

在UCM 11.5上配置无线终端跟踪功能。

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简介

本文档介绍Cisco Unified Call Manager(CUCM)11.5中引入的无线终端跟踪功能。通过此功能，CUCM将能够跟踪无线终端的物理位置并了解与之关联的接入点。然后，思科应急响应器(CER)等应用将提取此信息，以跟踪终端的物理位置并相应地路由呼叫并创建可扩展的解决方案。

先决条件

要求

Cisco 建议您了解以下主题：

- 呼叫路由和计算机电话集成(CTI)路由点
- 将CER与CUCM集成
- 在CUCM上配置IP电话

使用的组件

本文档中的信息基于以下软件版本：

- CUCM 11.5
- CUCM上的思科无线控制器同步服务

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。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

背景信息

传统上，CER根据呼叫设备的IP地址范围来路由呼叫，并将呼叫路由到属于同一IP块的特定紧急部门。此解决方案适用于有线终端，因为这些终端不是移动的，并且其IP地址定义了其确切位置。但是，无线终端会出现问题，因为它们将保留IP地址，但不绑定到一个特定物理位置。这会导致路由不正确，因此需要一种方法来跟踪无线终端的物理位置，并使CUCM了解它当前与哪个接入点关联，以便CER等应用稍后可以使用此信息来更高效地路由。

目前，此功能可用于以下组件：

1. CUCM 11.5版本
2. 7925/7926 IP电话固件1.4.7.2及更高版本

注意：截至目前，Jabber终端不支持此功能。

注意：CUCM 11.5版本不支持对第三方WLC和接入点的支持。

配置

接入点有两种部署模式：

- 1.无线LAN控制器(WLC)管理的接入点：

在此部署模式中，CUCM使用SNMP v1/2c/3从WLC提取接入点信息。

- 2.独立接入点部署：

在此部署模式中，接入点信息需要在CUCM中使用批量管理工具(BAT)手动更新。

根据您的部署，使用适当部分配置无线终端跟踪功能。

1. WLC管理的接入点

- a. 通过选择位置下的“思科无线控制器同步服务”选项来启用该功能

基于CUCM的可维护性页面的跟踪服务。

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. 为此功能引入了三个服务参数，可帮助实现SNMP属性。这些属性必须与在WLC下配置的属性匹配，因为它将用于从WLC中提取接入点信息。

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. 启动服务并从a.和b.添加SNMP详细信息后，继续在“无线接入点控制器”下添加WLC详细信息。

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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.

Cisco Wireless Controller Synchronization

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

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. 添加控制器主机名/IP和SNMP版本/社区字符串详细信息。添加重新同步时间和间隔在同步计划下。

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. 发布这些步骤后，您将看到接入点信息填充在选项Switch和Access Points下。

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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. 在每个接入点下，您将看到接入点详细信息以及与其关联的电话。

- 电话使用StationLocationInfo消息更新CUCM，以通知其所连接的接入点。
- 每次电话漫游到新接入点或重新注册时，终端会通过StationLocationInfo消息更新CUCM，通知它现在与之关联的接入点。

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.选择CSV文件，然后根据要求选择“立即运行”或“稍后运行”选项。如果选择“稍后运行”，请确保使用“作业计划程序”页来安排和激活作业。

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.发布这些步骤后，转到Advanced features > Device Location Tracking services > Switches and Access points，检查所提到的设备是否已添加。

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

注意：当电话在StationLocationInfo消息中发送该信息时，请确保BSSID与接入点信息匹配，CUCM将接入点映射到设备的方式。

这是CUCM如何维护无线终端并通过将其映射到手动添加或与WLC同步的接入点来跟踪其物理位置。

日志分析

此日志分析来自一个实验环境，该环境包含一个2节点11.5 UCM群集和一个注册到发布方节点的7925电话。有一个接入点由无线LAN控制器使用802.11 b/g/n无线电控制。

1.在电话注册时从电话发出的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.您会看到，当电话注册或连接到其他接入点时，该信息由电话传播：

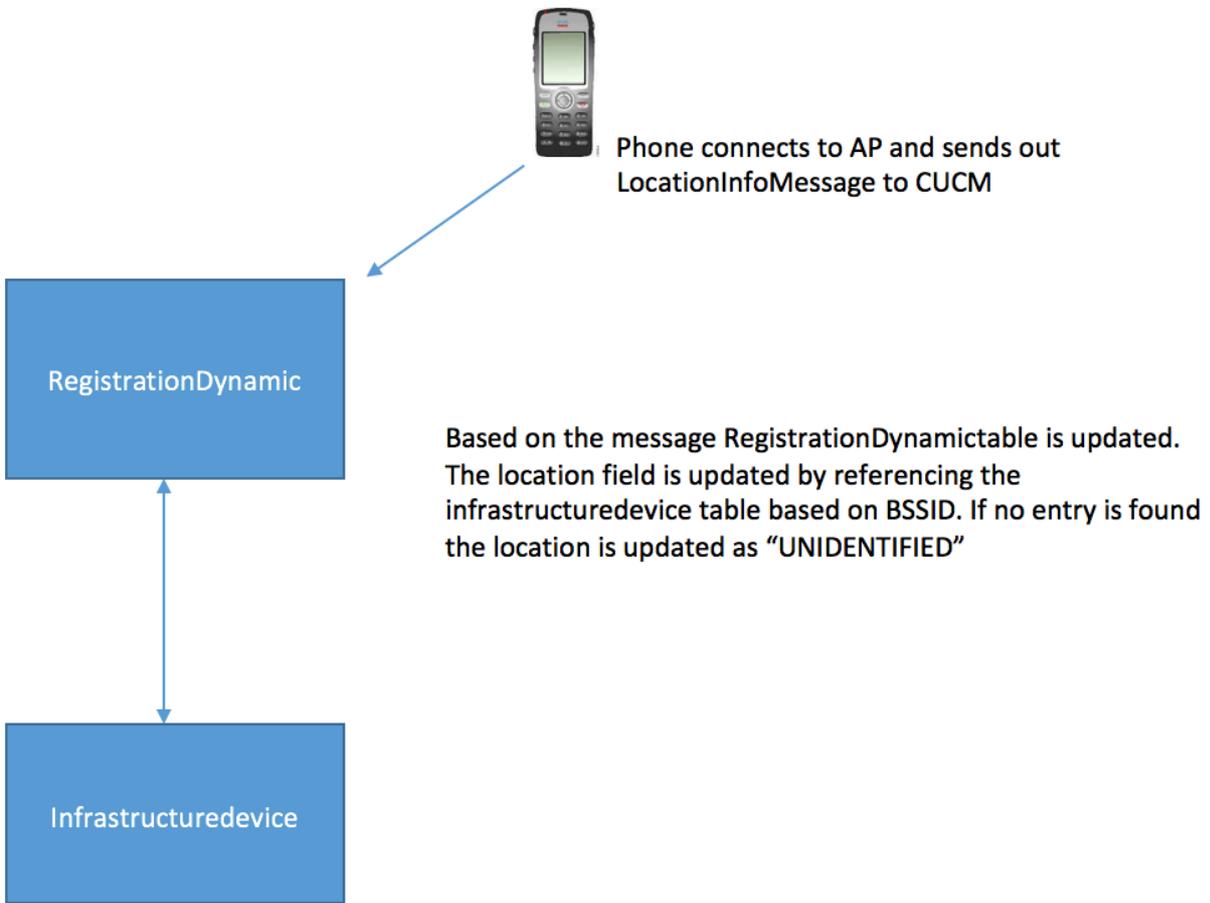
- **BSSID:** **A8:0C:0D:DB:C5:23**
- **SSID :** **test1111234**
- **AP 名称:** **test-7510-2702i**

3.值在注册动态表中更新。通过引用BSSID、SSID和AP名称，从基础设施设备表中填充注册动态表中的位置详细信息列。找到后，它将在注册中使用接入点的PKID动态填充位置详细信息列。如果找不到该条目，则位置详细信息列将输入为UNISONFIED。

```
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
```

注意：fkdevice将是无线电话的PKID。这是无线电话与接入点的关联方式。



4.更新这些表后，在交换机和接入点的高级功能下更新该条目。

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

Deactivate

Status

i 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.这些条目是动态的，在更新RegistrationDynamic表后会进行更新。

注册动态中会添加一个附加条目Lastseen，告知无线电话的上次查看信息。

验证

当前没有可用于此配置的验证过程。

故障排除

本部分提供了可用于对配置进行故障排除的信息。

兼容性

首先，必须了解无线终端上对功能的支持以及包含的固件版本：

- 此功能需要7925和7926 IP电话的固件1.4.7.2及更高版本
- 截至目前，此功能不支持Jabber端点

如果使用固件版本1.4.7.2，则电话将无法将接入点信息传播到CUCM。

要排除故障的常见检查点

- 如果电话未与接入点关联，请检查CUCM是否收到StationLocationInfo消息。交叉验证使用的电话型号和固件版本。
- 验证确切的接入点名称和BSSID，并检查其配置是否正确（如果手动添加接入点）。
- 交叉验证无线LAN控制器信息是否同步且状态显示为Successful。导航至Advanced features > Device Location Tracking Services > Wireless LAN controllers可以**检查此情况**。
- 交叉验证SNMP属性的服务参数，并确保其与无线LAN控制器的SNMP属性匹配。
- 交叉验证是否填充了接入点。导航至Advanced features > Device Location Tracking Services > Switches and Access Points可以检查此情况。如果未填充，请检查LAN控制器上的配置并确保配置正确。

要收集的日志

如果问题仍然存在，请收集这些日志以进一步审查：

1. Cisco CM跟踪设置为detailed。
2. 思科无线控制器同步服务