

配置DNA空間和Mobility Express Direct Connect並對其進行故障排除

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簡介

本檔案介紹

背景資訊

與基於AireOS的常規無線LAN控制器一樣，運行在802.11ac Wave 2接入點(2800、3800、4800、1542、1562、1850、1815)上的Cisco Mobility Express(ME)可以通過三種方式連線到DNA Spaces雲：

- 直接連線
- 通過DNA空間聯結器
- 通過思科CMX內部裝置或虛擬機器

從Mobility Express 8.3版開始，支援與DNA Spaces整合。本文僅涉及Direct Connect的設定和故障排除。

重要:僅建議直接連線最多部署50個客戶端。對於較大的連線，請使用DNA空間聯結器。

需求

必要條件

採用元件

- 行動化Express映像8.10.
- 1542美聯社
- DNA空間雲

本文中概述的步驟假設已部署ME並具有有效的Web介面和SSH。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

設定

行動化Express

DNA Spaces雲節點和ME通過HTTPS協定（埠443）進行通訊。在此測試設定中，在1542 AP上運行的ME被置於具有完全網際網路訪問的NAT之後。

通過Web介面進行配置

在將Mobility Express控制器連線到DNA Spaces之前，需要設定NTP和DNS伺服器，並至少加入一個AP。與其他基於AireOS的控制器不同，Mobility Express不要求安裝DigiSign根證書（在撰寫本文時）。

訪問Mobility Express Web介面並在右上角點選2個綠色箭頭以啟用專家模式。專家模式將解鎖一些隱藏選項：

The screenshot displays the Cisco Aironet 1542 Series Mobility Express web interface. The browser address bar shows the URL `https://192.168.1.13/screens/dashboard.html#/MainDashboard`. The page title is "Cisco Aironet 1542 Series Mobility Express". The interface includes a left sidebar with navigation options: Monitoring (Network Summary, Access Points, Clients), Applications, Rogues (Access Points, Clients), Interferers, Wireless Dashboard (AP Performance, Client Performance), Best Practices, Wireless Settings, Management, and Advanced. The main content area shows a "NETWORK SUMMARY" section with metrics: Wireless Networks (1), Access Points (1), Active Clients (1 on 2.4GHz, 0 on 5GHz), Rogues (42 APs, 0 Clients), and Interferers (0 on both 2.4GHz and 5GHz). Below this are "ACCESS POINTS BY USAGE" and "CLIENTS" sections. A red arrow points to two green double-headed arrows in the top right corner of the interface.

導覽至**Management > Time**，並確保WLC已與NTP同步。預設情況下，EWC預配置為使用 `ciscome.pool.ntp.org` NTP伺服器：

Monitoring
Wireless Settings
Management
Access
Admin Accounts
Time
Software Update
Services
Advanced

Cisco Aironet 1542 Series Mobility Express

TIME SETTINGS

Time Zone (GMT +1:00) Amsterdam, Berlin, Rome, Vienna Set Time Automatically From Current Location

Set Time Manually * 02/24/2020 11:21 PM

NTP Polling Interval 86400 (seconds)

Apply

time_settings_ntp_servers

+ Add New NTP Server

| | NTP Index | NTP Server | NTP Status | For All APs |
|--------------------------|-----------|------------------------|------------|-------------|
| <input type="checkbox"/> | 1 | 0.ciscome.pool.ntp.org | In Sync | false |
| <input type="checkbox"/> | 2 | 1.ciscome.pool.ntp.org | Not Tried | false |
| <input type="checkbox"/> | 3 | 2.ciscome.pool.ntp.org | Not Tried | false |

導覽至Advanced > Controller Tools > Troubleshooting Tools，確認已新增DNS伺服器。預設情況下，ME預配置為使用Open DNS伺服器。可以在同一頁上輸入HTTP代理地址和埠：

Monitoring
Wireless Settings
Management
Advanced
SNMP
Logging
RF Optimization
Controller Tools
Security Settings
CMX

Cisco Aironet 1542 Series Mobility Express

CONTROLLER TOOLS

Tools

Restart Controller Configuration Management Troubleshooting Files **Troubleshooting Tools** Upload File

DNS Servers 208.67.222.222, 208.67.220.220

DNS Server IP Open DNS 208.67.220.220 208.67.222.222

Apply

HTTP-Proxy IP Address* HTTP-Proxy IP Address

HTTP-Proxy Port* HTTP-Proxy Port

Apply

在Wireless Settings > Access Points下，確認至少已加入一個AP。此AP可以是運行ME的AP：

The screenshot displays the Cisco DNA Spaces web interface for 'Cisco Aironet 1542 Series Mobility Express'. The left sidebar contains navigation options: Monitoring, Wireless Settings (with sub-items: WLANs, Access Points, Access Points Groups, WLAN Users, Guest WLANs, DHCP Server), Management, and Advanced. The 'Access Points' item is highlighted with a red box. The main content area is titled 'ACCESS POINTS ADMINISTRATION' and shows a summary card for 'Access Points' with a count of 1. Below this is a search bar and buttons for 'Global AP Configuration', 'Convert to ME', and 'Convert to CAPWAP'. A status bar indicates 'Primary Controller', 'Primary Controller and Preferred Master', and 'Preferred Master'. A table lists the access points with columns: Select, Manage, Type, Location, Name, IP Address, AP Mac, Up Time, and AP Model. The table contains one entry: ME Capable, default location, APD478.9BF8.7070, 192.168.1.185, d4:78:9b:f8:70:70, 0 days, 00 h 27 ..., and AIR-AP1542i-E-K9. The bottom of the page shows a pagination control for 10 items per page and '1 - 1 of 1 items'.

在DNA Spaces雲端上，登入並導覽至**Setup > Wireless Networks > Connect WLC/Catalyst 9800 Directly**，然後按一下**View Token**:

Connect your wireless network

Connect WLC/Catalyst 9800 Directly

Connect WLC/Catalyst 9800 Directly is an easy way to get your wireless network connected to Cisco DNA Spaces. No need to upgrade Wireless LAN Controllers or reconfigure your wireless network.

1 Install Root Certificate

You can install the certificate from WLC CLI
[View root certificate](#)

2 Configure Token in WLC

Configure the token in WLC to establish the connection.

14 Total controller(s)

[View Token](#)

3 Import Controllers into Location Hierarchy

Once the controllers are connected, you can import them into location hierarchy

1 controller(s)
imported to location
hierarchy

[Import Controllers](#)

Need Help?

Access the below links to view detailed help.

[View Configuration Steps](#)

[System Requirements](#)

[Frequently Asked Questions](#)

複製權杖和URL:

Token for WLC to connect to DNA Spaces

WLC Cisco Catalyst 9800

Follow the steps below to configure token in WLC CLI

- Execute the following steps in the WLC CLI mode
 - a.config cloud-services cmx disable
 - b.config cloud-services server url <https://vasilijeperovic.dnaspaces.eu 63.33.127.190>
 - c.config cloud-services server id-token [TOKEN]

TOKEN

eyJ0eXAI0iJKV1Q1LCJhbGciOiJI

 - d.config network dns serverip [dns_server_ip]
 - e.config cloud-services cmx enable
- Check the summary using the following command:
 - a.show nmsp cloud-services summary

The result should be as follows:

| | |
|---------------------|--------------------------------------|
| Server | https://vasilijeperovic.dnaspaces.eu |
| IP Address | 63.33.127.190 |
| Connectivity | https: UP |
| Service Status | Active |
| Last Request Status | HTTP/1.1 200 OK |
| Heartbeat Status | OK |

Done

在ME Web介面的Advanced > CMX下，貼上URL和驗證權杖：

Monitoring
Wireless Settings
Management
Advanced
SNMP
Logging
RF Optimization
Controller Tools
Security Settings
CMX

Cisco Aironet 1542 Series Mobility Express

CONNECTED MOBILE EXPERIENCE: CMX

CMX Settings Enabled

CMX Status Enabled

CMX Server URL * <https://vasilijeperovic.dnaspaces.eu> Test Link

CMX Server Token * eyJ0eXAI0iJKV1Q1LCJhbGciOiJI

Apply

要驗證連線是否已建立，請按一下測試連結按鈕。如果已建立連線，按鈕將更改為Link Up:



跳過下一章並轉到「將控制器匯入到位置層次」。

通過CLI配置

驗證NTP是否已配置和同步：

```
(ME) >show time

Time..... Mon Feb 24 23:38:13 2020

Timezone delta..... 0:0
Timezone location..... (GMT +1:00) Amsterdam, Berlin, Rome, Vienna

NTP Servers
NTP Version..... 3
NTP Polling Interval..... 86400

Index NTP Key Index      NTP Server                Status      NTP Msg Auth Status
-----
 1 0          0.ciscome.pool.ntp.org    In Sync     AUTH DISABLED
 2 0          1.ciscome.pool.ntp.org    Not Tried  AUTH DISABLED
 3 0          2.ciscome.pool.ntp.org    Not Tried  AUTH DISABLED
```

可以使用config time ntp server <index> <ip_address>命令新增新的NTP伺服器。

驗證是否已配置DNS伺服器：

```
(ME) >show network summary

RF-Network Name..... ME
DNS Server IP1..... 192.168.1.1
DNS Server IP2..... 208.67.222.222
DNS Server IP3..... 208.67.220.220
```

可以使用config network dns serverip <ip_addr>命令新增新的DNS伺服器。

要確認AP已加入，請執行以下操作：

```
(ME) >show ap summary

Number of APs..... 1

Global AP User Name..... admin
Global AP Dot1x User Name..... Not Configured
Global AP Dot1x EAP Method..... EAP-FAST

* prefix indicates Cisco Internal AP

AP Name          Slots AP Model          Ethernet MAC      Location          Country
IP Address       Clients DSE Location
-----
*APD478.9BF8.7070    2      AIR-AP1542I-E-K9    d4:78:9b:f8:70:70  default location  BE
192.168.1.185      0      [0 ,0 ,0 ]
```

如前所述，訪問DNA Spaces cloud，導航至Setup > Wireless Networks > Connect WLC/Catalyst 9800 Directly，然後點選View Token:

Connect your wireless network

Connect WLC/Catalyst 9800 Directly

Connect WLC/Catalyst 9800 Directly is an easy way to get your wireless network connected to Cisco DNA Spaces. No need to upgrade Wireless LAN Controllers or reconfigure your wireless network.

1 Install Root Certificate

You can install the certificate from WLC CLI
[View root certificate](#)

2 Configure Token in WLC

Configure the token in WLC to establish the connection.

14 Total controller(s)

[View Token](#)

3 Import Controllers into Location Hierarchy

Once the controllers are connected, you can import them into location hierarchy

1 controller(s)
imported to location
hierarchy

[Import Controllers](#)

Need Help?

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[System Requirements](#)

[Frequently Asked Questions](#)

複製令牌和URL:

運行以下命令：

```
(ME) >config cloud-services cmx disable
(ME) >config cloud-services server url [URL]
(ME) >config cloud-services server id-token [TOKEN]
(ME) >config cloud-services cmx enable
```

要驗證是否已成功建立與DNA Spaces雲的連線，請運行：

CMX Service

```
Server ..... https://vasilijeperovic.dnaspaces.eu
IP Address..... 63.33.127.190
Connectivity..... https: UP
Service Status ..... Active
Last Request Status..... HTTP/1.1 200 OK

Heartbeat Status ..... OK
Payload Compression type ..... gzip
```

將控制器匯入位置層次結構

其餘配置將在DNA空間中完成。在Setup>Wireless Networks> Connect WLC/Catalyst 9800 Directly下，按一下Import Controllers。

Connect WLC/Catalyst 9800 Directly

Connect WLC/Catalyst 9800 Directly is an easy way to get your wireless network connected to Cisco DNA Spaces. No need to upgrade Wireless LAN Controllers or reconfigure your wireless network.

- 1 Install Root Certificate**
You can install the certificate from WLC CLI
[View root certificate](#)
- 2 Configure Token in WLC**
Configure the token in WLC to establish the connection.
14 Total controller(s) [View Token](#)
- 3 Import Controllers into Location Hierarchy**
Once the controllers are connected, you can import them into location hierarchy
1 controller(s) imported to location hierarchy [Import Controllers](#)

Need Help?
Access the below links to view detailed help.
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[System Requirements](#)
[Frequently Asked Questions](#)

選中帳戶名稱旁邊的單選按鈕，然後按一下「下一步」。如果您已經新增了一些位置，它們將顯示在以下清單中：

Import Controllers

Where do you want to import this Controller

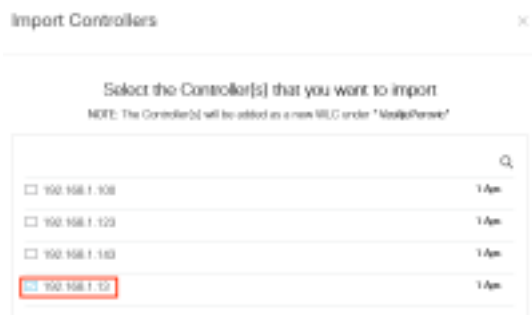
Choose a location that you want to import this controller.

Search Locations

TestLocation

Next

找到控制器IP地址，選中其旁邊的框，然後按下一步：



由於尚未新增其他位置，只需按一下「完成」：



系統將彈出提示ME已成功匯入到位置層次結構中：



Controller successfully imported to location hierarchy!

Total controllers added : 1
Total number of APs : 1
Total number of Locations : 0

Would you like to organize your location hierarchy

Yes, take me to location hierarchy

No, Continue with Setup

現在EWC已成功連線到雲，您可以開始使用所有其他DNA空間功能。

驗證

目前沒有適用於此組態的驗證程序。

疑難排解

本節提供的資訊可用於對組態進行疑難排解。

在Mobility Express上的調試非常有限，而且在撰寫本文時，不能提供有關雲連線失敗原因的深入分析。缺少NTP伺服器、DNS未解析DNA空間域名和防火牆阻止HTTPS流量都會導致相同的調試和show輸出：

(ME) >**show cloud-services cmx summary**

CMX Service

```
Server ..... https://vasilijeperovic.dnaspaces.eu
IP Address..... 0.0.0.0
Service Status ..... Down
Connectivity..... https: Failed to establish connection
Time remaining for next Retry..... 5 Seconds
```

如果與雲的連線失敗，Mobility Express將每30秒重試建立一次。要啟用調試，只需運行：

(ME) >**debug nmsp all enable**

*emWeb: Jul 01 00:20:52.836: Started http trace logging to file /var/log/debug/wlc-debug-captures.txt

對於缺少NTP伺服器、DNS未解析DNA空間域名和防火牆阻止HTTPS流量，調試輸出將再次相同。
因此，始終建議在AP交換機埠上執行資料包捕獲。

由於未配置NTP而導致連線失敗的示例如下所示：

(ME) >**debug nmsp all enable**

Debugging session started on Jul 01 00:20:52.839 for WLC AIR-AP1542I-E-K9 Version :8.10.112.0
SN :FGL2324B02P Hostname ME

*nmspTxServerTask: Jul 01 00:21:05.408: Received Message LOCP_HTTPS_SERVICE_UPDATE

*nmspTxServerTask: Jul 01 00:21:05.408: Received CMX service command CMX_SERVICE_LINK_CHECK,
Buffer Length 1292

*nmspTxServerTask: Jul 01 00:21:05.408: **connection failed. Attempt 1**

*nmspTxServerTask: Jul 01 00:21:05.409: **Configured Domain:**vasilijeperovic.dnaspaces.eu

*nmspTxServerTask: Jul 01 00:21:05.409: Connect to data.dnaspaces.eu/networkdata, Tenant Id
vasilijeperovic

*nmspTxServerTask: Jul 01 00:21:05.409: Keep Alive

Url:https://data.dnaspaces.eu/api/config/v1/nmspconfig/192.168.1.13

*nmspTxServerTask: Jul 01 00:21:05.409: **Initating cmx-cloud connetion. port 443**, token
eyJ0eXAiOiJKV1Q[information-omitted]I8krcrpmRq0g

*nmspTxServerTask: Jul 01 00:21:05.409: [CTX:0] Tx handles in use 0, free 1

*nmspTxServerTask: Jul 01 00:21:05.411: [CTX:1] Tx handles in use 0, free 32

*nmspTxServerTask: Jul 01 00:21:05.411: Http connection URL

https://data.dnaspaces.eu/networkdata?jwttoken=eyJ0eXAiOiJKV1Q[information-omitted]I8krcrpmRq0g

*nmspTxServerTask: Jul 01 00:21:05.411: **Sending Echo Req in start.** Refresh Handle =**Yes**

*nmspTxServerTask: Jul 01 00:21:05.411: Https Control path handle may be refreshed.

*nmspMxServerTask: Jul 01 00:21:05.413: Async Perform done on 1 messages

成功連線的示例：

(ME) >**debug nmsp all enable**

Debugging session started on Feb 25 01:13:04.913 for WLC AIR-AP1542I-E-K9 Version :8.10.112.0
SN :FGL2324B02P Hostname ME

*emWeb: Feb 25 01:13:10.138: **Init cmx-cloud config: Already initialized**

*emWeb: Feb 25 01:13:10.138: **Starting connection retry timer**

*emWeb: Feb 25 01:13:10.138: Posting Service Request 50 to Tx service

*nmspTxServerTask: Feb 25 01:13:10.212: Received Message LOCP_HTTPS_SERVICE_UPDATE

*nmspTxServerTask: Feb 25 01:13:10.213: Received CMX service command CMX_SERVICE_START, Buffer
Length 1292

*nmspTxServerTask: Feb 25 01:13:10.213: **Configured Domain:**vasilijeperovic.dnaspaces.eu

*nmspTxServerTask: Feb 25 01:13:10.213: Connect to data.dnaspaces.eu/networkdata, Tenent Id vasilijeperovic
*nmspTxServerTask: Feb 25 01:13:10.213: Keep Alive
Url:https://data.dnaspaces.eu/api/config/v1/nmspconfig/192.168.1.13
*nmspTxServerTask: Feb 25 01:13:10.213: **Initating cmx-cloud connetion. port 443**, token eyJ0eXAiOiJKV1Q[information-omitted]I8krcrpmRq0g
*nmspTxServerTask: Feb 25 01:13:10.216: [CTX:1] Tx handles in use 0, free 32
*nmspTxServerTask: Feb 25 01:13:10.216: Http connection URL
https://data.dnaspaces.eu/networkdata?jwttoken=eeyJ0eXAiOiJKV1Q[information-omitted]I8krcrpmRq0g
*nmspTxServerTask: Feb 25 01:13:10.216: **Sending Echo Req in start**. Refresh Handle =No
*nmspMxServerTask: Feb 25 01:13:10.217: Async Perform done on 1 messages
*nmspMxServerTask: Feb 25 01:13:10.446: Received: 17 bytes header

*nmspMxServerTask: Feb 25 01:13:10.446: **Rx Header HTTP/1.1 200 OK**

*nmspMxServerTask: Feb 25 01:13:10.446: 00000000: 48 54 54 50 2f 31 2e 31 20 32 30 30 20 4f 4b 0d HTTP/1.1.200.OK.
*nmspMxServerTask: Feb 25 01:13:10.446: 00000010: 0a
.
*nmspMxServerTask: Feb 25 01:13:10.446: **Received Heartbeat response on connection [0]**

*nmspMxServerTask: Feb 25 01:13:10.446: **Stopping connection retry timer**
*nmspMxServerTask: Feb 25 01:13:10.446: **connection succeeded. server IP 63.33.127.190**

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。