

# 安裝、配置國際編號方案(INNP)並對其進行故障排除

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## 簡介

本檔案介紹如何安裝、設定和疑難排解INNP。

Cisco Unified Communications Manager(CUCM)提供預設的北美編號方案(NANP)。對於撥號方案要求不同的國家/地區，您可以安裝思科國際撥號方案並使用該方案建立特定於貴機構要求的唯一編號方案。

## 必要條件

### 需求

思科建議您瞭解以下主題：

- 通話路由
- 路由過濾器

### 採用元件

本檔案中的資訊是根據Cisco Unified CallManager 11.5。

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。

## 備份資訊

如果要為北美以外的國家/地區安裝國家編號方案，請下載包含當前版本的國際撥號方案的思科選項包(COP)檔案。

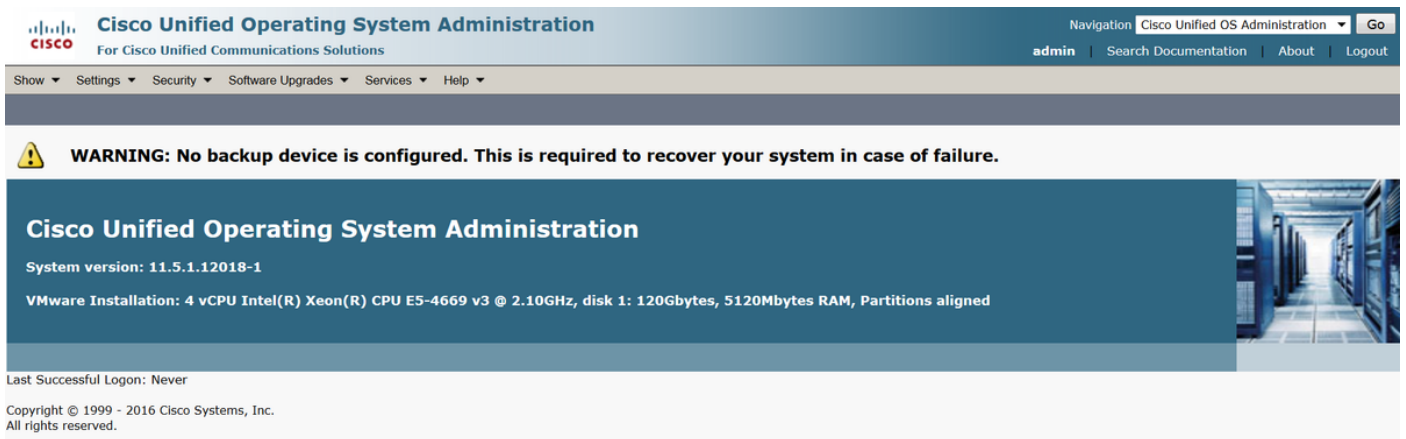
COP檔案使用命名約定，可從思科網站獲取：

<https://software.cisco.com/download/release.html?mdfid=278719042&softwareid=282074292&os=Linux&release=3.1.33-GB&relind=AVAILABLE&rellifecycle=&reltype=latest>

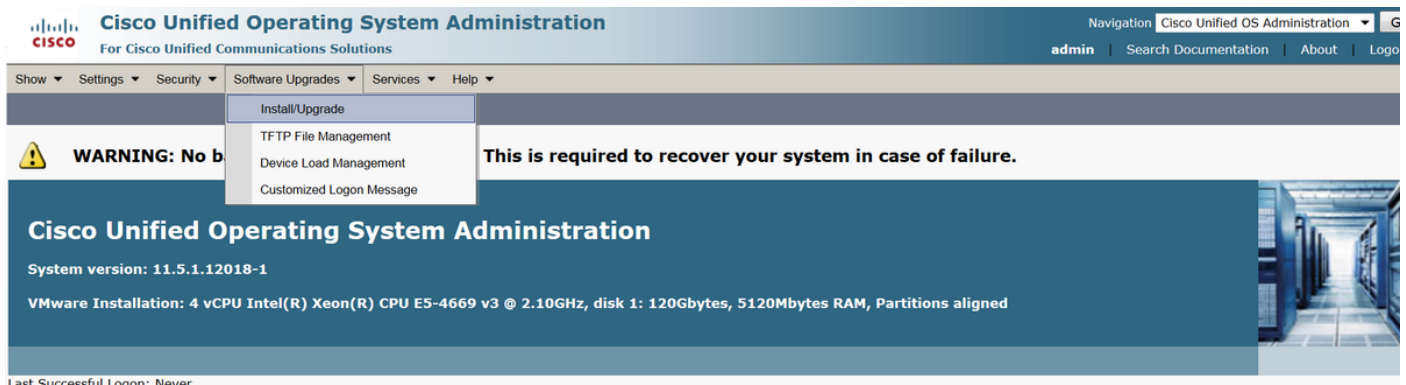
## 設定

這是安裝INNP命令檔案的過程。

步驟1.登入到OS Admin。



步驟2.導覽至Software Upgrade > Install/Upgrade，如下圖所示：



選擇源：此處我們使用SFTP伺服器執行安裝/升級。

來源：遠端檔案系統

目錄：/

伺服器:在此，您必須保持SFTP應用程式運行筆記型電腦/台式機IP地址。



使用者名稱：SFTP使用者名稱。

使用者密碼：SFTP使用者的密碼。

傳輸協定：SFTP


Show ▾ Settings ▾ Security ▾ Software Upgrades ▾ Services ▾ Help ▾

### Software Installation/Upgrade

 Cancel
  Next

---

**Status**

 Status: Ready

---

**Software Location**

Source\*

Directory\*

Server\*

User Name\*

User Password\*

Transfer Protocol\*



SMTP Server

Email Destination

步驟3.選擇Next，然後出現如下圖所示的螢幕。


您必須為INNP選擇正確的複製檔案，然後選擇下一步。

Software Installation/Upgrade

 Cancel
  Next

---

**Status**

 Status: Ready

---

**Software Location**

Options/Upgrades\*

---

**Invalid Upgrades**

Option Names	Status
10.196.120.25_bulk_tftp.pkcs12	Name does not match any filter pattern.
Publisher_tomcat.pkcs12	Name does not match any filter pattern.
CUCM-PUB_tomcat.pkcs12	Name does not match any filter pattern.

螢幕如下圖所示。選擇Next。

**Software Installation/Upgrade**

Cancel Next

**Status**

- Warning:** To ensure the integrity of the installation file, please verify the MD5 hash value against the Cisco Systems web site
- Warning:** To ensure the integrity of the installation file, please verify the SHA512 value against the Cisco Systems web site
- Warning:** You may need to stop some services before you install a locale. You may then restart those services after you complete the locale installation. Refer to your product-specific online help for locale installation details.

**File Checksum Details**

File dp-ffr.3-1-8.IN.k3.cop.sgn  
 MD5 Hash Value 28:36:a4:74:45:48:32:c3:85:3e:3f:8b:b4:40:21:28  
 SHA512 Value

Cancel Next

**i** \*- indicates required item.

#### 步驟4.正在安裝：

Cancel

**Installation Status**

File dp-ffr.3-1-8.IN.k3.cop.sgn  
 Start Time Wed Dec 28 15:20:08 IST 2016  
 Status Running

**Installation Log**

```

12/28/2016 15:20:08 sd_cancelInstall.sh|Canceling active side processes done
12/28/2016 15:20:08 sd_cancelInstall.sh|Canceling inactive side processes
12/28/2016 15:20:08 sd_cancelInstall.sh|Skipping IDS shared memory clean up since this is a COP
12/28/2016 15:20:09 sd_cancelInstall.sh|Canceling inactive side processes done
[16/12/28_15:20:14] locale_install.sh: Successful untarring of /common/download//dp-ffr.3-1-8.IN.k3.cop

Call manager version is : master-11.5.1.12018-1.i386
cp: cannot stat `/common/download/IDP': No such file or directory

cp: cannot stat `/common/download/INNP.xml': No such file or directory
  
```

Cancel

#### 步驟5.安裝完成。

Install Another

**Installation Status**

File dp-ffr.3-1-8.IN.k3.cop.sgn  
 Start Time Wed Dec 28 15:20:08 IST 2016  
 Status Complete

**Installation Log**

```

installCsv rc[0]
enablenotify dsn[DSN=ccm_super]
enablenotify rc[0]
installdb Success[-c]
[16/12/28_15:20:17] locale_install.sh: Publisher: Starting installdb...
/bin/su -l informix -s /bin/sh -c
"source /usr/local/cm/db/dblenv.bash /usr/local/cm ;
source /usr/local/cm/db/informix/local/ids.env ;
nice /usr/local/cm/bin/installdb -x /usr/local/cm/db/xml/xml"
  
```

Install Another

對群集中的所有節點執行相同的操作。

## INNP設定

步驟1.在Cisco Unified CM管理下，導航至呼叫路由>撥號方案安裝程式。



## Cisco Unified CM Administration

System version: 11.5.1.12018-1

VMware Installation: 4 vCPU Intel(R) Xeon(R) CPU E5-4669 v3 @ 2.10GHz, disk 1: 120Gbytes, 5120Mbytes RAM, Partitions aligned

User c last logged in to this cluster on Wednesday, December 28, 2016 3:03:54 PM IST, to node 10.106.99.199, from 10.196.120.192 using HTTPS

- System
- Route Filter
- Route/Hunt
- SIP Route Pattern
- Class of Control
- Intercom
- Client Matter Codes
- Forced Authorization Codes
- Emergency Location
- Translation Pattern
- Call Park
- Directed Call Park
- Call Pickup Group
- Directory Number
- Meet-Me Number/Pattern
- Conference Now
- Dial Plan Installer**
- Route Plan Report

步驟2.按一下Find並選擇INNP，如下圖所示：

Find and List Dial Plans

2 records found

Dial Plan	Description	Installed Version	System Version
CHNP	Switzerland Numbering Plan	1.1(6)	1.1(6)
<b>INNP</b>	<b>India Numbering Plan</b>	<b>1.1(8)</b>	<b>1.1(8)</b>

步驟3.如圖所示，按一下Install。

### Dial Plan Configuration

Install Uninstall

**Dial Plan Information**

Dial Plan\*

Description

Installed Version

Available Version

Install Uninstall

完成複製檔案安裝後，在所有節點上重新啟動CM服務。

## INNP中的子句

First understand the clauses in the INNP:

```
# P: Digit pattern -- PATTERN TAG
# T: Type of Number -- I(nternational) or N(ational)
# W: Network Specific Facilities -- OP or OPXXXX(alternate carriers)
# U: Urgent pattern? (Call extended immediately on match)
```

```
# [2-6]XXXXXX
P: [2-6]XXXXXX          LOCAL-6-DIGIT
```

```
# [2-6]XXXXXXX
P: [2-6]XXXXXXX        LOCAL-7-DIGIT
```

```
# [2-6]XXXXXXXX
P: [2-6]XXXXXXXX        LOCAL-8-DIGIT
```

# Long Distance Calls

```
# 0+11+[2-6]XXXXXXXX
P: 0                    NATIONAL-ACCESS
P: 11                   AREA-CODE
P: [2-6]XXXXXXXX        LOCAL-8-DIGIT
T: N
```

```
# 0+2[02]+[2-6]XXXXXXXX
P: 0                    NATIONAL-ACCESS
P: 2[02]                AREA-CODE
P: [2-6]XXXXXXXX        LOCAL-8-DIGIT
T: N
```

```
# 0+33+[2-6]XXXXXXXX
P: 0                    NATIONAL-ACCESS
P: 33                   AREA-CODE
P: [2-6]XXXXXXXX        LOCAL-8-DIGIT
T: N
```

# Services, Mobile & Non Geographic Calls

```
# 100
P: 100                 SERVICE
U: Y
```

```
# 101
P: 101                 SERVICE
U: Y
```

```
# 80[01589]X+XXX+XXX
P: 80[01589]X         LOCAL-PREFIX-8-MOBILE
P: XXX                MOBILE-ACCESS
P: XXX                MOBILE-SUBSCRIBER
T: N
```

```
# 81XX+XXX+XXX
P: 81XX               LOCAL-PREFIX-8-MOBILE
P: XXX                MOBILE-ACCESS
P: XXX                MOBILE-SUBSCRIBER
```

T: N

# 8128+XXX+XXX

P: 8128 LOCAL-PREFIX-8-MOBILE

P: XXX MOBILE-ACCESS

P: XXX MOBILE-SUBSCRIBER

T: N

# 8149+XXX+XXX

P: 8149 LOCAL-PREFIX-8-MOBILE

P: XXX MOBILE-ACCESS

P: XXX MOBILE-SUBSCRIBER

T: N

有關更多詳細資訊，請參閱以下有關INNP條款的連結：

<http://www.cisco.com/web/software/282074292/122537/INNP.txt>

根據以上資訊，我們將建立路由過濾器。

範例：

您的要求是建立僅允許本地呼叫的本地呼叫過濾器。

案例：分機3001必須呼叫本地移動號碼，從7、8和9開始。

分機3001必須呼叫本地座機號碼（8位）。

分機3001必須阻止STD和全國呼叫撥號。


步驟1.建立新分割槽 — PT-LOCAL

導航至呼叫路由>控制類>分割槽。

## Partition Configuration

 Save  Delete  Reset  Apply Config  Add New

### Status

 Status: Ready


### Partition Information

Name\*

Description

Time Schedule

Time Zone  Originating Device  
 Specific Time Zone

 \*- indicates required item.

步驟2.建立新的CSS - CSS-Local

導航至呼叫路由>控制類別>呼叫搜尋空間。


在此CSS中，您保留PT-LOCAL分割槽。



## Calling Search Space Configuration

 Save  Delete  Copy  Add New

### Status

 Status: Ready

### Calling Search Space Information

Name\*   
Description

### Route Partitions for this Calling Search Space

Available Partitions\*\*   
Global Learned E164 Numbers  
Global Learned E164 Patterns  
Global Learned Enterprise Numbers  
Global Learned Enterprise Patterns

▼ ▲

Selected Partitions

▼ ▲

步驟3. 建立路由器過濾器。

導覽至Call Routing > Route Filter。

按一下「Add New」，如下圖所示：

## Find and List Route Filters

 Add New

### Route Filter

Find Route Filter where Route Filter Name    
   


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

如圖所示，選擇編號方案。

# Route Filter Configuration


 Next

## Status

 Status: Ready

## Route Filter Information

Numbering Plan\*

 \*- indicates required item.

這些過濾器是根據要求建立的。

Route Filter Name*	Local
Numbering Plan	India Numbering Plan
Clause	(LOCAL-PREFIX-7-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-8-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-9-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-8-DIGIT EXISTS)

## Clause Information

To add a clause within this Route Filter, click Add Clause.

<input type="button" value="Edit Clause"/>	<input type="button" value="Remove Clause"/>	
LOCAL-PREFIX-7-MOBILE	<input type="text" value="EXISTS"/>	<b>AND</b>
MOBILE-ACCESS	<input type="text" value="EXISTS"/>	<b>AND</b>
MOBILE-SUBSCRIBER	<input type="text" value="EXISTS"/>	
<b>OR</b>		
<input type="button" value="Edit Clause"/>	<input type="button" value="Remove Clause"/>	
LOCAL-PREFIX-8-MOBILE	<input type="text" value="EXISTS"/>	<b>AND</b>
MOBILE-ACCESS	<input type="text" value="EXISTS"/>	<b>AND</b>
MOBILE-SUBSCRIBER	<input type="text" value="EXISTS"/>	
<b>OR</b>		
<input type="button" value="Edit Clause"/>	<input type="button" value="Remove Clause"/>	

LOCAL-PREFIX-8-MOBILE	EXISTS	▼	<b>AND</b>
MOBILE-ACCESS	EXISTS	▼	<b>AND</b>
MOBILE-SUBSCRIBER	EXISTS	▼	
<b>OR</b>			
<b>Edit Clause</b>		<b>Remove Clause</b>	
LOCAL-PREFIX-9-MOBILE	EXISTS	▼	<b>AND</b>
MOBILE-ACCESS	EXISTS	▼	<b>AND</b>
MOBILE-SUBSCRIBER	EXISTS	▼	
<b>OR</b>			
<b>Edit Clause</b>		<b>Remove Clause</b>	
LOCAL-8-DIGIT	EXISTS	▼	

---

步驟4.建立路由模式。

導覽至Call Routing > Route/Hunt > Route Pattern。

**Pattern Definition**

Route Pattern*	9.@	Here we have created the 9.@ pattern
Route Partition	PT-LOCAL	Keep the PT-LOCAL partition
Description		
Numbering Plan*	INNP	Select the numbering plan
Route Filter	Local	Select the Route Filter created for Local calling.
MLPP Precedence*	Default	
<input type="checkbox"/> Apply Call Blocking Percentage		
Resource Priority Namespace Network Domain	< None >	
Route Class*	Default	
Gateway/Route List*	Chandra-CUCM	(Edit)
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern No Error	
Call Classification*	OffNet	
External Call Control Profile	< None >	
<input type="checkbox"/> Allow Device Override <input checked="" type="checkbox"/> Provide Outside Dial Tone <input type="checkbox"/> Allow Overlap Sending <input type="checkbox"/> Urgent Priority		

---

**Connected Party Transformations**

Connected Line ID Presentation*	Default
Connected Name Presentation*	Default

---

**Called Party Transformations**

Discard Digits	< None >
Called Party Transform Mask	
Prefix Digits (Outgoing Calls)	
Called Party Number Type*	Cisco CallManager
Called Party Numbering Plan*	Cisco CallManager

---

**ISDN Network-Specific Facilities Information Element**

Network Service Protocol	-- Not Selected --	
Carrier Identification Code		
Network Service	Service Parameter Name	Service Parameter Value
-- Not Selected --	< Not Exist >	

---

請確保測試擴展具有正確的CSS(CSS-Local)。

Directory Number\*   Urgent Priority

Route Partition

Description

Alerting Name

ASCII Alerting Name

External Call Control Profile

Allow Control of Device from CTI

Line Group  [Edit Line Group](#)

Associated Devices   
 [Edit Device](#)  
[Edit Line Appearance](#)

Dissociate Devices

**Directory Number Settings**

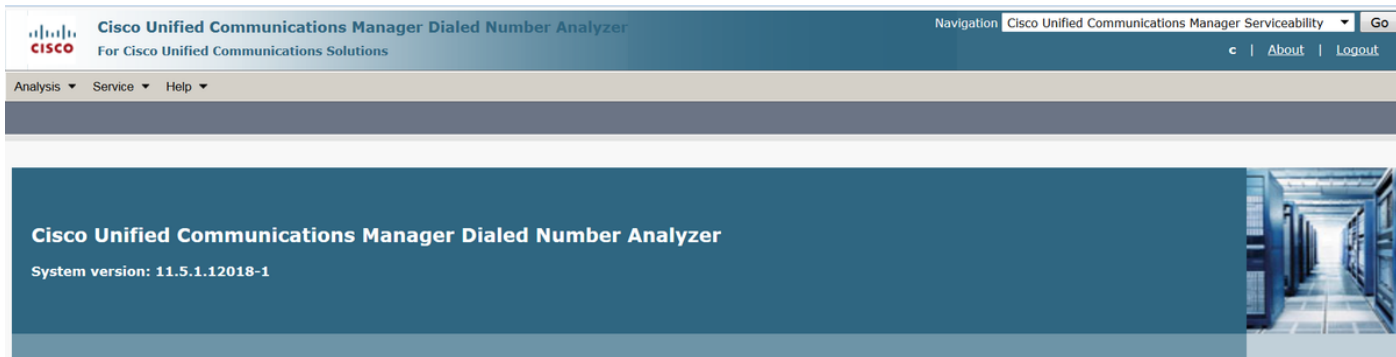
Voice Mail Profile  (Choose <None> to use system default)

Calling Search Space

## 驗證

驗證設定：

步驟1.在撥號號碼分析器下，導覽至分析>電話。



輸入分機3001並按一下Find。

Analysis Service Help

**Find and List Phones**

**Status**  
1 records found

**Search Options**  
Find Phone where: Directory Number begins with: 3001 [Find](#)  Search Within Results  
Select item or enter search text

**Search Results**


Device Name(Line)	Description	Device Pool	Extension	Partition	Device Protocol	Status	IP Address
7841 SEP00E16DBA5FD5	Auto 3003	HQ	3001	PT-CUG	SIP	Registered	10.106.99.249

Rows per Page 50

## - Device Information (Model = Cisco 7841)

Registration	Registered with Cisco Unified CallManager 10.106.99.199
IP Address	10.106.99.249
MAC Address	00E16DBA5FD5
Device Name	00E16DBA5FD5
Description	Auto 3003
Owner User ID	cisco3
Device Pool	HQ
Call Classification	OnNet
Calling Search Space	None
AAR Calling Search Space	None
Media Resource Group List	None
Device Time Zone	Etc/GMT

## Association Information

-  Line [1] - 3001 in PT-CUG
-  Line [2] - 3006 in PT-CUG
-  Line [3] - 8888 (no partition)

## - Analyzer Input

### Dialed Digit Settings

- Directory URI
- Dialed Digits

步驟2.按一下Do Analysis時，系統會顯示一頁面，其中包含所有詳細資訊和正確篩選條件，如下圖所示：

## Cisco Unified Communications Manager Dialed Number Analyzer Results

Expand All

Collapse All

### Results Summary

#### Calling Party Information

- **Dialed Digits** = 944262527
- **Match Result** = RouteThisPattern

#### Matched Pattern Information

- **Pattern** = 9.@
- **Partition** = PT-LOCAL
- **Time Schedule** =
- **Called Party Number** = 944262527
- **Time Zone** = Etc/GMT
- **End Device** = Chandra-CUCM
- **Call Classification** = OffNet
- **InterDigit Timeout** = NO
- **Device Override** = Disabled
- **Outside Dial Tone** = NO

### Call Flow

#### Route Pattern :Pattern= 9.@

- **Positional Match List** = 9:44262527
- **DialPlan** = India Numbering Plan

#### Route Filter

- **Filter Name** = Local
- **Filter Clause** = (LOCAL-PREFIX-7-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-8-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-9-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-8-DIGIT EXISTS)
- **Require Forced Authorization Code** = No
- **Authorization Level** = 0

## 疑難排解

配置的路由過濾器工作正常，但有一個問題。如果用兩位數字區號撥打STD號碼，呼叫就會通過。

範例：如果撥打號碼080 26252728，它會使用本地過濾器路由呼叫。

## Cisco Unified Communications Manager Dialed Number Analyzer Results

Expand All Collapse All

### Results Summary

#### Calling Party Information

- Dialed Digits = 908026252728
- Match Result = RouteThisPattern

#### Matched Pattern Information

- Pattern = 9.@
- Partition = PT-LOCAL
- Time Schedule =
- Called Party Number = 908026252728
- Time Zone = Etc/GMT
- End Device = Chandra-CUCM
- Call Classification = OffNet
- InterDigit Timeout = NO
- Device Override = Disabled
- Outside Dial Tone = NO

### Call Flow

#### Route Pattern :Pattern= 9.@

- Positional Match List = 9:0:80:26252728
- DialPlan = India Numbering Plan

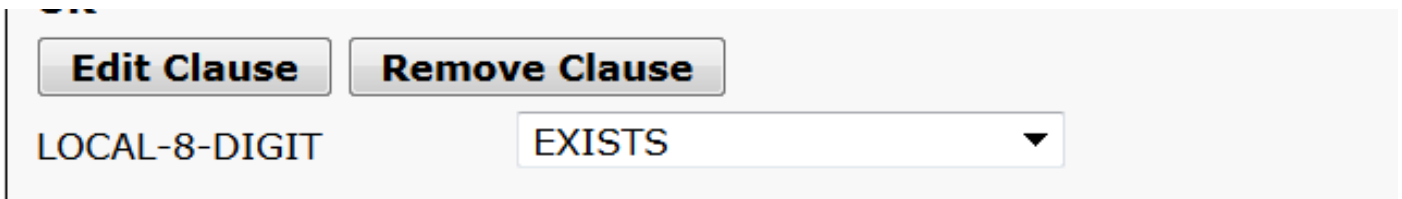
#### Route Filter

- Filter Name = Local
- Filter Clause = (LOCAL-PREFIX-7-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-8-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-9-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-8-DIGIT EXISTS)

其原因是允許呼叫Local-8-digit number，並且它與8位匹配（不包括區號）。

因此，此處必須在過濾器中明確定義以阻止本地過濾器的區號。

步驟1.導覽至本地8位元的Router filter和Edit Clause。



The screenshot shows a user interface with two buttons: "Edit Clause" and "Remove Clause". Below the buttons, there is a text field containing "LOCAL-8-DIGIT" and a dropdown menu currently displaying "EXISTS".

步驟2.選擇AREA-CODE DOES-NOT-EXIST並保存過濾器，如下圖所示：

### – Clause Information



The screenshot shows a section titled "Clause Information" with a text field containing "AREA-CODE" and a dropdown menu currently displaying "DOES-NOT-EXIST".

篩選器如下所示：

<b>Edit Clause</b>	<b>Remove Clause</b>		
AREA-CODE	DOES-NOT-EXIST		<b>AND</b>
LOCAL-8-DIGIT	EXISTS		

---

Save	Delete	Copy	Reset	Apply Config	Add New
------	--------	------	-------	--------------	---------

步驟3.使用兩位數字區號執行STD編號的DNA。

### Cisco Unified Communications Manager Dialed Number Analyzer Results

Expand All Collapse All

- ▼ **Results Summary**
  - ▶ **Calling Party Information**
    - **Dialed Digits** = 908026252728
    - **Match Result** = BlockThisPattern
    - **Route Block Cause** = Unallocated Number
    - **Called Party Number** =
  - ▼ **Matched Pattern Information**
    - **Pattern** =
    - **Partition** =
  - **Pattern Type** =
  - **Time Zone** = Etc/GMT
  - **Outside Dial Tone** = NO
- ▼ **Call Flow**
  - **Note: Information Not Available**
- ▼ **Alternate Matches**
  - **Note: Information Not Available**

附註：必須顯式地阻止不需要的模式。