瞭解CUSP術語和路由邏輯

目錄

簡介

本檔案將說明思科整合SIP代理(CUSP)通話路由邏輯。

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必要條件

需求

思科建議您瞭解以下主題：

- 作業階段啟始通訊協定(SIP)一般知識
- 語音網路部署中CUSP的概念理解

技術

定義

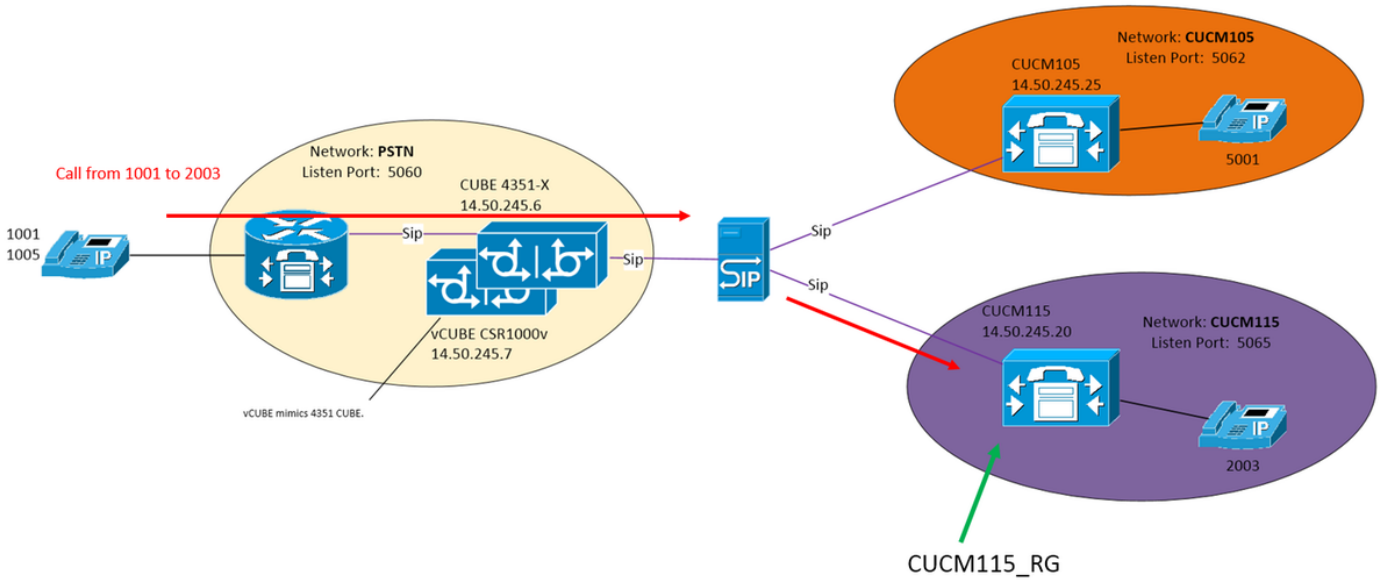
字詞	定義

網路	SIP網路是本地介面的邏輯集合，在一般路由用途中可以將其視為同一介面。 從<http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cusp/rel9_1/gui_configuration/en_US 網路在邏輯上定義網路的區域。 可以使用CUSP裝置上的介面定義網路，也可以使用特定埠提 ，可以配置單獨的偵聽埠。 (範例： 偵聽埠14.50.245.9:**5060**、14.50.245.9:**5062**、14.50.245.9:**5065**可以使用單個CUSP 網路在邏輯上定義後，便可用於根據網路配置觸發器。 **附註**：如果設定了偵聽埠，請確保將流量傳送到CUSP的裝置使用正確的埠。 如果為CUC 14.50.245.9:**5065**，則必須確保CUCM將流量傳送到埠5065，而不是預設的5060。
觸發器	可以設定觸發器以標識傳入消息。 觸發器可以識別入站網路、本地埠和遠端網路等。
伺服器組	伺服器組定義Cisco Unified SIP Proxy系統為每個網路互動的元素。 從 <http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cusp/rel9_1/gui_configuration/en_US/c ml> 伺服器組和路由組都可以用作路由表中的目標。 伺服器組通常用於相同型別的冗餘裝置。 CU 例。
路由組	路由組允許您指定網關和中繼的選擇順序。它允許您為傳出中繼選擇確定網關和埠清單的優先 從 <http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cusp/rel9_1/gui_configuration/en_US/c l> 伺服器組和路由組都可以用作路由表中的目標。 路由組通常定義到達同一裝置的加權組目標。 直接到CUCM的SIP中繼和到PSTN網關的SIP中繼以到達CUCM是路由組的典型示例。 到CUC ，而PSTN路由則是備份。
路由表	您可以配置路由表，將SIP請求定向到其相應的目的地。每個路由表都包含一組基**於查**找策略 從 <http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cusp/rel9_1/gui_configuration/en_US/c > CUSP中的路由表類似於第3層路由表。CUSP路由表由與**第**3層路由表中的網路類似的金鑰組成 在CUSP路由表中**鍵**可以對映到以下路由型別以路由SIP消息： **destination**:可以將特定主機或本地配置的伺服器組配置為目標 **route-group**:具有一個或多個元素的本地配置的路由組 **route-policy**:路由策略可用於在路由表之間移動，類似CUCM中的轉換模式 **回應**:CUSP可以傳送特定響應來終止呼叫嘗試，而不是路由SIP消息 **default-sip**: 遵循RFC 3263的簡單路由。 **附註**：如果將**Key**對映到route-policy，請注意邏輯環路。
路由策略	路由策略指向路由表，並定義如何使用該路由表中的**Key**。 **範例：** 路由表名稱："FromCUCM105-RT" 查詢鍵匹配項："Prefix-Longest-Match" 查詢鍵："SIP報頭：「收件人」電話」 通過將**Key**的定義與**Key**的配置值相分離，同一路由表能以不同方式使用。 例如，一個路由策 TO的前**綴：**報頭，而另一個路由策略可以將路由表的**金鑰**定義為FROM的**字首：**標題。
路由觸發器	路由觸發器將觸發器連結到路由策略。 從邏輯上說，如果SIP消息與觸發器匹配，則使用配置的路由策略。

總而言之，根據SIP偵聽埠使用**Network**標籤SIP消息。 **Network**可用於匹配**Trigger**。 **Route Policy**然後根據**Trigger**確定要使用的**Route Table**，並定義在何處查詢**Key**。 **Route Table**然後使用**Key**查詢將SIP消息路由到的位置（路由型別）。 路由型別(主機、**伺服器組**、**路由組**等)將用於將

SIP消息傳送到已配置的目標(**元素**)。

網路拓撲



通話範例

從CUCM115上的PSTN 1001到2003的呼叫

基本呼叫路由

傳入網路："PSTN"

觸發程序： "From-PSTN-Trigger"

如果傳入消息與網路「PSTN」匹配，則觸發

路由觸發器： "FromPSTN-RPolicy" "From-PSTN-Trigger"

連結「From-PSTN-Trigger」至「FromPSTN-RPolicy」

路由策略："FromPSTN-RPpolicy"

指定路由表「PSTN-RT」

指定查詢鍵匹配「Prefix-Longest-Match」

指定查詢金鑰為「SIP報頭：「收件人」電話」

路由表："PSTN-RT"

包含要轉至路由組「CUCM115_RG」的金鑰「2」

路由組（或伺服器組）："CUCM115_RG"

包含元素14.50.245.20:5065

這些配置結合起來形成邏輯語句：

對於來自PSTN的呼叫（電話號碼字首為2），路由到14.50.245.20:5065

組態

PSTN - 2XXX和5XXX呼叫通過CUBE和vCUBE傳送到CUSP

CUCM 10.5 - 1XXX和2XXX通過SIP中繼傳送到CUSP

CUCM 11.5 - 1XXX和5XXX通過SIP中繼傳送到CUSP

> **附註**：使用GUI時，必須提交某些配置才能在其他配置部分獲得這些配置。 這些標籤有 **###Commit Configuration**

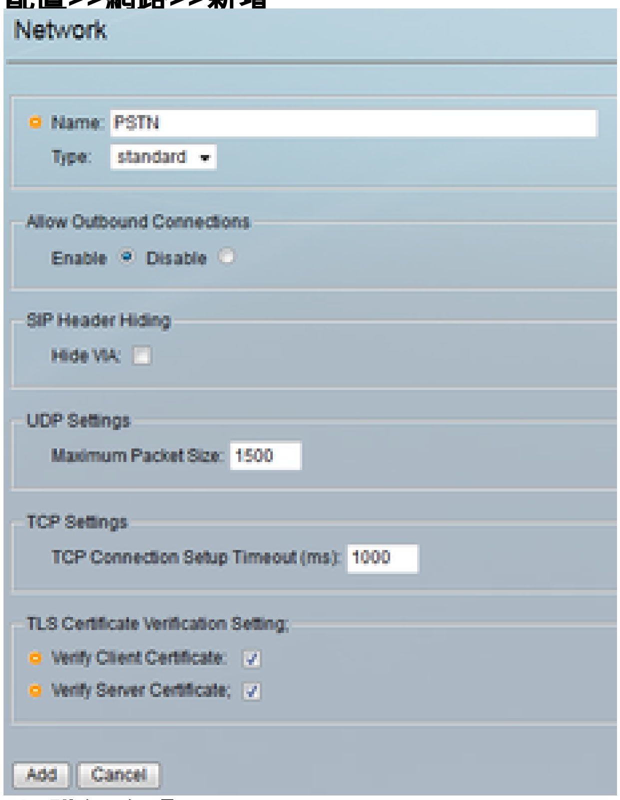
關鍵配置元素

CLI組態

GUI配置

建立網路

配置>>網路>>新增

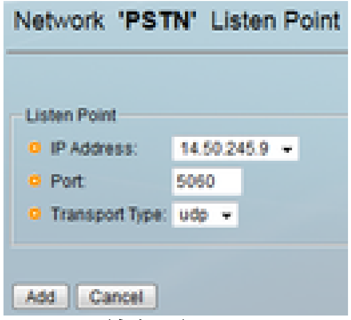


sip網路PSTN標準

定義偵聽埠以標識網路「PSTN」

配置>>網路>> [網路名稱] >> SIP偵聽點>>新增

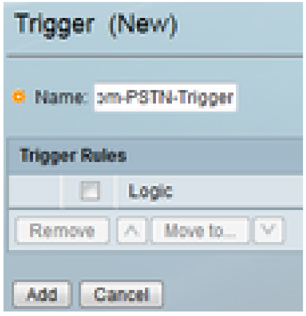
sip listen PSTN udp 14.50.245.9 5060



入站網路「PSTN」的觸發器

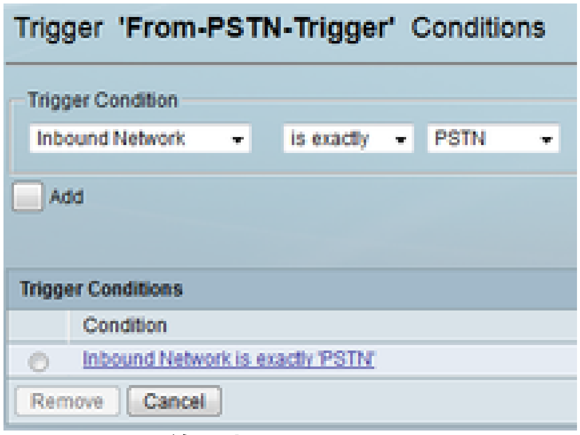
配置>>觸發器>>新增

配置觸發器名稱



觸發條件From-PSTN-Trigger
 序列1
  網路內^\QPSTN\E$
  結束序列
 結束觸發條件

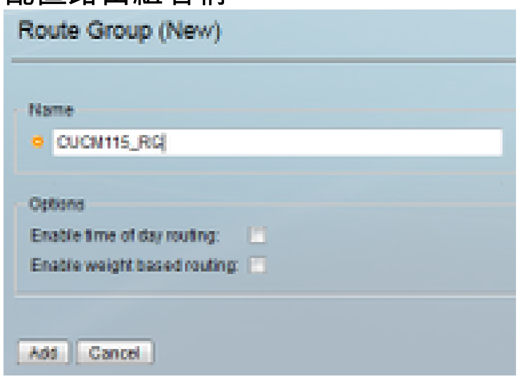
配置觸發器條件並點選新增



指定「CUCM115_RG」的目標

配置>>路由組>>新增(###Commit配置)

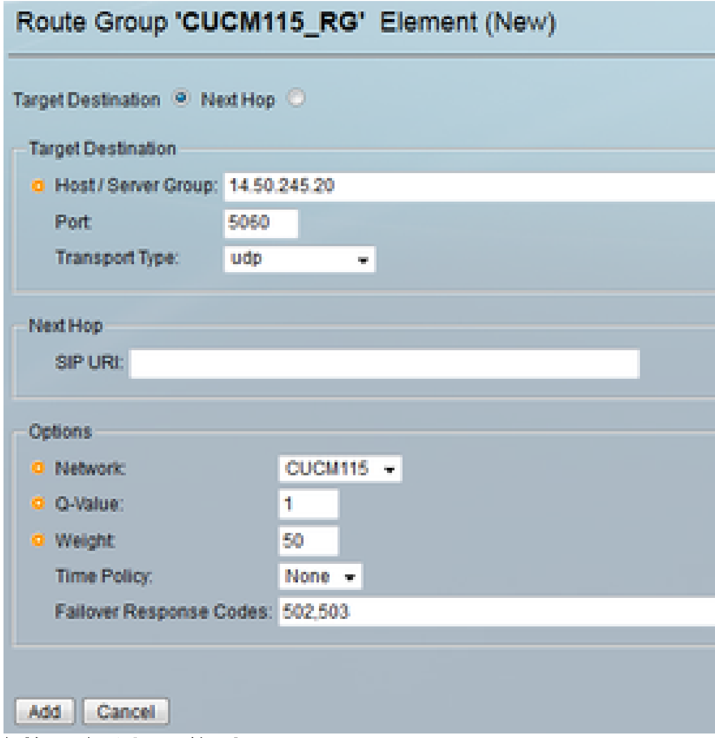
配置路由組名稱



路由組CUCM115_RG
 element target-destination 14.50.245.20:5065:udp
CUCM115 q-value 0.0
  failover-codes 502 - 503
  重量50
  end元素
 結束路由

按一下「元素」列下的「按一下此處」，然後按一
新增」

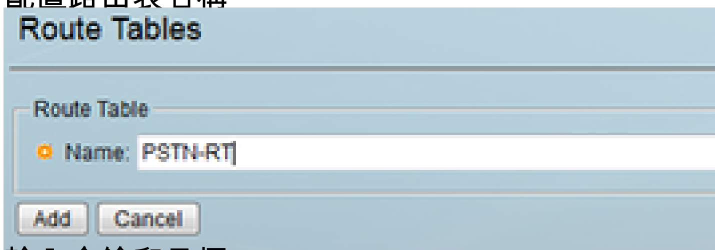
輸入要素目標



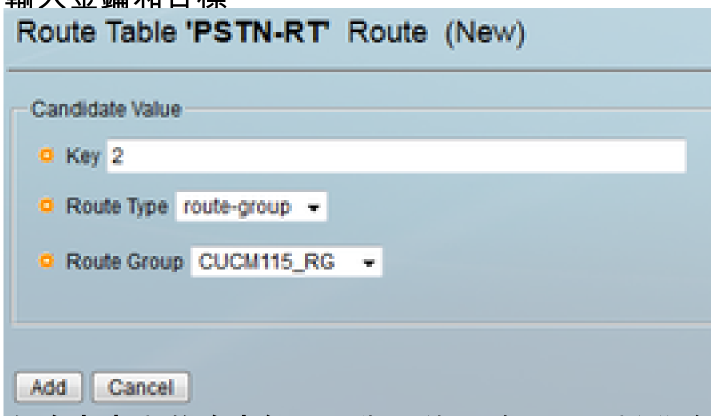
定義路由表並將一個鍵關聯到目標

配置>>路由表>>新增(###Commit配置)

配置路由表名稱

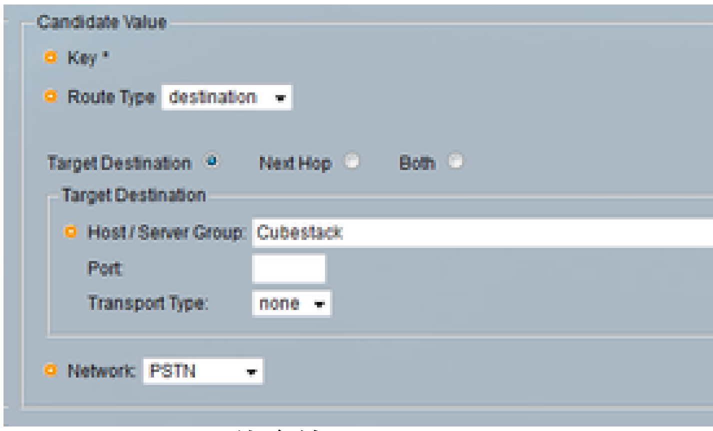


輸入金鑰和目標



在**路由表**中將**路由組**配置為目的地時，不要新增埠和傳輸型別。 通過新增埠和/或傳輸型別，您指示CUSP DNS主機條目Cubestack:5060:UDP，而不是查詢本要的伺服器組配置。

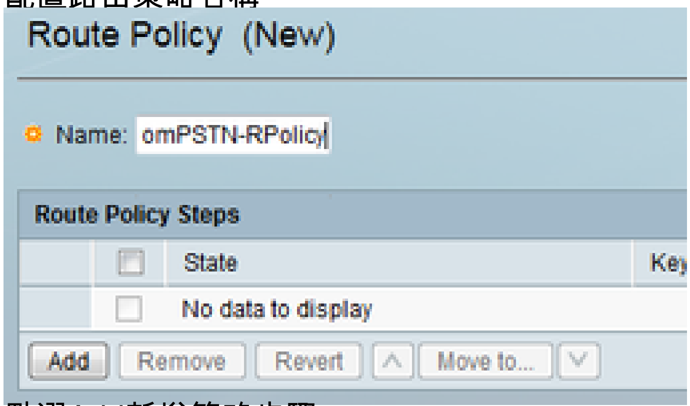
路由表PSTN-RT
 金鑰2組CUCM115_RG
 key 5組CUCM105_RG
 結束路由表



定義「FromPSTN-RPolicy」的金鑰

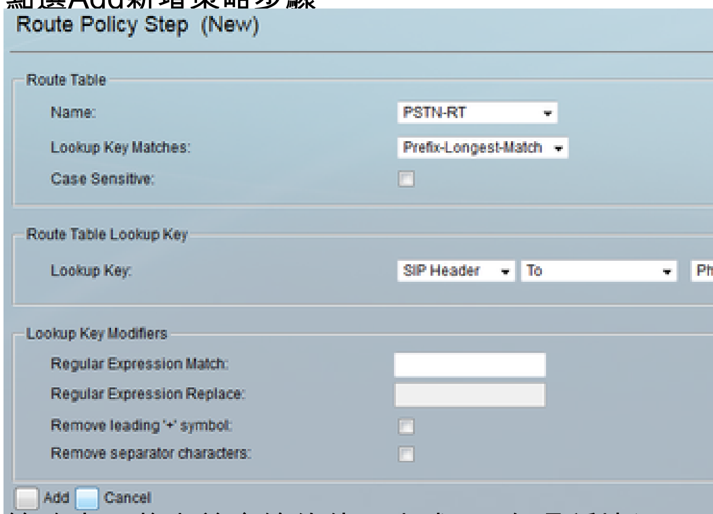
配置>>路由策略>>新增(###Commit配置)

配置路由策略名稱



來自PSTN-RPpolicy的策略查詢
 序列100 PSTN-RT報頭到uri元件電話
  規則字首
  結束序列
 結束策略

點選Add新增策略步驟

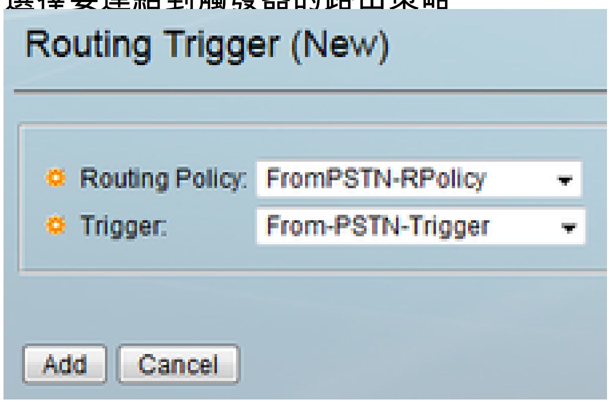


策略步驟將定義金鑰的使用方式。 在這種情況下，
將在To:上查詢匹配的最長**電話號碼**SIP報頭中的**欄**

將「From-PSTN-Trigger」連結到「FromPSTN-RPolicy」

配置>>路由觸發器>>新增

選擇要連結到觸發器的路由策略



觸發路由序列2策略FromPSTN-RPpolicy condition
From-PSTN-Trigger

完整配置

附註：show configuration active verbose將顯示包括路由表在內的整個配置。

```
josmeado-CUSP(cusp)# show configuration active verbose
Building CUSP configuration...
!
server-group sip global-load-balance weight
server-group sip retry-after 250
server-group sip element-retries udp 2
server-group sip element-retries tls 1
server-group sip element-retries tcp 1
sip dns-srv
 enable
 no naptr
 end dns
!
no sip header-compaction
no sip logging
!
sip max-forwards 70
sip network CUCM105 standard
 no non-invite-provisional
 allow-connections
 no tls verify
 retransmit-count invite-client-transaction 3
 retransmit-count invite-server-transaction 5
 retransmit-count non-invite-client-transaction 3
 retransmit-timer T1 500
 retransmit-timer T2 4000
 retransmit-timer T4 5000
 retransmit-timer TU1 5000
 retransmit-timer TU2 32000
 retransmit-timer clientTn 64000
 retransmit-timer serverTn 64000
 tcp connection-setup-timeout 1000
 tls handshake-timeout 3000
 udp max-datagram-size 1500
 end network
!
sip network CUCM115 standard
 no non-invite-provisional
 allow-connections
 no tls verify
 retransmit-count invite-client-transaction 3
 retransmit-count invite-server-transaction 5
 retransmit-count non-invite-client-transaction 3
 retransmit-timer T1 500
 retransmit-timer T2 4000
 retransmit-timer T4 5000
 retransmit-timer TU1 5000
 retransmit-timer TU2 32000
 retransmit-timer clientTn 64000
 retransmit-timer serverTn 64000
 tcp connection-setup-timeout 1000
 tls handshake-timeout 3000
 udp max-datagram-size 1500
 end network
!
sip network PSTN standard
```

```
 no non-invite-provisional
 allow-connections
 no tls verify
 retransmit-count invite-client-transaction 3
 retransmit-count invite-server-transaction 5
 retransmit-count non-invite-client-transaction 3
 retransmit-timer T1 500
 retransmit-timer T2 4000
 retransmit-timer T4 5000
 retransmit-timer TU1 5000
 retransmit-timer TU2 32000
 retransmit-timer clientTn 64000
 retransmit-timer serverTn 64000
 tcp connection-setup-timeout 1000
 tls handshake-timeout 3000
 udp max-datagram-size 1500
 end network
!
sip overload reject retry-after 0
!
no sip peg-counting
!
sip privacy service
sip queue message
 drop-policy head
 low-threshold 80
 size 2000
 thread-count 20
 end queue
!
sip queue radius
 drop-policy head
 low-threshold 80
 size 2000
 thread-count 20
 end queue
!
sip queue request
 drop-policy head
 low-threshold 80
 size 2000
 thread-count 20
 end queue
!
sip queue response
 drop-policy head
 low-threshold 80
 size 2000
 thread-count 20
 end queue
!
sip queue st-callback
 drop-policy head
 low-threshold 80
 size 2000
 thread-count 10
 end queue
!
sip queue timer
 drop-policy none
 low-threshold 80
 size 2500
 thread-count 8
 end queue
```

```
!
sip queue xcl
 drop-policy head
 low-threshold 80
 size 2000
 thread-count 2
 end queue
!
route recursion
!
sip tcp connection-timeout 30
sip tcp max-connections 256
!
no sip tls
!
sip tls connection-setup-timeout 1
!
trigger condition From-CUCM105-Trigger
 sequence 1
  in-network ^\QCUCM105\E$
  end sequence
 end trigger condition
!
trigger condition From-CUCM115-Trigger
 sequence 1
  in-network ^\QCUCM115\E$
  end sequence
 end trigger condition
!
trigger condition From-PSTN-Trigger
 sequence 1
  in-network ^\QPSTN\E$
  end sequence
 end trigger condition
!
trigger condition mid-dialog
 sequence 1
  mid-dialog
  end sequence
 end trigger condition
!
accounting
 no enable
 no client-side
 no server-side
 end accounting
!
server-group sip group Cubestack PSTN
 element ip-address 14.50.245.6 5060 udp q-value 0.0 weight 1
 element ip-address 14.50.245.7 5060 udp q-value 0.0 weight 1
 failover-resp-codes 503
 lbtype weight
 ping
 end server-group
!
route group CUCM105_RG
 element target-destination 14.50.245.25:5062:udp CUCM105 q-value 0.0
  failover-codes 510
  weight 50
  end element
 end route
!
route group CUCM115_RG
 element target-destination 14.50.245.20:5065:udp CUCM115 q-value 0.0
```

```
  failover-codes 502 - 503
  weight 50
  end element
 end route
!
route table FromCUCM105-RT
 key * target-destination Cubestack PSTN
 key 2 group CUCM115_RG
 end route table
!
route table FromCUCM115-RT
 key 1 target-destination Cubestack PSTN
 key 5 group CUCM105_RG
 end route table
!
route table PSTN-RT
 key 2 group CUCM115_RG
 key 5 group CUCM105_RG
 end route table
!
policy lookup FromCUCM105-RPolicy
 sequence 100 FromCUCM105-RT header to uri-component phone
  rule prefix
  end sequence
 end policy
!
policy lookup FromCUCM115-RPolicy
 sequence 100 FromCUCM115-RT header to uri-component phone
  rule prefix
  end sequence
 end policy
!
policy lookup FromPSTN-RPolicy
 sequence 100 PSTN-RT header to uri-component phone
  rule prefix
  end sequence
 end policy
!
trigger routing sequence 1 by-pass condition mid-dialog
trigger routing sequence 2 policy FromPSTN-RPolicy condition From-PSTN-Trigger
trigger routing sequence 3 policy FromCUCM115-RPolicy condition From-CUCM115-Trigger
trigger routing sequence 4 policy FromCUCM105-RPolicy condition From-CUCM105-Trigger
!
server-group sip global-ping
!
no server-group sip ping-503
!
sip cac session-timeout 720
sip cac PSTN 14.50.245.6 5060 udp limit -1
sip cac PSTN 14.50.245.7 5060 udp limit -1
!
no sip cac
!
sip listen CUCM105 udp 14.50.245.9 5062
sip listen CUCM115 udp 14.50.245.9 5065
sip listen PSTN udp 14.50.245.9 5060
!
call-rate-limit 100
!
end
```

疑難排解

跟蹤級別配置

在CUSP GUI中，導航至**故障排除>> Cisco Unified SIP Proxy >> Trace**

Trigger-Conditions - Level:debug:這將顯示哪些觸發器匹配以啟動呼叫路由。

Routing - Level:debug:這將顯示呼叫路由過程中完成的操作。 已匹配哪個金鑰、選擇了哪個目標等。

SIP-Wire-Log - Level:debug:這將顯示接收和傳送的SIP消息。

跟蹤收集

通過GUI

在CUSP GUI中，導航至**故障排除>> Cisco Unified SIP Proxy >> Trace**

選擇下載日誌檔案

您還可以清除日誌

通過FTP客戶端

預設情況下，沒有具有FTP許可權的帳戶。 要啟用具有FTP許可權的帳戶，請將使用者新增到PFS組。

```
josmeado-CUSP# user platformadmin group ?
  Administrators     System administrators group
  pfs-privusers      PFS privileged users group
  pfs-readonly       PFS read only group
josmeado-CUSP# user platformadmin group pfs
```

通過FTP客戶端連線到CUSP。 **檔案路徑：**cusp >> log >> trace >> trace.log

跟蹤順序

1. **SIP-Wire-Log — 傳**入SIP邀請
2. **SIP-Wire-Log — 返**回100嘗試
3. **Trigger-Condition** — 確定網路和觸發路由策略
4. **路由 —** 有關詳細資訊，請參閱下面的路由跟蹤部分
5. **SIP-Wire-Log** — 向目標傳送邀請
6. **SIP-Wire-Log** — 繼續正常的SIP事務，直到每個呼叫段都出現200 Ok消息

觸發條件跟蹤示例

```
13:24:36:987 08:17:2017 vCUSP,9.1.5,josmeado-CUSP,14.50.245.9,trace.log
[REQUESTI.7] DEBUG 2017.08.17 13:25:03:006 conditions.RegexCondition - inNetwork='PSTN'
[REQUESTI.7] DEBUG 2017.08.17 13:25:03:006 conditions.RegexCondition - IN_NETWORK: PSTN
[REQUESTI.7] DEBUG 2017.08.17 13:25:03:006 conditions.AbstractRegexCondition -
pattern(^\QPSTN\E$), toMatch(PSTN) returning true
```

[REQUESTI.7] DEBUG 2017.08.17 13:25:03:006 triggers.ModuleTrigger - ModuleTrigger.eval() action<FromPSTN-RPolicy> actionParameter<>
[REQUESTI.7] DEBUG 2017.08.17 13:25:03:006 triggers.ModuleTrigger - ModuleTrigger.eval() got the policy, executing it ...

在上方範例中，我們看到網路是以PSTN相符的，這用在路由原則「FromPSTN-RPolicy」中。

路由跟蹤示例

13:29:13:453 08:17:2017 vCUSP,9.1.5,josmeado-CUSP,14.50.245.9,trace.log
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 nrs.XCLNRSShiftRoutes - Entering ShiftAlgorithms.execute()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 nrs.XCLNRSShiftRoutes - Leaving ShiftAlgorithms.execute()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 modules.XCLLookup - Entering execute()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 nrs.XCLPrefix - Entering getKeyValue()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 nrs.FieldSelector - **getToUri: To header obtained - To:**

[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 nrs.FieldSelector - **getUriPart: URI - sip:2003@14.50.245.9 part 1**
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 nrs.FieldSelector - Requested field 52
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 nrs.FieldSelector - **Returning key 2003**
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 nrs.XCLPrefix - Leaving getKeyValue()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 modules.XCLLookup - table=PSTN-RT, key=2003
[REQUESTI.7] INFO 2017.08.17 13:29:33:987 modules.XCLLookup - table is PSTN-RT
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 routingtables.RoutingTable - Entering lookup()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 routingtables.RoutingTable - **Looking up 2003 in table PSTN-RT with rule prefix and modifiers=none**
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 routingtables.RoutingTable - Entering applyModifiers()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:987 routingtables.RoutingTable - Leaving applyModifiers(), returning 2003
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 routingtables.RoutingTable - Leaving lookup()
[REQUESTI.7] INFO 2017.08.17 13:29:33:988 nrs.XCLPrefix - **NRS Routing decision is: RouteTable:PSTN-RT, RouteKey:2, RouteGroup:CUCM115_RG**
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 loadbalancer.LBFactory - Entering createLoadBalancer()
[REQUESTI.7] INFO 2017.08.17 13:29:33:988 loadbalancer.LBFactory - **lbtype is 3(call-id)**
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 loadbalancer.LBFactory - Leaving createLoadBalancer()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 nrs.XCLPrefix - **Stored NRSAlgResult=isFound=true, isFailure=false, Response=-1, Routes=[Ruri: 14.50.245.20:5065:udp, Route: null, Network: CUCM115, q-value=0.0radvance=[502, 503]], PolicyAdvance=null [REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 nrs.NRSAlgResult - set policyAdvance as specified in route=RouteTable:PSTN-RT, RouteKey:2, RouteGroup:CUCM115_RG**
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 nrs.NRSAlgResult - no policyAdvance specified in route
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 nrs.NRSAlgResult - set policyAdvance as specified in algorithm={lookuprule=1, lookupfield=52, lookuplenght=-1, lookuptable=PSTN-RT, sequence=100, algorithm=1}
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 nrs.NRSAlgResult - no policyAdvance specified in algorithm
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 modules.XCLLookup - Leaving execute()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 nrs.XCLNRSShiftRoutes - Entering ShiftRoutes.execute()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 loadbalancer.LBBase - Entering getServer()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 loadbalancer.LBBase - Entering initializeDomains()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 nrs.NRSRoutes - **routes before applying time policies:**

```
[Ruri: 14.50.245.20:5065:udp, Route: null, Network: CUCM115, q-value=0.0radvance=[502, 503]]
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 nrs.NRSRoutes -routes after applying time policies:
[Ruri: 14.50.245.20:5065:udp, Route: null, Network: CUCM115, q-value=0.0radvance=[502, 503]]
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 loadbalancer.LBBase - Leaving initializeDomains()
[REQUESTI.7] INFO  2017.08.17 13:29:33:988 loadbalancer.LBHashBased - list of elements in order
on which load balancing is done : Ruri: 14.50.245.20:5065:udp, Route: null, Network: CUCM115, q-
value=0.0radvance=[502, 503],
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 loadbalancer.LBBase - Server group route-sg selected
Ruri: 14.50.245.20:5065:udp, Route: null, Network: CUCM115, q-value=0.0radvance=[502, 503]
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 loadbalancer.LBBase - Leaving getServer()
[REQUESTI.7] DEBUG 2017.08.17 13:29:33:988 nrs.XCLNRSShiftRoutes - Leaving ShiftRoutes.execute()
```

1. **CUSP獲得TO：中的Key值標題**
2. **CUSP將金鑰標識為2003**
3. **CUSP在路由表中查詢金鑰**
4. **CUSP匹配路由表中的條目並標識目標RouteGroup:CUCM115_RG**
5. **CUSP在RouteGroup內應用負載均衡**
6. **CUSP標識它要向其傳送SIP消息的RouteGroup中的特定元素**
7. **CUSP應用時間策略（如果適用）**
8. **CUSP最終確定它將向其傳送SIP消息的元素**

SIP-Wire-Log跟蹤示例

```
13:48:26:669 08:17:2017 vCUSP,9.1.5,josmeado-CUSP,14.50.245.9,trace.log
[DsTransportListener-2] DEBUG 2017.08.17 13:48:52:221 DsSipLlApi.Wire - Received UDP packet on
14.50.245.9:5060 ,source 14.50.245.6:50683
INVITE sip:2003@14.50.245.9:5060 SIP/2.0
Via: SIP/2.0/UDP 14.50.245.6:5060;branch=z9hG4bK2A5763
Remote-Party-ID: <sip:1001@14.50.245.6>;party=calling;screen=no;privacy=off
From: <sip:1001@14.50.245.6>;tag=4E329FEC-A9F
To: <sip:2003@14.50.245.9>
Date: Thu, 17 Aug 2017 13:48:52 GMT
Call-ID: 2A7BE22B-82AB11E7-83AEAE0B-F940DC75@14.50.245.6
Supported: 100rel,timer,resource-priority,replaces,sdp-anat
Min-SE:  1800
Cisco-Guid: 0350227076-2191790567-2162465606-1670485135
User-Agent: Cisco-SIPGateway/IOS-15.5.3.S4b
Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY, INFO,
REGISTER
CSeq: 101 INVITE
Timestamp: 1502992132
Contact: <sip:1001@14.50.245.6:5060>
Expires: 180
Allow-Events: telephone-event
Max-Forwards: 69
Content-Type: application/sdp
Content-Disposition: session;handling=required
Content-Length: 266

v=0
o=CiscoSystemsSIP-GW-UserAgent 7317 4642 IN IP4 14.50.245.6
s=SIP Call
```

```
c=IN IP4 14.50.245.6
t=0 0
m=audio 8266 RTP/AVP 18 127
c=IN IP4 14.50.245.6
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
a=rtpmap:127 telephone-event/8000
a=fmtp:127 0-16
a=ptime:20

--- end of packet ---

[REQUESTI.7] DEBUG 2017.08.17 13:48:52:223 DsSipLlApi.Wire - Sending UDP packet on
14.50.245.9:32789, destination 14.50.245.6:5060
SIP/2.0 100 Trying
Via: SIP/2.0/UDP 14.50.245.6:5060;branch=z9hG4bK2A5763
To: <sip:2003@14.50.245.9>
From: <sip:1001@14.50.245.6>;tag=4E329FEC-A9F
Call-ID: 2A7BE22B-82AB11E7-83AEAE0B-F940DC75@14.50.245.6
CSeq: 101 INVITE
Timestamp: 1502992132
Content-Length: 0


[REQUESTI.7] DEBUG 2017.08.17 13:48:52:225 DsSipLlApi.Wire - Sending UDP packet on
14.50.245.9:32790, destination 14.50.245.20:5065
INVITE sip:2003@14.50.245.20:5065;transport=udp SIP/2.0
Via: SIP/2.0/UDP 14.50.245.9:5065;branch=z9hG4bKM3X51yKL9BEW5v0Kudc5Dw~~128
Via: SIP/2.0/UDP 14.50.245.6:5060;branch=z9hG4bK2A5763
Max-Forwards: 68
To: <sip:2003@14.50.245.9>
From: <sip:1001@14.50.245.6>;tag=4E329FEC-A9F
Contact: <sip:1001@14.50.245.6:5060>
Expires: 180
Remote-Party-ID: <sip:1001@14.50.245.6>;party=calling;screen=no;privacy=off
Call-ID: 2A7BE22B-82AB11E7-83AEAE0B-F940DC75@14.50.245.6
CSeq: 101 INVITE
Content-Length: 266
Date: Thu, 17 Aug 2017 13:48:52 GMT
Supported: 100rel,timer,resource-priority,replaces,sdp-anat
Min-SE: 1800
Cisco-Guid: 0350227076-2191790567-2162465606-1670485135
User-Agent: Cisco-SIPGateway/IOS-15.5.3.S4b
Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY, INFO,
REGISTER
Timestamp: 1502992132
Allow-Events: telephone-event
Content-Type: application/sdp
Content-Disposition: session;handling=required

v=0
o=CiscoSystemsSIP-GW-UserAgent 7317 4642 IN IP4 14.50.245.6
s=SIP Call
c=IN IP4 14.50.245.6
t=0 0
m=audio 8266 RTP/AVP 18 127
c=IN IP4 14.50.245.6
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
a=rtpmap:127 telephone-event/8000
a=fmtp:127 0-16
a=ptime:20

[DsTransportListener-3] DEBUG 2017.08.17 13:48:52:229 DsSipLlApi.Wire - Received UDP packet on
```

```
14.50.245.9:5065 ,source 14.50.245.20:5065
SIP/2.0 100 Trying
Via: SIP/2.0/UDP 14.50.245.9:5065;branch=z9hG4bKM3X51yKL9BEW5v0Kudc5Dw~~128,SIP/2.0/UDP
14.50.245.6:5060;branch=z9hG4bK2A5763
From: <sip:1001@14.50.245.6>;tag=4E329FEC-A9F
To: <sip:2003@14.50.245.9>
Date: Thu, 17 Aug 2017 17:48:52 GMT
Call-ID: 2A7BE22B-82AB11E7-83AEAE0B-F940DC75@14.50.245.6
CSeq: 101 INVITE
Allow-Events: presence
Content-Length: 0


--- end of packet ---

[DsTransportListener-3] DEBUG 2017.08.17 13:48:52:284 DsSipLlApi.Wire - Received UDP packet on
14.50.245.9:5065 ,source 14.50.245.20:5065
SIP/2.0 180 Ringing
Via: SIP/2.0/UDP 14.50.245.9:5065;branch=z9hG4bKM3X51yKL9BEW5v0Kudc5Dw~~128,SIP/2.0/UDP
14.50.245.6:5060;branch=z9hG4bK2A5763
From: <sip:1001@14.50.245.6>;tag=4E329FEC-A9F
To: <sip:2003@14.50.245.9>;tag=93896~37db7c49-96d4-4c4c-a223-626b2c74c16a-16919968
Date: Thu, 17 Aug 2017 17:48:52 GMT
Call-ID: 2A7BE22B-82AB11E7-83AEAE0B-F940DC75@14.50.245.6
CSeq: 101 INVITE
Allow: INVITE, OPTIONS, INFO, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY
Allow-Events: presence
Server: Cisco-CUCM11.5
Call-Info: <urn:x-cisco-remotecc:callinfo>;x-cisco-video-traffic-class=DESKTOP
Supported: X-cisco-srtp-fallback
Supported: Geolocation
Session-ID: 1e6e772300105000a00084b517ae1a83;remote=c07cdfa83b8f7c373757cf842ab93896
P-Asserted-Identity: "Alerting JM1 - 2003" <sip:2003@14.50.245.20>
Remote-Party-ID: "Alerting JM1 - 2003"
<sip:2003@14.50.245.20>;party=called;screen=yes;privacy=off
Contact: <sip:2003@14.50.245.20:5065>;+u.sip!devicename.ccm.cisco.com="SEP84B517AE1A83"
Content-Length: 0


--- end of packet ---

[CT_CALLBACK.15] DEBUG 2017.08.17 13:48:52:285 DsSipLlApi.Wire - Sending UDP packet on
14.50.245.9:32789, destination 14.50.245.6:5060
SIP/2.0 180 Ringing
Via: SIP/2.0/UDP 14.50.245.6:5060;branch=z9hG4bK2A5763
To: <sip:2003@14.50.245.9>;tag=93896~37db7c49-96d4-4c4c-a223-626b2c74c16a-16919968
From: <sip:1001@14.50.245.6>;tag=4E329FEC-A9F
Contact: <sip:2003@14.50.245.20:5065>;+u.sip!devicename.ccm.cisco.com="SEP84B517AE1A83"
Remote-Party-ID: "Alerting JM1 - 2003"
<sip:2003@14.50.245.20>;party=called;screen=yes;privacy=off
Call-ID: 2A7BE22B-82AB11E7-83AEAE0B-F940DC75@14.50.245.6
CSeq: 101 INVITE
Content-Length: 0
Date: Thu, 17 Aug 2017 17:48:52 GMT
Allow: INVITE, OPTIONS, INFO, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY
Allow-Events: presence
Server: Cisco-CUCM11.5
Call-Info: <urn:x-cisco-remotecc:callinfo>;x-cisco-video-traffic-class=DESKTOP
Supported: X-cisco-srtp-fallback
Supported: Geolocation
Session-ID: 1e6e772300105000a00084b517ae1a83;remote=c07cdfa83b8f7c373757cf842ab93896
P-Asserted-Identity: "Alerting JM1 - 2003" <sip:2003@14.50.245.20>
```

```
[DsTransportListener-3] DEBUG 2017.08.17 13:48:54:292 DsSipLlApi.Wire - Received UDP packet on
14.50.245.9:5065 ,source 14.50.245.20:5065
SIP/2.0 200 OK
Via: SIP/2.0/UDP 14.50.245.9:5065;branch=z9hG4bKM3X51yKL9BEW5v0Kudc5Dw~~128,SIP/2.0/UDP
14.50.245.6:5060;branch=z9hG4bK2A5763
From: <sip:1001@14.50.245.6>;tag=4E329FEC-A9F
To: <sip:2003@14.50.245.9>;tag=93896~37db7c49-96d4-4c4c-a223-626b2c74c16a-16919968
Date: Thu, 17 Aug 2017 17:48:52 GMT
Call-ID: 2A7BE22B-82AB11E7-83AEAE0B-F940DC75@14.50.245.6
CSeq: 101 INVITE
Allow: INVITE, OPTIONS, INFO, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY
Allow-Events: presence, kpml
Supported: replaces
Server: Cisco-CUCM11.5
Call-Info: <urn:x-cisco-remotecc:callinfo>;x-cisco-video-traffic-class=DESKTOP
Supported: X-cisco-srtp-fallback
Supported: Geolocation
Session-Expires:  1800;refresher=uas
Require:  timer
Session-ID: 1e6e772300105000a00084b517ae1a83;remote=c07cdfa83b8f7c373757cf842ab93896
P-Asserted-Identity: "CLID JM1 - 2003" <sip:2003@14.50.245.20>
Remote-Party-ID: "CLID JM1 - 2003" <sip:2003@14.50.245.20>;party=called;screen=yes;privacy=off
Contact: <sip:2003@14.50.245.20:5065>;+u.sip!devicename.ccm.cisco.com="SEP84B517AE1A83"
Content-Type: application/sdp
Content-Length: 258

v=0
o=CiscoSystemsCCM-SIP 93896 1 IN IP4 14.50.245.20
s=SIP Call
c=IN IP4 14.50.245.254
b=TIAS:8000
b=AS:8
t=0 0
m=audio 16502 RTP/AVP 18 101
a=ptime:20
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-15

--- end of packet ---

[CT_CALLBACK.15] DEBUG 2017.08.17 13:48:54:293 DsSipLlApi.Wire - Sending UDP packet on
14.50.245.9:32789, destination 14.50.245.6:5060
SIP/2.0 200 OK
Via: SIP/2.0/UDP 14.50.245.6:5060;branch=z9hG4bK2A5763
To: <sip:2003@14.50.245.9>;tag=93896~37db7c49-96d4-4c4c-a223-626b2c74c16a-16919968
From: <sip:1001@14.50.245.6>;tag=4E329FEC-A9F
Contact: <sip:2003@14.50.245.20:5065>;+u.sip!devicename.ccm.cisco.com="SEP84B517AE1A83"
Require: timer
Remote-Party-ID: "CLID JM1 - 2003" <sip:2003@14.50.245.20>;party=called;screen=yes;privacy=off
Call-ID: 2A7BE22B-82AB11E7-83AEAE0B-F940DC75@14.50.245.6
CSeq: 101 INVITE
Content-Length: 258
Date: Thu, 17 Aug 2017 17:48:52 GMT
Allow: INVITE, OPTIONS, INFO, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY
Allow-Events: presence, kpml
Supported: replaces
Supported: X-cisco-srtp-fallback
Supported: Geolocation
Server: Cisco-CUCM11.5
Call-Info: <urn:x-cisco-remotecc:callinfo>;x-cisco-video-traffic-class=DESKTOP
Session-Expires: 1800;refresher=uas
Session-ID: 1e6e772300105000a00084b517ae1a83;remote=c07cdfa83b8f7c373757cf842ab93896
```

```
P-Asserted-Identity: "CLID JM1 - 2003" <sip:2003@14.50.245.20>
Content-Type: application/sdp

v=0
o=CiscoSystemsCCM-SIP 93896 1 IN IP4 14.50.245.20
s=SIP Call
c=IN IP4 14.50.245.254
b=TIAS:8000
b=AS:8
t=0 0
m=audio 16502 RTP/AVP 18 101
a=ptime:20
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-15
```

SIP-Wire-Log顯示通常的SIP消息，最大為200 Okay，對於兩個呼叫段。

架構參考