

邏輯分割槽和地理定位的配置與故障排除

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簡介

本文檔介紹如何在Cisco Unified Communications Manager(CUCM)中配置邏輯分割槽和地理位置。

必要條件

思科建議您瞭解以下主題：

- 思科整合通訊管理員

採用元件

- 思科統一通訊管理器8.6或更高版本

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

邏輯分割槽功能可確保單個系統可用於支援這兩種型別的呼叫，只要通過公共交換電話網絡(PSTN)網關的呼叫不直接連線到另一地理位置（地理位置）的IP語音(VoIP)電話或VoIP PSTN網關，即使呼叫中間呼叫功能。

在印度等一些國家，電信法規必須在企業層面得到滿足。因此，公司需要建立語音基礎設施。它們的設定使得本地PSTN僅在連線企業外部呼叫時使用。根據電信管理機構(TRAI)的規定，印度的PSTN電話網路決不能與VoIP電話網路互連，以實現Toll ByPass。

這就要求將語音系統邏輯地劃分為兩個系統：企業內一個VoIP，第二個訪問本地PSTN。

在CUCM中，使用呼叫搜尋空間(CSS)和分割槽功能來維護此類語音系統是非常困難的。CSS和分割槽可以限制基本呼叫，但無法限制中間呼叫功能，如重定向和加入。

邏輯分割槽的元素

地理定位

CUCM需要設定識別符號以分配給電話、網關、中繼等裝置。地理定位是一個可以在邏輯分割槽中用作識別符號的標準。

地理位置用於根據最多17個引數指定物理位置：國家2字母縮寫、州(A1)、縣(A2)、城市(A3)、區(A4)、街區(A5)、街道(A6)、方向(PRD)、街道字尾(POD)、門牌號(HNO)和門牌字尾(HNS)等。

地理位置過濾器

典型的邏輯分割槽策略配置僅使用地理定位策略記錄中的欄位子集。地理定位過濾器會縮小此選擇範圍。Logical Partitioning (邏輯分割槽)功能使用在Geolocation Filter (地理位置過濾器)中選擇的欄位。

邏輯分割槽策略

在CUCM中，邏輯分割槽被定義為呼叫控制功能，藉助邏輯分割槽策略可用於限制這些VoIP實體之間的通訊。

- 網關之間的IP電話
- 網關到網關
- IP電話與/來自中繼 (ICT/SIP中繼)
- 進出中繼的網關 (ICT/SIP中繼)

邏輯分割槽中的裝置分為內部和邊界。這些裝置被歸類為內部：

1. 電話 (SCCP、SIP、第三方)
2. VG224類比電話
3. MGCP連線埠(FXS)
4. Cisco Unity Voice Mail(SCCP)
5. CTI路由點、CTI埠
6. QSIG網關或ICT

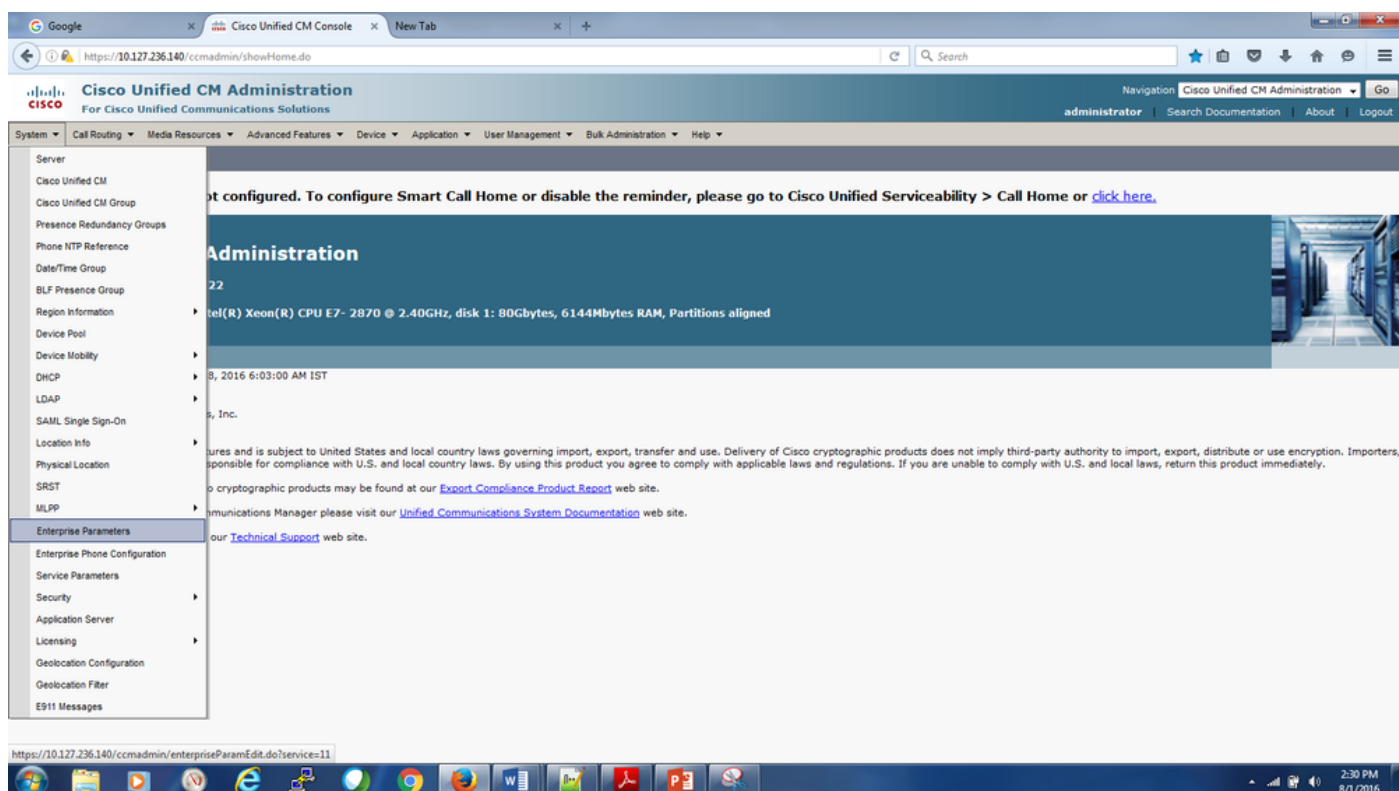
這些裝置被歸類為邊界：

1. 閘道
2. 集群間中繼(ICT)
3. H.225中繼
4. SIP中繼
5. MGCP埠(E1、T1、PRI、BRI、FXO)

組態

步驟1.預設地理定位適用於未配置地理定位且未參與邏輯分割槽的裝置。要設定預設的地理位置策略起著主要作用，如果將其設定為allow，則必須將邏輯分割槽策略與deny功能配合使用，反之亦然

o



步驟2.轉至System-> Geolocation Configuration並新增與位置相關的資訊。它充當與此特定地理位置關聯的裝置的識別符號。

Google Find and List Geolocations New Tab
https://10.127.236.140/ccadmin/geolocationFindList.do

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation Cisco Unified CM Administration Go
administrator Search Documentation About Logout

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

- Server
 - Cisco Unified CM
 - Cisco Unified CM Group
 - Presence Redundancy Groups
 - Phone NTP Reference
 - Date/Time Group
 - BLF Presence Group
 - Region Information
 - Device Pool
 - Device Mobility
 - DHCP
 - LDAP
 - SAML Single Sign-On
 - Location Info
 - Physical Location
 - SRST
 - MLPP
 - Enterprise Parameters
 - Enterprise Phone Configuration
 - Service Parameters
 - Security
 - Application Server
 - Licensing
 - Geolocation Configuration**
 - Geolocation Filter
 - E911 Messages

begins with Find Clear Filter

No active query. Please enter your search criteria using the options above.

https://10.127.236.140/ccadmin/geolocationFindList.do

2:15 PM 8/1/2016



Geolocation Configuration

Save Delete Copy Add New

Geolocation Configuration	
Name *	<input type="text" value="Geo_pudong"/>
Description	<input type="text" value="Pudong"/>
Country using the two-letter abbreviation	<input type="text" value="CH"/>
State, Region, or Province (A1)	<input type="text" value="Shanghai"/>
County or Parish (A2)	<input type="text" value="China"/>
City or Township (A3)	<input type="text" value="Pudong"/>
Borough or City District (A4)	<input type="text"/>
Neighborhood (A5)	<input type="text"/>
Street (A6)	<input type="text"/>
Leading Street Direction, such as N or W (PRD)	<input type="text"/>
Trailing Street Suffix, such as SW (POD)	<input type="text"/>
Address Suffix, such as Avenue, Platz (STS)	<input type="text"/>
Numeric house number (HNO)	<input type="text"/>
House Number Suffix, such as A, 1/2 (HNS)	<input type="text"/>
Landmark (LMK)	<input type="text"/>
Additional Location Information, such as Room Number (LOC)	<input type="text"/>
Floor (FLR)	<input type="text"/>
Name of Business or Resident (NAM)	<input type="text"/>
Zip or Postal Code (PC)	<input type="text"/>

步驟3.轉至System-> Geolocation Filter , 根據過濾所需的邏輯策略檢查Geolocation Filter配置中的欄位。

Google Cisco Unified CM Console New Tab
https://10.127.236.140/ccadmin/showHome.do

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Server
Cisco Unified CM
Cisco Unified CM Group
Presence Redundancy Groups
Phone NTP Reference
Date/Time Group
BLF Presence Group
Region Information
Device Pool
Device Mobility
DHCP
LDAP
SAML Single Sign-On
Location Info
Physical Location
SRST
MLPP
Enterprise Parameters
Enterprise Phone Configuration
Service Parameters
Security
Application Server
Licensing
Geolocation Configuration
Geolocation Filter
E911 Messages

not configured. To configure Smart Call Home or disable the reminder, please go to Cisco Unified Serviceability > Call Home or [click here](#).

Administration

22
tel(R) Xeon(R) CPU E7- 2870 @ 2.40GHz, disk 1: 80Gbytes, 6144Mbytes RAM, Partitions aligned

8, 2016 6:03:00 AM IST

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o cryptographic products may be found at our [Export Compliance Product Report](#) web site.

munications Manager please visit our [Unified Communications System Documentation](#) web site.

our [Technical Support](#) web site.

https://10.127.236.140/ccadmin/geolocationFilterFindList.do

2:18 PM
8/1/2016



Geolocation Filter Configuration

Save Delete Copy Add New

Status: Ready

Geolocation Filter Configuration

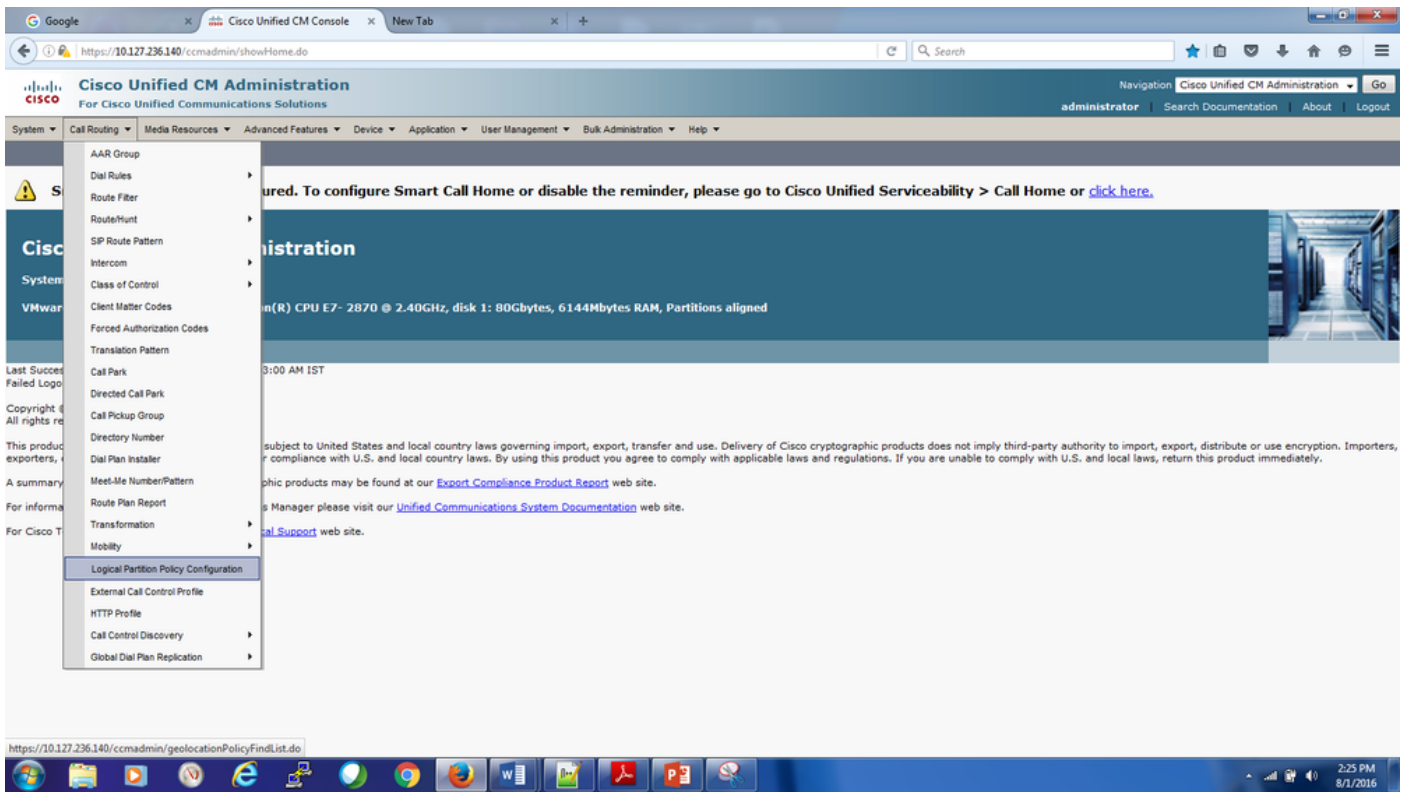
Name*

Description

Match Geolocations using the following criteria:

- Country using the two-letter abbreviation
- State, Region, or Province (A1)
- County or Parish (A2)
- City or Township (A3)
- Borough or City District (A4)
- Neighborhood (A5)
- Street (A6)
- Leading Street Direction, such as N or W (PRD)
- Trailing Street Suffix, such as SW (POD)
- Address Suffix, such as Avenue, Platz (STS)
- Numeric house number (HNO)
- House Number Suffix, such as A, 1/2 (HNS)
- Landmark (LMK)
- Additional Location Information, such as Room Number (LOC)
- Floor (FLR)
- Name of Business or Resident (NAM)
- Zip or Postal Code (PC)

步驟4. 配置邏輯分割槽策略。這是配置的最重要部分，因為允許或拒絕呼叫的所有決定均取決於其配置。



Device Type	Geolocation Policy	Other Device Type	Policy
Interior	LP-pudong	Border	Allow
Interior	LP-pudong	Interior	Allow
Border	LP-pudong	Border	Deny
Border	part-1	Border	Deny

NOTE: Geolocation Policies that are not displayed use the Default Policy; To remove policies from the above list, set the respective policy to Use Default Policy

Device Type	Geolocation Policy	Other Device Type	Policy
Border	LP-pudong part-1	Border	Use Default Policy

步驟5.轉至電話的裝置配置頁面，並根據電話所在位置應用地理位置。

類似地，轉到裝置池並新增地理位置配置。

步驟6.接下來轉到充當到PSTN的介面的網關/中繼/MGCP埠的配置頁，並應用地理位置配置和地理位置過濾器。

疑難排解

步驟1.簽入Enterprise Parameters that **Enable Logical Partitioning** option is set to **True**。

步驟2.確保裝置與裝置或裝置池級別的有效地理位置相關聯。

步驟3.在配置頁面中檢查裝置是否與有效的地理位置過濾器相關聯，並在裝置或裝置池級別選擇某些地理位置欄位。

步驟4.確保LP GeolocationPolicy記錄的欄位區分大小寫，並與地理位置記錄配置相匹配。

步驟5.也可藉助這些SQL命令從CLI驗證地理位置配置、過濾器和策略。


```
run sql select * from geolocationfilter
run sql select * from geolocationpolicy
run sql select * from geolocationpolicymatrix
run sql select * from typelogicalpartitionpolicy
```

步驟6.檢查基本配置後，檢驗地理定位策略之間的關係集。當Enterprise Parameter **Logical Partitioning Default Policy**設定為**Deny**時，檢查是否配置了Gateway & VoIP站點的Geolocation Policy之間的**Allow**邏輯分割槽策略。相反，如果預設策略為**Allow**，請檢查是否配置了**Deny**邏輯分割槽策略。

步驟7.確保未配置重疊或衝突的策略。

範例.

— GeoLocation Logical Partitioning Policy Matrix Summary —

Lists records from the GeoLocation Logical Partitioning Policy Matrix for LP-India.

Device Type A ▲▼	GeoLocation Policy Name A ▲▼	Device Type B ▲▼	GeoLocation Policy Name B ▲▼	Logical Partitioning Policy ▲▼
Interior	LP-India	Border	LP-pudong	Allow
Border	LP-pudong	Interior	LP-India	Deny

LP — 印度 — > 內部 LP — 浦東 — > 邊界 允許

LP — 浦東 — > 邊界 LP — 印度 — > 內部 拒絕

這裡策略之間的邏輯關係存在衝突。如果配置了邏輯策略內部LP-India到邊界LP-Dong，則意味著此關係適用於邊界LP-Dong到LP-India。這些政策是雙向的。

因此，在本示例中，根據第一個策略，允許浦東位置的內部IP電話通過PRI-India進行呼叫。同時，允許從PRI-India到浦東地理位置的IP電話的PSTN呼叫。

但是，根據第二個策略，從印度 — PRI到浦東位置的IP電話的呼叫和從浦東位置的IP電話的呼叫均被拒絕，但這與第一個策略衝突。

在這種情況下，請務必記住，最後新增的策略將優先使用。

步驟8.使用統一報告功能跟蹤重疊策略，以獲取邏輯分割槽策略矩陣。故障排除非常有用，因為您可以從一個螢幕瞭解在CUCM中配置的所有邏輯分割槽策略。Unified CM Geolocation Policy with Filter報告為所選地理位置策略提供了來自地理位置邏輯分割槽策略矩陣的記錄的完整清單，而Unified CM Geolocation Policy報告則提供了所有邏輯分割槽策略的記錄的完整清單。

System Reports

- [Report Descriptions](#)
- [Unified CM Cluster Overview](#)
- [Unified CM Data Summary](#)
- [Unified CM Database Replication Debug](#)
- [Unified CM Database Status](#)
- [Unified CM Device Counts Summary](#)
- [Unified CM Device Distribution Summary](#)
- [Unified CM Directory URI and GDPR Duplicates](#)
- [Unified CM Extension Mobility](#)
- [Unified CM GeoLocation Policy](#)
- [Unified CM GeoLocation Policy with Filter](#)
- [Unified CM Lines Without Phones](#)
- [Unified CM Multi-Line Devices](#)

OK: Report generated successfully.

Unified CM GeoLocation Policy with Filter

Provides a complete list of records from the GeoLocation Logical Partitioning Policy Matrix for the selected GeoLocation policy.
Created on Mon Aug 01 15:04:31 IST 2016

GeoLocation Policy:

Unified CM Cluster Name

Cluster Name	Publisher Name/IP
StandAloneCluster	cucm-pub

GeoLocation Logical Partitioning Policy Matrix Summary

Lists records from the GeoLocation Logical Partitioning Policy Matrix for part-1.

Device Type A	GeoLocation Policy Name A	Device Type B	GeoLocation Policy Name B	Logical Partitioning Policy
Border	LP-pudong	Border	part-1	Deny

System Reports

- [Report Descriptions](#)
- [Unified CM Cluster Overview](#)
- [Unified CM Data Summary](#)
- [Unified CM Database Replication Debug](#)
- [Unified CM Database Status](#)
- [Unified CM Device Counts Summary](#)
- [Unified CM Device Distribution Summary](#)
- [Unified CM Directory URI and GDPR Duplicates](#)
- [Unified CM Extension Mobility](#)
- [Unified CM GeoLocation Policy](#)
- [Unified CM GeoLocation Policy with Filter](#)
- [Unified CM Lines Without Phones](#)
- [Unified CM Multi-Line Devices](#)
- [Unified CM Phone Category](#)
- [Unified CM Phone](#)

OK: Report generated successfully.

Unified CM GeoLocation Policy with Filter

Provides a complete list of records from the GeoLocation Logical Partitioning Policy Matrix for the selected GeoLocation policy.
Created on Mon Aug 01 15:03:45 IST 2016

GeoLocation Policy:

Unified CM Cluster Name

Cluster Name	Publisher Name/IP
StandAloneCluster	cucm-pub

GeoLocation Logical Partitioning Policy Matrix Summary

Lists records from the GeoLocation Logical Partitioning Policy Matrix for LP-pudong.

Device Type A	GeoLocation Policy Name A	Device Type B	GeoLocation Policy Name B	Logical Partitioning Policy
Interior	LP-pudong	Border	LP-pudong	Allow
Interior	LP-pudong	Interior	LP-pudong	Allow
Border	LP-pudong	Border	LP-pudong	Deny
Border	LP-pudong	Border	part-1	Deny

System Reports

- [Report Descriptions](#)
- [Unified CM Cluster Overview](#)
- [Unified CM Data Summary](#)
- [Unified CM Database Replication Debug](#)
- [Unified CM Database Status](#)
- [Unified CM Device Counts Summary](#)
- [Unified CM Device Distribution Summary](#)
- [Unified CM Directory URI and GDPR Duplicates](#)
- [Unified CM Extension Mobility](#)
- [Unified CM GeoLocation Policy](#)
- [Unified CM GeoLocation Policy with Filter](#)
- [Unified CM Lines](#)

OK: Report generated successfully.

Unified CM GeoLocation Policy

Provides a complete list of records from the GeoLocation Logical Partitioning Policy Matrix.
Created on Mon Aug 01 15:02:32 IST 2016

GeoLocation Logical Partitioning Policy Matrix Summary

Lists all records from the GeoLocation Logical Partitioning Policy Matrix.

Device Type A	GeoLocation Policy Name A	Device Type B	GeoLocation Policy Name B	Logical Partitioning Policy
Interior	LP-pudong	Border	LP-pudong	Allow
Interior	LP-pudong	Interior	LP-pudong	Allow
Border	LP-pudong	Border	LP-pudong	Deny
Border	LP-pudong	Border	part-1	Deny

步驟9.進行幾次測試呼叫，檢查是否有效。即時監控工具(RTMT)得到了增強，可跟蹤由於新 Perfmon計數器中的邏輯分割槽策略限制導致的故障數量。Perfmon計數器有一個名為Cisco Call Restriction的新組。從這裡我們可以跟蹤不同場景中的許多呼叫失敗，如傳輸失敗、臨時會議失敗、我開會會議失敗、轉發失敗、基本呼叫失敗、呼叫中失敗、呼叫限制失敗總數等。

步驟10.在呼叫的持續時間內從RTMT收集CUCM跟蹤。在信令分佈層(SDL)跟蹤中，您可以看到正在選擇的策略和在地理定位策略對之間配置的策略。

CC訊號中地理位置資訊的通訊。

```
| SdlSig      | CcRegisterPartyA          | restart0          |
LineControl(1,100,139,3) | SIPCdpc(1,100,55,17)      | (1,100,45,1).3035-
(SEP0019555CBAE3:10.76.253.14) | [R:NP - HP: 0, NP: 2, LP: 0, VLP: 0, LZP: 0 DBP: 0]CI=23624774
CI.branch=0 CSS= cssIns=0 aarCSS= aarDev=T doNotAppendLineCSS=F lrg= ccBearCap.itc=0
ccBearCap.l=3 ccBearCap.itr=1 protected=1 flushCapIns=0 geolocInfo={geolocPkid=9dc76052-3a37-
78c2-639a-1c02e8f5d3a2, filterPkid=d5bdda76-6a86-56c5-b5fd-6dff82b37493, geolocVal=, devType=4}
locPkid= locName=
```

PolicyAndRSVP訊號中的地理位置資訊通訊。

```
| SdlSig      | PolicyAndRSVPRegisterReq | wait              |
RSVPSessionMgr(1,100,76,1) | SIPCdpc(1,100,55,17)      | (1,100,45,1).3035-
(SEP0019555CBAE3:10.76.253.14) | [R:NP - HP: 0, NP: 0, LP: 0, VLP: 0, LZP: 0 DBP: 0]CI= 23624774
Branch= 0 reg=Default cap=5 loc=0 MRGLPkid= PrecLev=5 VCall=F VCapa=F regiState=0 medReq=0
dataCapFl=2 ipAddrMode=0 status=0 geolocInfo={geolocPkid=9dc76052-3a37-78c2-639a-1c02e8f5d3a2,
filterPkid=d5bdda76-6a86-56c5-b5fd-6dff82b37493, geolocVal=, devType=4}
| SdlSig      | PolicyAndRSVPRegisterReq | await_init        |
LPSSession(1,100,26,21) | RSVPSessionMgr(1,100,76,1) | (1,100,45,1).3035-
(SEP0019555CBAE3:10.76.253.14) | [R:NP - HP: 0, NP: 0, LP: 0, VLP: 0, LZP: 0 DBP: 0]CI= 23624774
Branch= 0 geolocInfo={geolocPkid=9dc76052-3a37-78c2-639a-1c02e8f5d3a2, filterPkid=d5bdda76-
6a86-56c5-b5fd-6dff82b37493, geolocVal=, devType=4}
```

值得思考的要點

- 媒體裝置(即 (媒體終端點) MTP、 (會議網橋) CFB、訊號器、 (保留音樂) MoH不需要與地理位置值關聯。
- 對於僅包含VoIP參與者的VoIP到VoIP裝置呼叫或功能，不進行LP策略檢查。換句話說，內部到內部的政策總是允許的。
- LPPolicyManager是一個單一進程，它與InMemDB連線並將呼叫處理中的策略維護為LP策略樹。在CUCM服務啟動期間，LPPolicyManager從InMemDB表中讀取策略並構建LP策略樹。在資料庫中新增/刪除/更新策略會導致向LPPolicyManager發出更改通知，並且在LP策略樹中更改會受到影響。

邏輯分割槽策略檢查。

```
|
| LPPolicyManager -getLogicalPartitionPolicy, GeolocInfoA[pkid=31396408-3d83-74a9-1655-
d2f0a05dd0a4, filter=d5bdda76-6a86-56c5-b5fd-6dff82b37493, val=, devType=4]
001853113| 2008/09/26 11:50:39.687| 001| AppInfo |
|
| LPPolicyManager -getLogicalPartitionPolicy, GeolocInfoB[pkid=9dc76052-3a37-78c2-639a-
1c02e8f5d3a2, filter=d5bdda76-6a86-56c5-b5fd-6dff82b37493, val=, devType=8]
```

- 跟蹤中顯示的DevType描述裝置的型別。

devType = 4 (UserDevice)用於這些裝置。

- 電話 (SCCP、SIP、第三方)
- VG224類比電話
- CTI路由點和CTI埠
- Cisco Unity Voice Mail(SCCP)
- MGCP連線埠(FXS)

如果這些裝置，**devType = 3(AccessDevice)**。

- 集群間中繼(ICT)，由網守控制和非網守控制的H.225中繼
- MGCP埠(E1、T1、PRI、BRI、FXO)
- 網關 (例如H.323網關)

此裝置的**devType =8(SIPAccessDevice)**。

- SIP中繼

參考資料

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