

在UCM 11.5上配置無線終端跟蹤功能。

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簡介

本檔案介紹Cisco Unified Call Manager(CUCM)11.5中引入的無線端點跟蹤功能。通過此功能，CUCM將能夠跟蹤無線端點的物理位置並瞭解與其關聯的接入點。然後，Cisco Emergency Responder(CER)等應用將提取此資訊，以跟蹤終端的物理位置並相應地路由呼叫，從而構建可擴展的解決方案。

必要條件

需求

思科建議您瞭解以下主題：

- 通話路由和電腦電話整合(CTI)路由點
- 將CER與CUCM整合
- 在CUCM上配置IP電話

採用元件

本檔案中的資訊是根據以下軟體版本：

- CUCM 11.5
- CUCM上的思科無線控制器同步服務

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。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

背景資訊

傳統上，CER根據呼叫裝置的IP地址範圍路由呼叫，並將呼叫路由到屬於同一IP塊的特定緊急部門。此解決方案適用於有線終端，因為它們不是移動的，並且其IP地址定義了確切的位置。但是，無線終端出現問題，因為它們將保留IP地址，但不會繫結到一個特定的物理位置。這會導致不正確的路由，因此需要一種方法來跟蹤無線端點的物理位置，並使CUCM知道它當前與哪個接入點相關聯，以便此資訊以後能夠被CER等應用用於更高效的路由。

此功能目前適用於以下元件：

1. CUCM 11.5版本
2. 7925/7926 IP電話韌體1.4.7.2及更高版本

附註：目前，Jabber終端不支援此功能。

附註：CUCM 11.5版本不支援第三方WLC和接入點。

設定

接入點的部署模式有兩種：

1. 由無線LAN控制器(WLC)管理的存取點：

在此部署模型中，CUCM使用SNMP v1/2c/3從WLC提取接入點資訊。

2. 獨立接入點部署：

在此部署模型中，需要使用批次管理工具(BAT)在CUCM中手動更新接入點資訊。

根據您的部署，使用相應部分配置無線終端跟蹤功能。

1. 由WLC管理的存取點

- a. 通過在Location下選擇選項**Cisco Wireless Controller Synchronization**服務來開啟該功能

基於CUCM的可維護性頁面上的跟蹤服務。

CTI Services					
	Service Name	Status:	Activation Status	Start Time	Up Time
<input type="radio"/>	Cisco IP Manager Assistant	Started	Activated	Fri Jan 29 19:35:33 2016	186 days 02:10:33
<input type="radio"/>	Cisco WebDialer Web Service	Started	Activated	Fri Jan 29 19:35:33 2016	186 days 02:10:33
<input type="radio"/>	Self Provisioning IVR	Started	Activated	Fri Jan 29 19:03:34 2016	186 days 02:42:32

Voice Quality Reporter Services					
	Service Name	Status:	Activation Status	Start Time	Up Time
<input type="radio"/>	Cisco Extended Functions	Started	Activated	Fri Jan 29 19:03:37 2016	186 days 02:42:29

Database and Admin Services					
	Service Name	Status:	Activation Status	Start Time	Up Time
<input type="radio"/>	Cisco Bulk Provisioning Service	Started	Activated	Fri Jan 29 19:03:42 2016	186 days 02:42:24
<input type="radio"/>	Cisco AXL Web Service	Started	Activated	Fri Jan 29 19:34:58 2016	186 days 02:11:08
<input type="radio"/>	Cisco UXL Web Service	Started	Activated	Fri Jan 29 19:34:58 2016	186 days 02:11:08
<input type="radio"/>	Cisco TAPS Service	Started	Activated	Fri Jan 29 19:03:55 2016	186 days 02:42:11

Location based Tracking Services					
	Service Name	Status:	Activation Status	Start Time	Up Time
<input type="radio"/>	Cisco Wireless Controller Synchronization Service	Started	Activated	Fri Jan 29 19:03:35 2016	186 days 02:42:31


CDR Services					
	Service Name	Status:	Activation Status	Start Time	Up Time
<input type="radio"/>	Cisco SOAP - CDRonDemand Service	Started	Activated	Fri Jan 29 19:45:50 2016	186 days 02:00:16
<input type="radio"/>	Cisco CAR Web Service	Started	Activated	Fri Jan 29 19:34:58 2016	186 days 02:11:08

Security Services					
	Service Name	Status:	Activation Status	Start Time	Up Time
<input type="radio"/>	Cisco CTL Provider	Started	Activated	Fri Jan 29 19:03:56 2016	186 days 02:42:10
<input type="radio"/>	Cisco Certificate Authority Proxy Function	Started	Activated	Fri Jan 29 19:03:57 2016	186 days 02:42:09


b. 已為此功能引入了三個服務引數，這有助於管理SNMP屬性。這些屬性必須


與WLC下配置的屬性匹配，因為它將用於從WLC提取接入點資訊。

Status

 Status: Ready

Select Server and Service

Server* 

Service* 

All parameters apply only to the current server except parameters that are in the cluster-wide group(s).

Cisco Wireless Controller Synchronization Service (Active) Parameters on server 10.106.101.74--CUCM Voice/Video (Active)

Parameter Name	Parameter Value	Suggested Value
Clusterwide Parameters (Parameters that apply to all servers)		
SNMP Request Timeout(secs) *	<input type="text" value="10"/>	10
SNMP Request Retries *	<input type="text" value="3"/>	3
SNMP Request Query Size *	<input type="text" value="10"/>	10

c. 啟動服務並從a.和b.新增SNMP詳細資訊後，請繼續在Wireless Access Point Controllers下新增WLC詳細資訊。

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation | cisco

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management ▾ Bulk Administration ▾ Help ▾

Service Parameter Configuration

Save Set to Default

Status
Status: Ready

Select Server and Service
Server* 10.106.101.74--CUCM Voice/A
Service* Cisco Wireless Controller Sync

All parameters apply only to the current server-wide group(s).

Cisco Wireless Controller Synchronization

Device Location Tracking Services ▾
Switches and Access Points
Wireless Access Point Controllers

Parameter Name **Parameter Value** **Suggested Value**

Clusterwide Parameters (Parameters that apply to all servers)

Parameter Name	Parameter Value	Suggested Value
SNMP Request Timeout(secs) *	10	10
SNMP Request Retries *	3	3
SNMP Request Query Size *	10	10

d. 新增控制器主機名/IP和SNMP版本/Community字串詳細資訊。新增重新同步時間和間隔在同步計畫下。

Wireless Access Point Controller Configuration

Save Delete Copy Add New Cancel Synchronization

Status
Status: Ready

Wireless Access Controller Details

Controller Hostname or IP* 10.106.127.107
Last Sync Attempt(Status) Pending(2016-01-29 19:15)
Description Chillika Location Testing-Re-Add
SNMP Version* 2C
SNMP Community String* public
Test SNMP Settings

Wireless Access Point Controller Synchronization Schedule

Enable scheduled synchronization to discover Infrastructure Devices
Perform a Re-sync Every* 1 HOUR
Next Re-sync time (YYYY-MM-DD hh:mm 24hrs format)* 2016-08-01 22:30

Save Delete Copy Add New Cancel Synchronization

*- indicates required item.

e. 發佈這些步驟後，您會看到接入點資訊已填充到「交換機和接入點」選項下。

Cisco Unified CM Administration
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Navigation | cisco | Se

System | Call Routing | Media Resources | **Advanced Features** | Device | Application | User Management | Bulk Administration | Help

Find and List Switches and Access Points

Select All | Clear All | Deactivate S

Status
2 records found

Active Switches and Access Points (1 -

Find Active Switches and Access Points where

Infrastructure Device Name

MAIB3502
Maib-3702I

Select All | Clear All | Deactivate Selected

Voice Mail
SAF
EMCC
Cluster View
Intercompany Media Services
Fallback
Called Party Tracing
ILS Configuration
Call Control Agent Profile
Directory Number Alias Sync And Lookup
Device Location Tracking Services

Related Links: Active

s with | Find | Clear Filter

Infrastructure Device Type	Infrastructure Device IP	Location
	10.105.132.111	Lab-BGL-14-Rack-K
		Lab-BGL-14-1

Switches and Access Points
Wireless Access Point Controllers

Find and List Switches and Access Points Related Links: Active Switches and Access Points | Go

Select All | Clear All | Deactivate Selected

Status
2 records found

Active Switches and Access Points (1 - 2 of 2) Rows per Page 50

Find Active Switches and Access Points where Infrastructure Device Name begins with | Find | Clear Filter

Infrastructure Device Name	Infrastructure Device Type	Infrastructure Device IP	Location	Associated Devices Count
MAIB3502	Access Point	10.105.132.111	Lab-BGL-14-Rack-K	2
Maib-3702I	Access Point	10.105.132.189	Lab-BGL-14-1	0

Select All | Clear All | Deactivate Selected

f. 在每個接入點下，您將會看到接入點詳細資訊以及與其關聯的手機。

- 電話使用StationLocationInfo消息更新CUCM以通知其連線的接入點。
- 每次電話漫遊到新的接入點或重新註冊時，終端都會通過通知其當前關聯的接入點的StationLocationInfo消息更新CUCM。

Switches and Access Point Configuration Related Links: Active Switches and Access Points | Go

Deactivate

Status
Switches and Access Points details cannot be modified. It is updated using Location Tracking Service.

Infrastructure Device Details

Type	Access Point
Name	MAIB3502
Location	Lab-BGL-14-Rack-K
IP Address	10.105.132.111
BSSID	24:b6:57:5a:b1:e0
Last Seen	29-Jan-2016 09:59:16

Associated Endpoints Rows per Page 50

Find Associated Endpoints where Endpoint Name begins with | Find | Clear Filter

Endpoint Name	Endpoint Type
SEP10F311862FE3	Cisco 7926
SEP2C542DEB323D	Cisco 7925

Deactivate

Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | Help

Device Defaults Configuration

Save

Cisco 6945	SCCP	SCCP6945.9-4-1-3SR2	Default	Standard 6945 SCCP
Cisco 6945	SIP	SIP6945.9-4-1-3SR2	Default	Standard 6945 SIP
Cisco 6961	SIP	SIP69xx.9-4-1-3SR2	Default	Standard 6961 SIP
Cisco 6961	SCCP	SCCP69xx.9-4-1-3SR2	Default	Standard 6961 SCCP
Cisco 7902	SCCP	CP7902080002SCCP06	Default	Standard 7902 SCCP
Cisco 7905	SCCP	CP7905080003SCCP07	Default	Standard 7905 SCCP
Cisco 7905	SIP	CP7905080001SIP060	Default	Standard 7905 SIP
Cisco 7906	SIP	SIP11.9-4-2SR1-1S	Default	Standard 7906 SIP
Cisco 7906	SCCP	SCCP11.9-4-2SR1-1S	Default	Standard 7906 SCCP
Cisco 7910	SCCP	P00405000700	Default	Standard 7910 SCCP
Cisco 7911	SCCP	SCCP11.9-4-2SR1-1S	Default	Standard 7911 SCCP
Cisco 7911	SIP	SIP11.9-4-2SR1-1S	Default	Standard 7911 SIP
Cisco 7912	SIP	CP7912080001SIP060	Default	Standard 7912 SIP
Cisco 7912	SCCP	CP7912080004SCCP08	Default	Standard 7912 SCCP
Cisco 7920	SCCP	cmterm_7920.4.0-03-	Default	Standard 7920 SCCP
Cisco 7921	SCCP	CP7921G-1.4.6.3	Default	Standard 7921 SCCP
Cisco 7925	SCCP	CP7925G-1.4.7.3	Default	Standard 7925 SCCP
Cisco 7926	SCCP	CP7926G-1.4.7.3	Default	Standard 7926 SCCP

Infrastructure Device

Insert Infrastructure Device

3. 選擇CSV檔案，然後根據需要選擇立即運行或稍後運行選項。如果選擇以後運行，請確保使用「作業計畫程式」頁來計畫和啟用作業。

Insert Infrastructure Device Configuration

Submit

Status

i Status: Ready

Infrastructure Device Information

File Name* -- Not Selected -- [\(View File\)](#) [\(View Sample File\)](#)

Job Information

Job Description: Insert Infrastructure Device

Run Immediately Run Later (To schedule and activate this job, use Job Scheduler page.)

Submit

i *- indicates required item.

4. 發佈這些步驟，轉到高級功能>裝置位置跟蹤服務>交換機和接入點，檢查是否新增了提到的裝置

Find and List Switches and Access Points Related Links: Active Switches and Access Points Go

Select All Clear All Deactivate Selected

Status

i 2 records found

Active Switches and Access Points (1 - 2 of 2) Rows per Page 50

Find Active Switches and Access Points where Infrastructure Device Name begins with Find Clear Filter

Infrastructure Device Name	Infrastructure Device Type	Infrastructure Device IP	Location	Associated Devices Count
<input type="checkbox"/> MAIB3502	Access Point	10.105.132.111	Lab-BGL-14-Rack-K	2
<input type="checkbox"/> Maib-37021	Access Point	10.105.132.189	Lab-BGL-14-1	0

Select All Clear All Deactivate Selected

附註：電話在StationLocationInfo消息中傳送接入點資訊時，請確保BSSID與接入點資訊匹配，這是CUCM將接入點對映到裝置的方式。

這就是CUCM維護無線端點並跟蹤其物理位置的方式，方法是將其對映到已手動新增的接入點或與WLC同步的接入點。

日誌分析

此日誌分析是從實驗室環境中提取的，該實驗室環境中有2個節點11.5 UCM群集和註冊到發佈伺服器節點的7925電話。有一個接入點被使用802.11 b/g/n無線電的無線LAN控制器控制。

1.註冊時電話的StationLocationInfo消息：

```
|09:54:41.102 |AppInfo |StationInit: (0005195)
InboundStim - StationLocationInfoMessageID Line 2364: 23469039.000 |09:54:41.102
|SdlSig |StationLocationInfo |restart0 |StationD(1,100,64,5195)
|StationInit(1,100,63,1) |1,100,14,5210.26^10.105.132.116^SEP10F311B680E2
|[R:N-H:0,N:0,L:0,V:0,Z:0,D:0] LocationInfo=A8:0C:0D:DB:C5:23test1111234test-7510-2702i
Line 2364: 23469039.000 |09:54:41.102 |SdlSig |StationLocationInfo |restart0
|StationD(1,100,64,5195) |StationInit(1,100,63,1)
|1,100,14,5210.26^10.105.132.116^SEP10F311B680E2
|[R:N-H:0,N:0,L:0,V:0,Z:0,D:0] LocationInfo=A8:0C:0D:DB:C5:23test1111234Maib-7510-2702i
```

2.您看到此資訊在註冊或連線到其他接入點時由電話傳播：

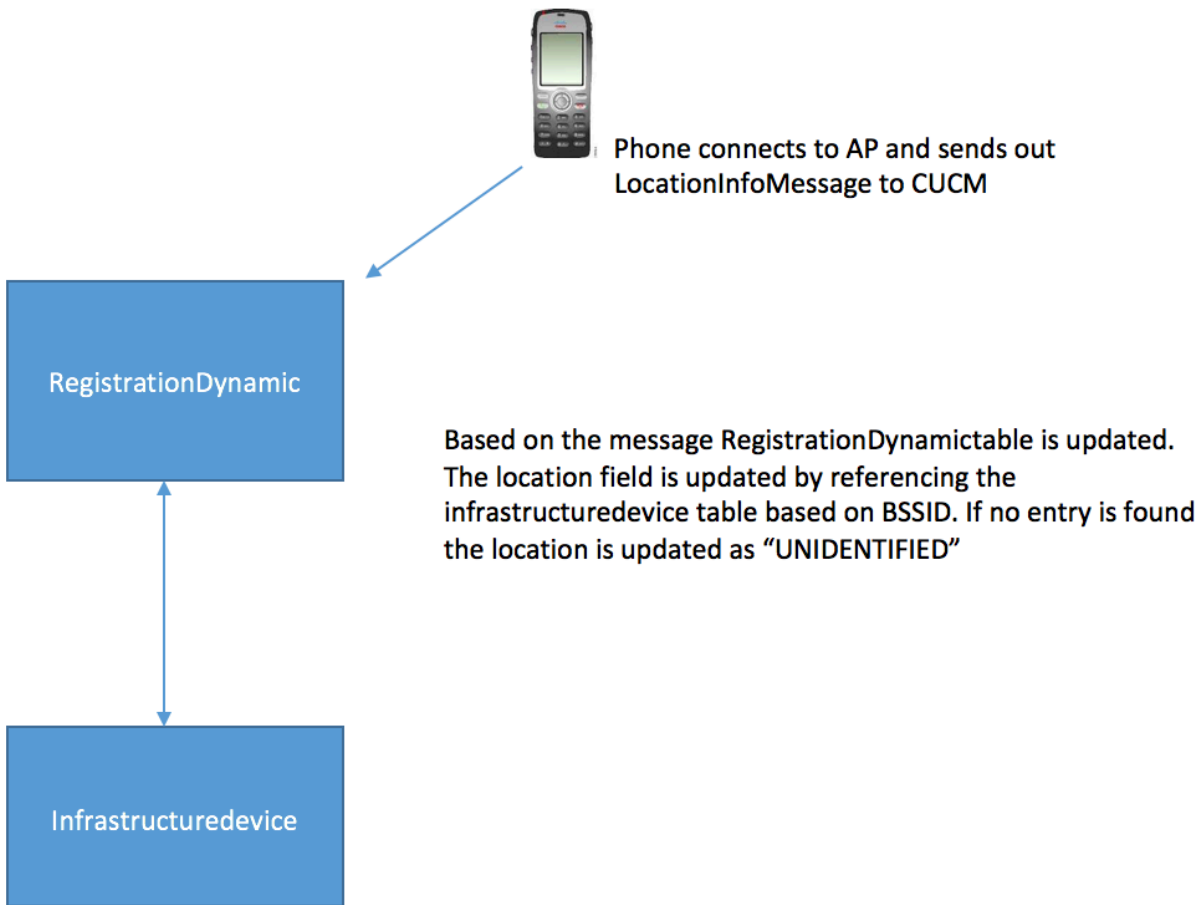
- **BSSID: a8:0c:0d:db:c5:23**
- **SSID: 1111234**
- **AP名稱: test-7510-2702i**

3.在registrationdynamic表中更新這些值。registrationdynamic表中的locationdetails列通過引用BSSID、SSID和AP名稱從infrastructuredevice表填充。找到後，將使用接入點的PKID填充registrationdynamic中的locationdetails列。如果找不到該條目，則位置詳細資訊列將輸入為UNIDENTIFIED。

```
admin:run sql select * from registrationdynamic
pkid                                lastknownipaddress lastknownucm
fkdevice                            datetimestamp lastknownconfigversion
locationdetails                    tkendpointconnection portorssid lastseen
=====
=====
=====
b366c291-bbd7-4464-b02c-e3f6d83c7cac 10.106.127.155          292a2ea3-dbee-43d7-9906-
ff3dc42985a5 1449389815          0d30deab-febc-4f76-8fce-99a140978f18
2                                WLANPersonal 1449389815
```

```
admin:run sql select * from infrastructuredevice
pkid                                name                ipv4address        ipv6address bssidwithmask
waplocation                        datetimestamp isactive
=====
=====
0d30deab-febc-4f76-8fce-99a140978f18 MAIB3502 10.105.132.111 NULL          24:b6:57:5a:b1:e0
Lab-BGL-14-Rack-K 1454041756 t
```


附註：fkdevice將成為無線電話的PKID。這就是無線電話與接入點關聯的方式。



4.更新這些表後，將在高級功能下的交換機和接入點中更新條目。

Switches and Access Point Configuration Related Links: Active Switches and Access Points Go

Deactivate

Status

! Switches and Access Points details cannot be modified. It is updated using Location Tracking Service.

Infrastructure Device Details

Type	Access Point
Name	MAIB3502
Location	Lab-BGL-14-Rack-K
IP Address	10.105.132.111
BSSID	24:b6:57:5a:b1:e0
Last Seen	29-Jan-2016 09:59:16

Associated Endpoints Rows per Page 50

Find Associated Endpoints where Endpoint Name begins with Find Clear Filter

Endpoint Name ^	Endpoint Type
SEP10F311B62FE3	Cisco 7926
SEP2C542DEB323D	Cisco 7925

5.這些條目是動態的，一旦更新了RegistrationDynamic表就會更新。

註冊動態中新增一個條目Lastseen，告知無線電話的最後可見資訊。

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。

相容性

首先，必須瞭解無線終端上對該功能的支援以及已包括的韌體版本：

- 此功能需要7925和7926 IP電話（韌體為1.4.7.2或更高版本）
- 目前，此功能不支援Jabber端點

如果使用韌體版本1.4.7.2，電話將無法向CUCM傳播接入點資訊。

要排除故障的常見檢查點

- 如果電話未與接入點關聯，請檢查CUCM是否收到StationLocationInfo消息。交叉驗證使用的電話型號和韌體版本。
- 驗證準確的接入點名稱和BSSID，並檢查其配置是否正確（如果手動新增了接入點）。
- 交叉驗證無線LAN控制器資訊是否處於同步狀態，且狀態顯示為「Successful」。這可導航到 **Advanced features > Device Location Tracking Services > Wireless LAN controllers** 進行檢查。
- 交叉驗證SNMP屬性的服務引數，並確保其與無線LAN控制器的SNMP屬性相匹配。
- 交叉驗證是否填充了接入點。可通過導航到 **Advanced features > Device Location Tracking Services > Switches and Access Points** 來檢查此問題。如果沒有填寫，請檢查LAN控制器上的組態，並確保已正確設定。

要收集的日誌

如果問題仍然存在，請收集這些日誌以進行進一步審查：

1. 設定為detailed的Cisco CM跟蹤。
2. 思科無線控制器同步服務