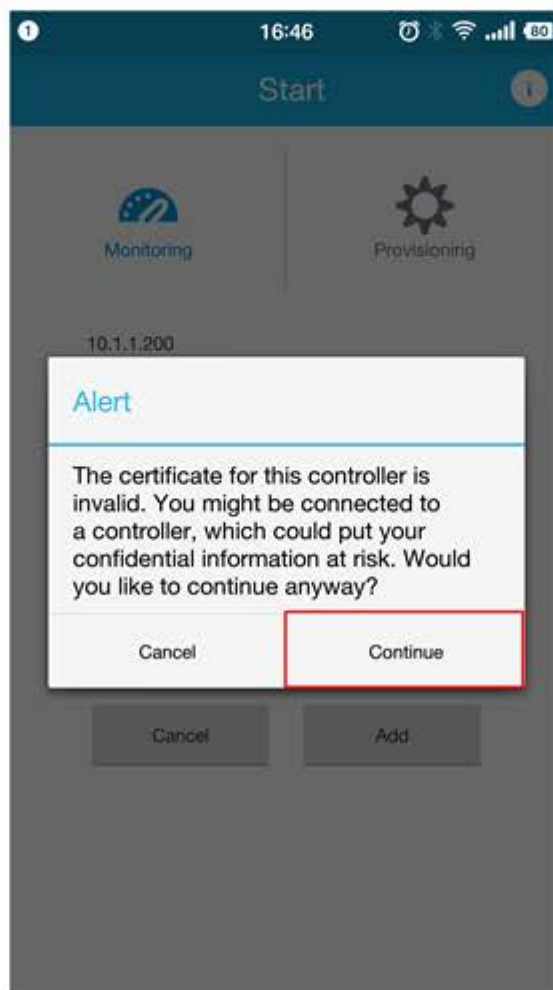
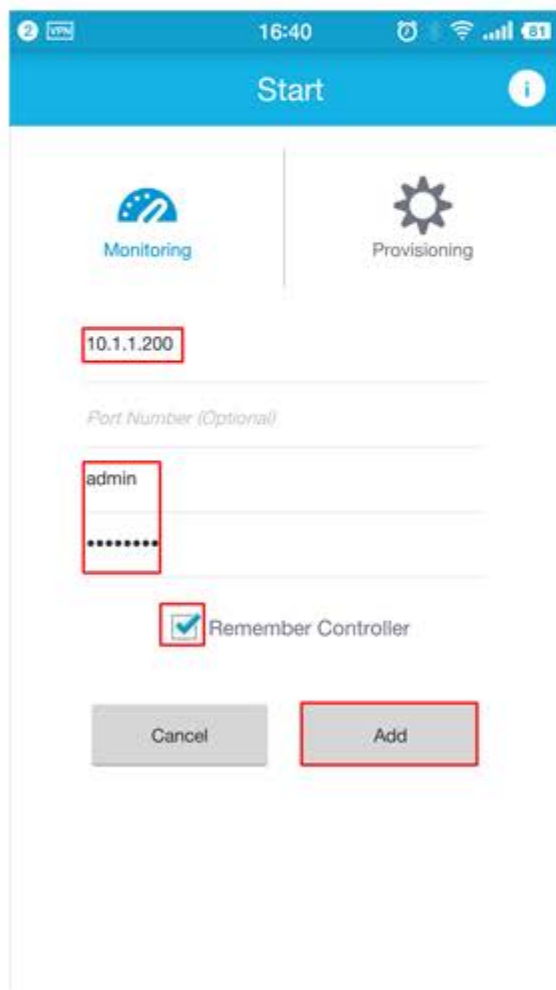
- 连接 WLAN ME-Admin





## 使用 Wireless APP 管理 ME - 1

- 输入ME-WLC的IP地址和用户名密码连接。



## 使用 Wireless APP 管理 ME - 2

- 查看 AP, 查看客户端详细信息。

