CUSP نيوكت لاثم

المحتويات

المقدمة

يصف هذا المستند نموذج تكوين CLI و GUI ل CUSP) Cisco Unified SIP Proxy) مع تصحيح الأخطاء التي تطابق أربعة سيناريوهات مختلفة لتوجيه المكالمات.

المتطلبات الأساسية

المتطلبات

توصي Cisco بأن تكون لديك معرفة أساسية بالمواضيع التالية:

- بروتوكول بدء جلسة عمل (SIP)
- وكيل SIP الموحد من CUSP) Cisco)

المكونات المستخدمة

تستند المعلومات الواردة في هذا المستند إلى CUSP.

تم إنشاء المعلومات الواردة في هذا المستند من الأجهزة الموجودة في بيئة معملية خاصة. بدأت جميع الأجهزة المُستخدمة في هذا المستند بتكوين ممسوح (افتراضي). إذا كانت شبكتك مباشرة، فتأكد من فهمك للتأثير المحتمل لأي أمر.

التكوين

يصف هذا القسم تكوين أربعة سيناريوهات لتوجيه المكالمات.

ملاحظة: أستخدم أداة بحث الأوامر (للعملاء المسجلين فقط) للحصول على مزيد من المعلومات حول الأوامر المستخدمة في هذا القسم.

السيناريو 1

تدفق المكالمات: **هاتف بروتوكول الإنترنت 1 — CUCM — SIP — SIP — CME — هاتف بروتوكول الإنترنت IP Phone 2**

اطلب 408 202 2102 من هاتف IP 1 المسجل إلى CallManager Express (CME) للوصول إلى هاتف IP 2 المسجل إلى Cisco Unified Communications Manager (CUCM) عبر CUSP.

يعمل CME كشبكة هاتف محولة عامة (PSTN) في هذا السيناريو.

1. تأتي دعوة SIP للتخفيف من CME.

```
- DsTransportListener-2] DEBUG 2013.02.27 19:15:59:245 DsSipLlApi.Wire]
Received UDP packet on 14.128.100.169:5060 ,source 14.128.100.150:57878
                    INVITE sip:4082022102@14.128.100.169:5060 SIP/2.0
               Via: SIP/2.0/UDP 14.128.100.150:5060;branch=z9hG4bK21F2555
          ;<Remote-Party-ID: "4082025555" <sip:4082025555@14.128.100.150
                                  party=calling;screen=yes;privacy=off
    From: "4082025555" <sip:4082025555@14.128.100.150>;tag=81D7430C-1D2
                                   <To: <sip:4082022102@14.128.100.169
                                   Date: Wed, 27 Feb 2013 19:15:59 GMT
             Call-ID: F3E5F396-804811E2-9818EC62-1B7185EE@14.128.100.150
             Supported: 100rel,timer,resource-priority,replaces,sdp-anat
                                                        Min-SE: 1800
                 Cisco-Guid: 4091813662-2152206818-2551376994-0460424686
                                  User-Agent: Cisco-SIPGateway/IOS-12.x
      ,Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER
                                      SUBSCRIBE, NOTIFY, INFO, REGISTER
                                                  CSeq: 101 INVITE
                                               Timestamp: 1361992559
                        <Contact: <sip:4082025555@14.128.100.150:5060
                                                       Expires: 180
                                    Allow-Events: telephone-event
                                               Max-Forwards: 69
                                    Content-Type: application/sdp
                  Content-Disposition: session;handling=required
                                               Content-Length: 410

                                                              v=0
        o=CiscoSystemsSIP-GW-UserAgent 1007 629 IN IP4 14.128.100.150
                                                       s=SIP Call
                                            c=IN IP4 14.128.100.150
                                                          t=0 0
                                     m=audio 16930 RTP/AVP 18 101
                                          c=IN IP4 14.128.100.150
                                            a=rtpmap:18 G729/8000
                                              a=fmtp:18 annexb=no
                                a=rtpmap:101 telephone-event/8000
                                              a=fmtp:101 0-16
```

```
m=video 17954 RTP/AVP 97
c=IN IP4 14.128.100.150
b=TIAS:1000000
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=42801E;packetization-mode=0

--- end of packet ---
```

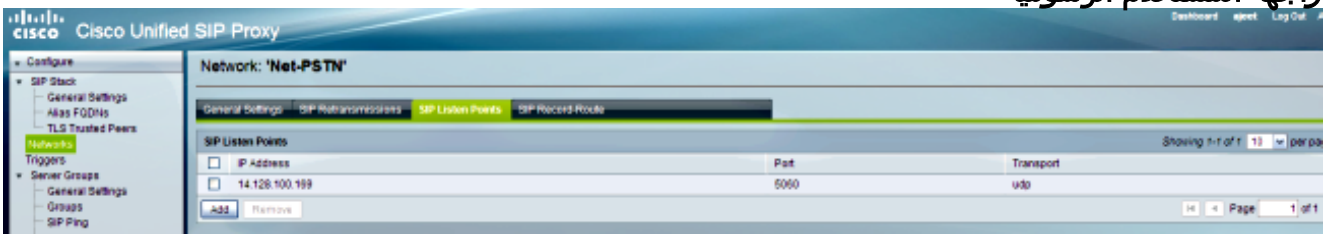
2. يتم قبول الاستدعاء لتكوين الشبكة (Net-PSTN) المتطابق.

CLI

```
sip listen Net-PSTN udp 14.128.100.169 5060

!
sip network Net-PSTN standard
no non-invite-provisional
allow-connections
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
udp max-datagram-size 1500
end network
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

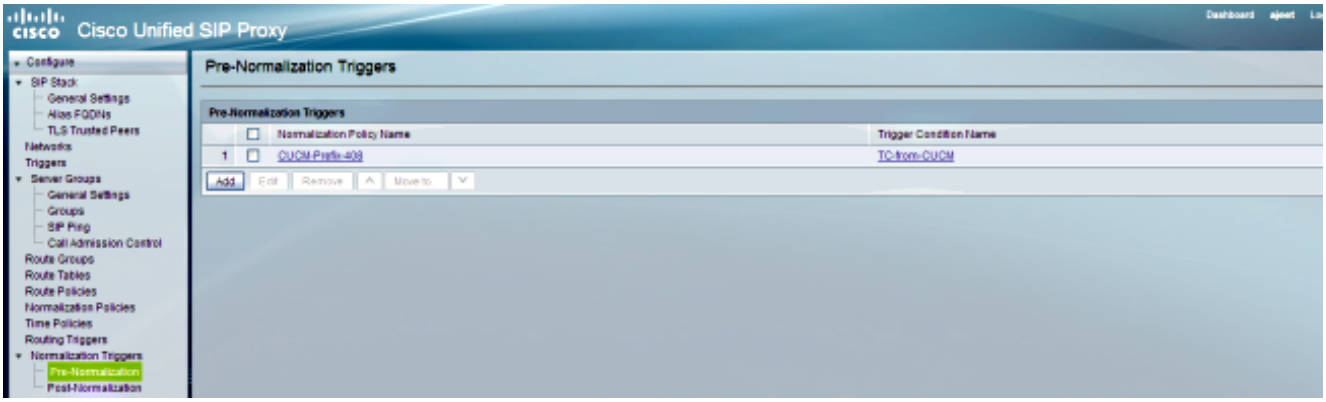
```
REQUESTI.12] DEBUG 2013.02.27 19:15:59:250]
'conditions.RegexCondition - inNetwork='Net-PSTN
REQUESTI.12] DEBUG 2013.02.27 19:15:59:250]
conditions.RegexCondition - IN_NETWORK: Net-PSTN
```

3. يتم تنفيذ تسلسل ما قبل التطبيع.

CLI

```
trigger pre-normalization sequence 1 policy CUCM-Prefix-408
condition TC-from-CUCM
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

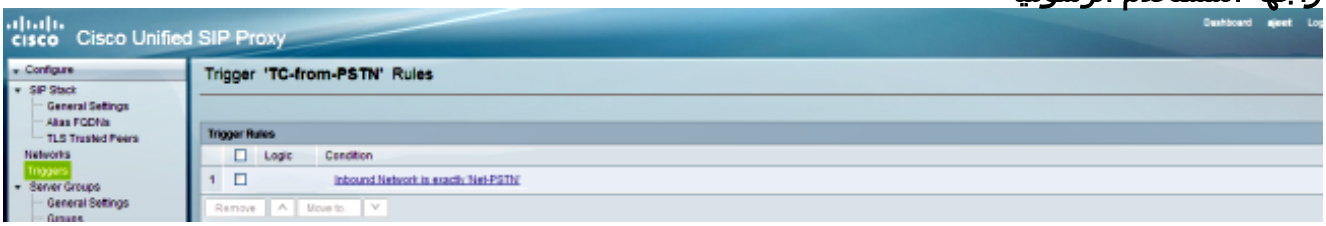
```
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 util.Normalization]
                    (Entering Normalization(moduleRequest:pre-normalize
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.RegexCondition]
                                                    'inNetwork='Net-PSTN
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.RegexCondition]
                                                    IN_NETWORK: Net-PSTN
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.AbstractRegexCondition]
                    pattern(^\QNet-CUCM\E$), toMatch(Net-PSTN) returning false
- REQUESTI.12] INFO 2013.02.27 19:15:59:250 util.Normalization]
    skipping pre-normalize, due to either no trigger is configured or triggers
                    did not evaluate to true or is configured to by-pass
```

4. تمت مطابقة شرط المشغل (TC-from-PSTN).

CLI

```
                                                    !
                                    trigger condition TC-from-PSTN
                                                    sequence 1
                                        $in-network ^\QNet-PSTN\E
                                                    end sequence
                                        end trigger condition
                                                    !
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

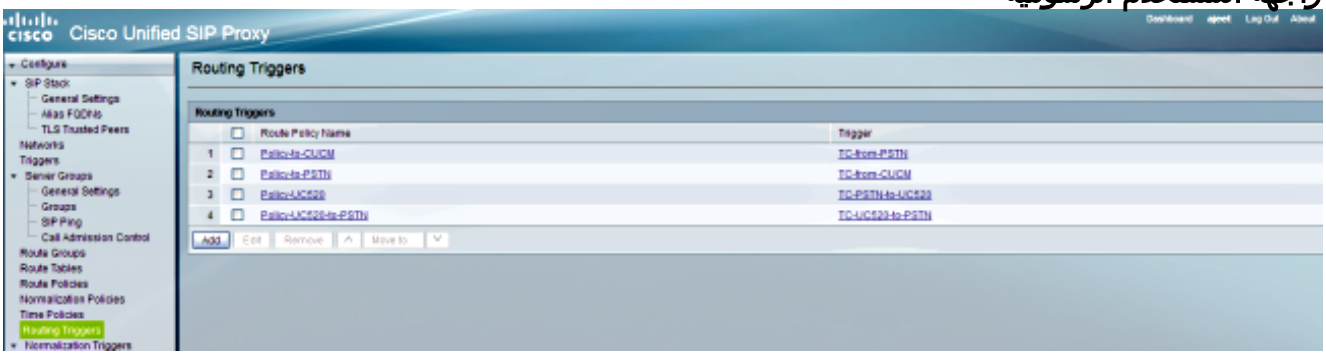
```
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.RegexCondition]
                                                    'inNetwork='Net-PSTN
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.RegexCondition]
                                                    IN_NETWORK: Net-PSTN
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.AbstractRegexCondition]
                    pattern(^\QNet-PSTN\E$), toMatch(Net-PSTN) returning true
```

5. يتم التحقق من تكوين مشغل التوجيه للعثور على سياسة المسار (سياسة إلى CUCM) التي تطابق استنادا إلى شرط المشغل (TC-from-PSTN).

CLI

```
trigger routing sequence 1 policy Policy-to-CUCM condition TC-from-PSTN
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

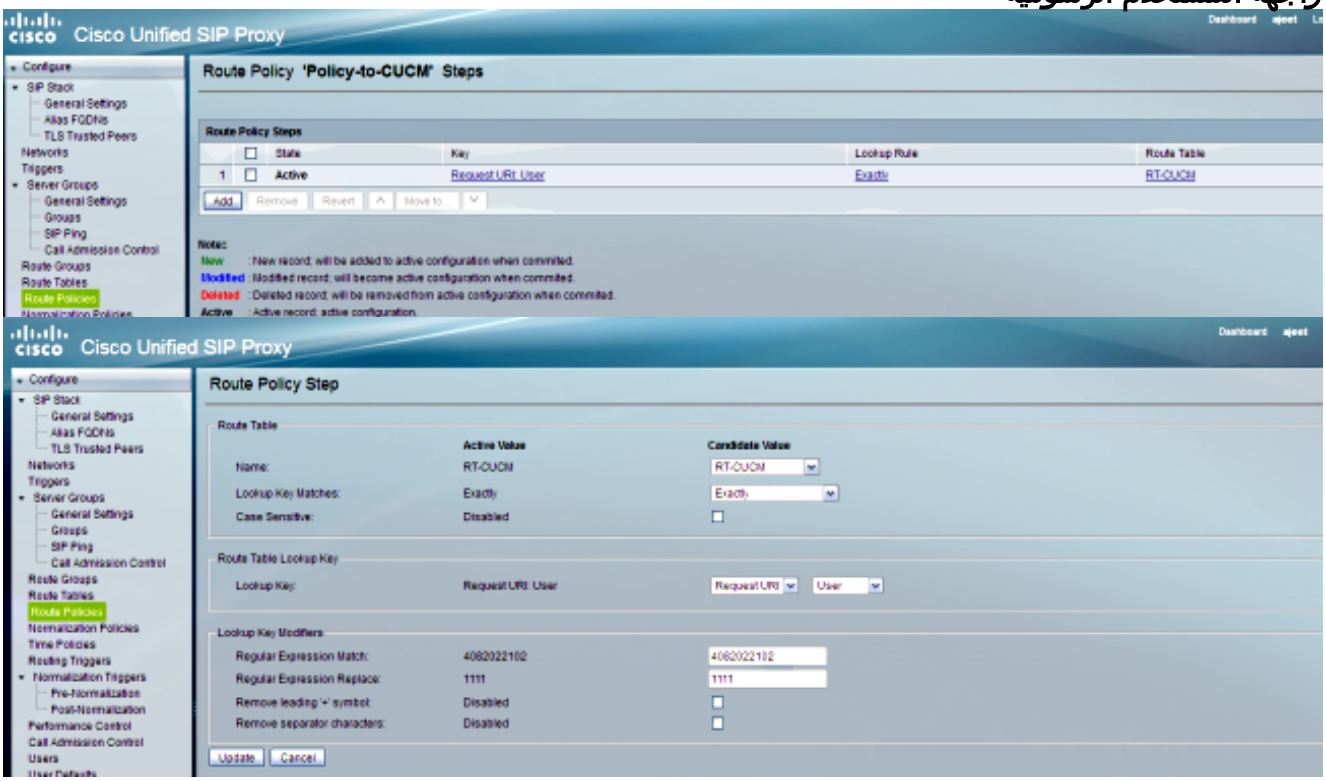
```
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 triggers.ModuleTrigger]
      <>ModuleTrigger.eval() action<Policy-to-CUCM> actionParameter
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 triggers.ModuleTrigger]
... ModuleTrigger.eval() got the policy, executing it
```

6. يتم التحقق من تكوين سياسة المسار (policy-to-CUCM) للعثور على جدول المسار (RT-CUCM) الذي يتطابق.

CLI

```
!
policy lookup Policy-to-CUCM
sequence 100 RT-CUCM request-uri uri-component user
modify-key 4082022102 1111
rule exact
end sequence
end policy
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

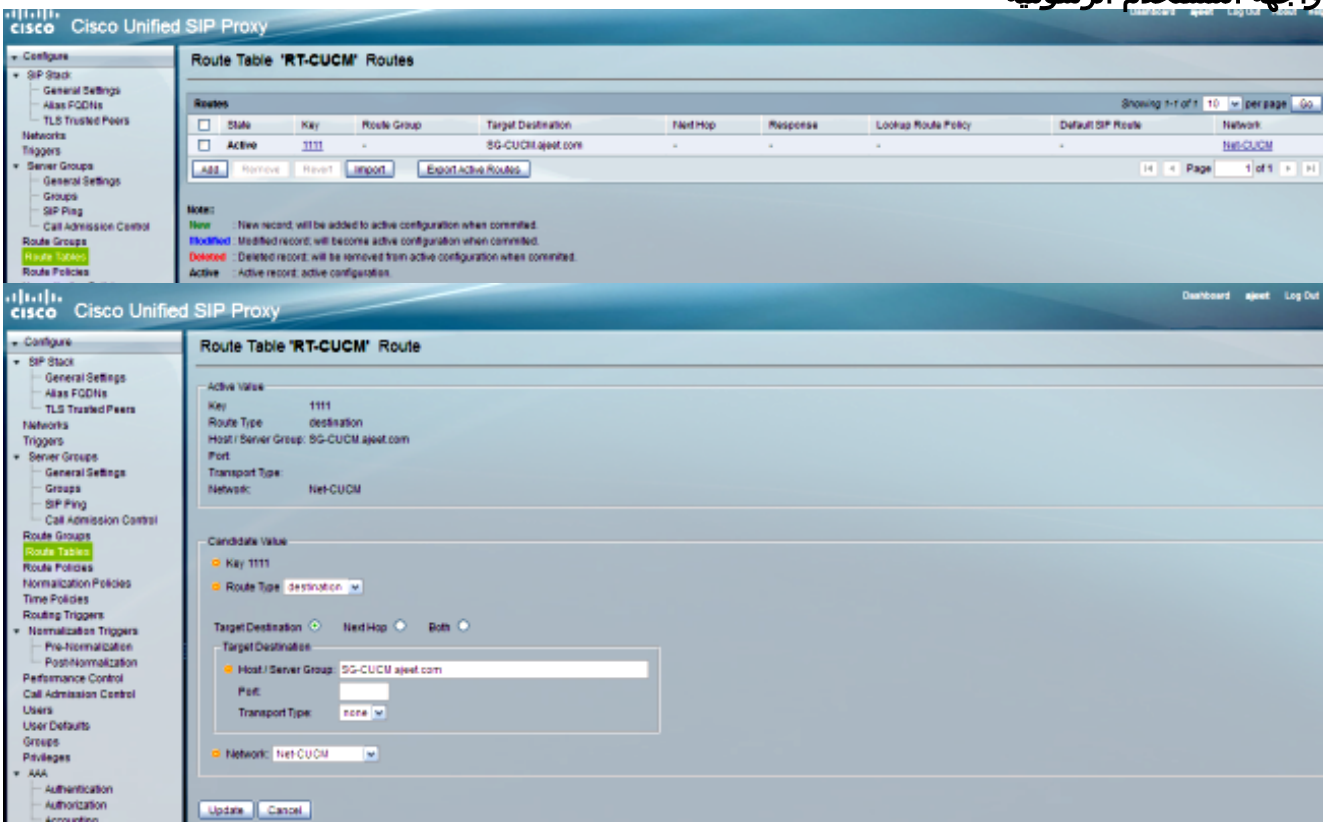
```
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 nrs.XCLPrefix]
                                                ()Entering getKeyValue
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 nrs.FieldSelector]
   getUriPart: URI - sip:4082022102@14.128.100.169:5060 part 6
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 nrs.FieldSelector]
                                                Requested field 45
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 nrs.FieldSelector]
                                              Returning key 4082022102
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 nrs.FieldSelector]
  =Retrieved Modifier RegexModifier: match= 4082022102, replace
                                              ignore case= false ,1111
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 nrs.FieldSelector]
                                               Input field: 4082022102
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 nrs.FieldSelector]
                                                Modified field: 1111
   - REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 nrs.XCLPrefix]
                                                ()Leaving getKeyValue
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 modules.XCLLookup]
                                               table=RT-CUCM, key=1111
 - REQUESTI.12] INFO 2013.02.27 19:15:59:252 modules.XCLLookup]
                                                table is RT-CUCM
```

7. يتم التحقق من تكوين جدول المسار (RT-CUCM) للعثور على الوجهة الهدف (SG-CUCM.ajeet.com).

CLI

```
!
route table RT-CUCM
key 1111 target-destination SG-CUCM.ajeet.com Net-CUCM
end route table
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 routingtables.RoutingTable]
                                                          ()Entering lookup
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 routingtables.RoutingTable]
    Looking up 1111 in table RT-CUCM with rule exact and modifiers=none
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 routingtables.RoutingTable]
                                                   ()Entering applyModifiers
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 routingtables.RoutingTable]
                                    Leaving applyModifiers(), returning 1111
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 routingtables.RoutingTable]
                                                          ()Leaving lookup
                - REQUESTI.12] INFO 2013.02.27 19:15:59:252 nrs.XCLPrefix]
                ,NRS Routing decision is: RouteTable:RT-CUCM, RouteKey:1111
                     TargetDestination:SG-CUCM.ajeet.com, Network:Net-CUCM
          - REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 loadbalancer.LBFactory]
                                                   ()Entering createLoadBalancer
           - REQUESTI.12] INFO 2013.02.27 19:15:59:252 loadbalancer.LBFactory]
                                                          (lbtype is 3(call-id
          - REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 loadbalancer.LBFactory]
                                                   ()Leaving createLoadBalancer
                - REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 nrs.XCLPrefix]
             ,Stored NRSAlgResult=isFound=true, isFailure=false, Response=-1
            ,Routes=[Ruri: SG-CUCM.ajeet.com, Route: null, Network: Net-CUCM
                        q-value=1.0radvance=[502, 503]], PolicyAdvance=null
             - REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 nrs.NRSAlgResult]
,set policyAdvance as specified in route=RouteTable:RT-CUCM, RouteKey:1111
                     TargetDestination:SG-CUCM.ajeet.com, Network:Net-CUCM
             - REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 nrs.NRSAlgResult]
                                          no policyAdvance specified in route
             - REQUESTI.12] DEBUG 2013.02.27 19:15:59:253 nrs.NRSAlgResult]
           =set policyAdvance as specified in algorithm={lookupkeymodifier
,[RegexModifier: match= 4082022102, replace= 1111, ignore case= false ]
    ,lookuprule=0, lookupfield=45, lookuplenght=-1, lookuptable=RT-CUCM
                                                {sequence=100, algorithm=1
             - REQUESTI.12] DEBUG 2013.02.27 19:15:59:253 nrs.NRSAlgResult]
                                          no policyAdvance specified in algorithm
```

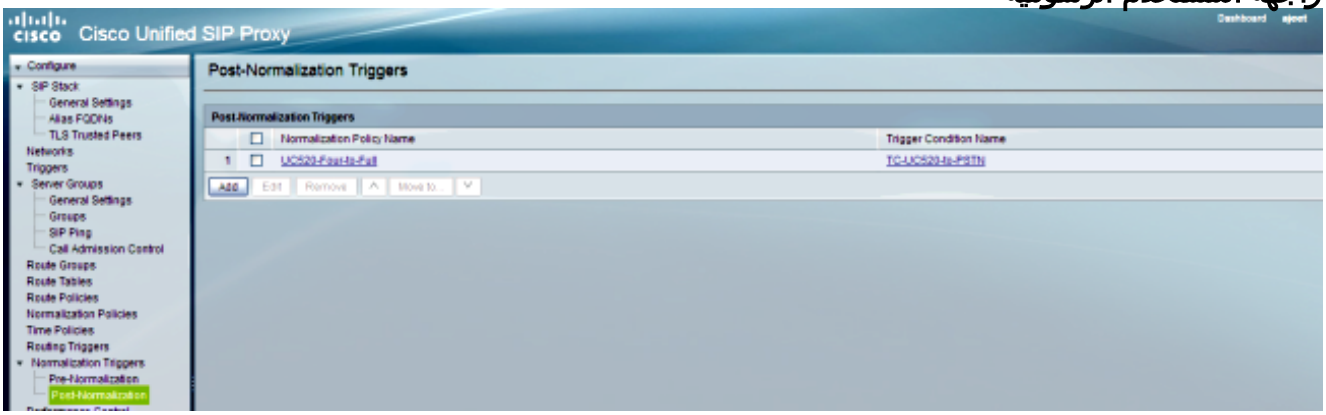
8. يتم تنفيذ تسلسل ما بعد التطبيع.

ملاحظة: لا يستخدم هذا السيناريو ما بعد التطبيع، وهو ما يفسر تخطي ما بعد التطبيع في تصحيح الأخطاء.

CLI

```
trigger post-normalization sequence 1 policy
UC520-Four-to-Full condition TC-UC520-to-PSTN
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 util.Normalization]
                (Entering Normalization(moduleRequest:post-normalize
```

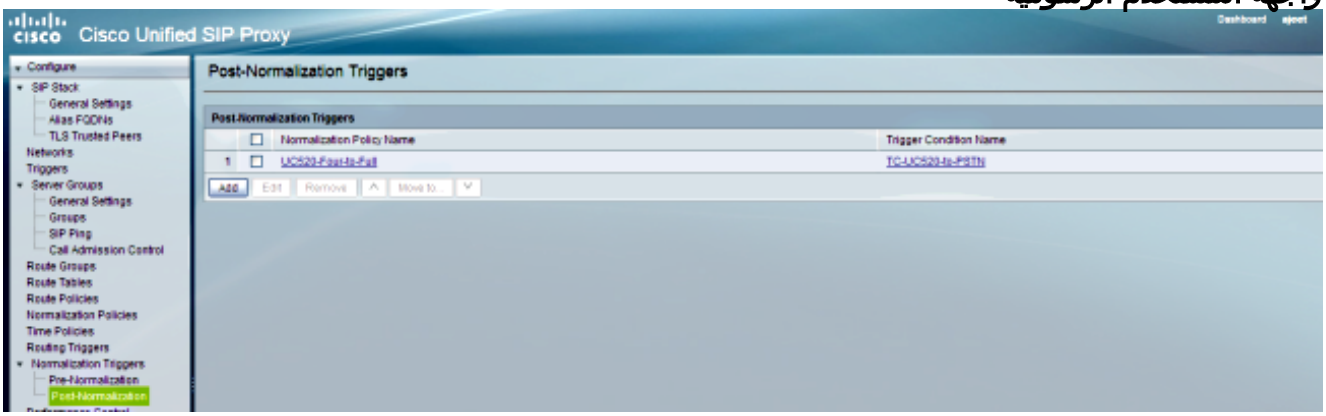
```
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 conditions.RegexCondition]
                                                                'inNetwork='Net-PSTN
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 conditions.RegexCondition]
                                                            IN_NETWORK: Net-PSTN
- REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 conditions.AbstractRegexCondition]
                        pattern(^\QNet-From-UC520\E$), toMatch(Net-PSTN) returning false
                         - REQUESTI.12] INFO 2013.02.27 19:15:59:254 util.Normalization]
                    skipping post-normalize, due to either no trigger is configured or triggers
                                        did not evaluate to true or is configured to by-pass
```

9. يتم التحقق من تكوين مجموعة الخوادم للعثور على عنوان IP للعنصر، ويتم توجيه الاستدعاء إلى أفضل مسار ممكن استنادا إلى تكوين القيمة Q والوزن.

CLI

```
                                                                        !
                                                  server-group sip group SG-CUCM.ajeet.com Net-CUCM
                                     element ip-address 14.128.64.191 5060 udp q-value 1 weight 50
                                  element ip-address 14.128.64.192 5060 udp q-value 1.0 weight 100
                                                                failover-resp-codes 503
                                                                        lbtype global
                                                                                ping
                                                                    end server-group
                                                                                !
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
                                - REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 loadbalancer.LBFactory]
                                                                        ()Entering createLoadBalancer
                                 - REQUESTI.12] INFO 2013.02.27 19:15:59:254 loadbalancer.LBFactory]
                                                                            (lbtype is 0(global
                                 - REQUESTI.12] INFO 2013.02.27 19:15:59:254 loadbalancer.LBFactory]
                                                                        (Default lbtype is 3(call-id
                                - REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 loadbalancer.LBFactory]
                                                                        ()Leaving createLoadBalancer
                                   - REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 loadbalancer.LBBase]
                                                                            ()Entering getServer
                                   - REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 loadbalancer.LBBase]
                                                                        ()Entering initializeDomains
                                          .REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 servergroups]
                                           ServerGlobalStateWrapper - Net-CUCM:14.128.64.191:5060:1
                                                                numTries=2--->isServerAvailable(): true
                                          .REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 servergroups]
                                           ServerGlobalStateWrapper - Net-CUCM:14.128.64.192:5060:1
                                                                numTries=2--->isServerAvailable(): true
                        - REQUESTI.12] DEBUG 2013.02.27 19:15:59:255 servergroups.AbstractNextHop]
                                                                        ()Entering compareDomainNames
                        - REQUESTI.12] DEBUG 2013.02.27 19:15:59:255 servergroups.AbstractNextHop]
```

```
                                                    ()Leaving compareDomainNames
              - REQUESTI.12] DEBUG 2013.02.27 19:15:59:255 loadbalancer.LBBase]
                                                    ()Leaving initializeDomains
         - REQUESTI.12] INFO 2013.02.27 19:15:59:255 loadbalancer.LBHashBased]
                  : list of elements in order on which load balancing is done
                  ,reSgElementWeight=50, reSgElementSgName=SG-CUCM.ajeet.com}
      ,reSgElementTransport=UDP, reSgElementQValue=1.0, reSgElementPort=5060
    =reSgElementHost=14.128.64.191}, {reSgElementWeight=100, reSgElementSgName
        ,SG-CUCM.ajeet.com, reSgElementTransport=UDP, reSgElementQValue=1.0
                      ,{reSgElementPort=5060, reSgElementHost=14.128.64.192
         - REQUESTI.12] INFO 2013.02.27 19:15:59:255 loadbalancer.LBHashBased]
               Hashing on F3E5F396-804811E2-9818EC62-1B7185EE@14.128.100.150
    - REQUESTI.12] DEBUG 2013.02.27 19:15:59:255 loadbalancer.DsHashAlgorithm]
                                                    ()Entering selectIndex
    - REQUESTI.12] DEBUG 2013.02.27 19:15:59:255 loadbalancer.DsHashAlgorithm]
                                                    ()Leaving selectIndex
         - REQUESTI.12] INFO 2013.02.27 19:15:59:255 loadbalancer.LBHashBased]
                                                        Index selected 0
    - REQUESTI.12] DEBUG 2013.02.27 19:15:59:255 servergroups.AbstractNextHop]
                                                    ()Entering compareDomainNames
    - REQUESTI.12] DEBUG 2013.02.27 19:15:59:255 servergroups.AbstractNextHop]
                                                    ()Leaving compareDomainNames
              - REQUESTI.12] DEBUG 2013.02.27 19:15:59:255 loadbalancer.LBBase]
                 ,Server group SG-CUCM.ajeet.com selected {reSgElementWeight=50
                 ,reSgElementSgName=SG-CUCM.ajeet.com, reSgElementTransport=UDP
    {reSgElementQValue=1.0, reSgElementPort=5060, reSgElementHost=14.128.64.191
              - REQUESTI.12] DEBUG 2013.02.27 19:15:59:255 loadbalancer.LBBase]
                                                    ()Leaving getServer
```

10. يتم إرسال دعوة SIP إلى العنصر المحدد.

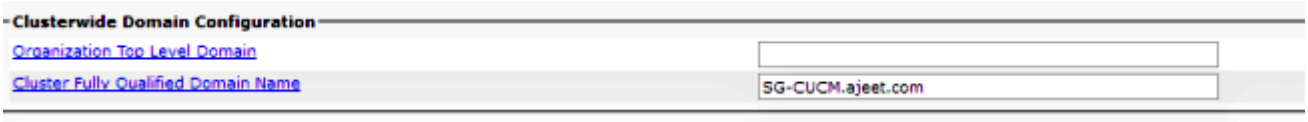
```
                - REQUESTI.12] DEBUG 2013.02.27 19:15:59:256 DsSipLlApi.Wire]
    Sending UDP packet on 14.128.100.169:32771, destination 14.128.64.191:5060
                                    INVITE sip:4082022102@SG-CUCM.ajeet.com SIP/2.0
Via: SIP/2.0/UDP 14.128.100.169:5061;branch=z9hG4bK.ToYJFeKMyfZGySv.gcLjg~~231
                     Via: SIP/2.0/UDP 14.128.100.150:5060;branch=z9hG4bK21F2555
                                                        Max-Forwards: 68
                                                <To: <sip:4082022102@14.128.100.169
           From: "4082025555" <sip:4082025555@14.128.100.150>;tag=81D7430C-1D2
                                    <Contact: <sip:4082025555@14.128.100.150:5060
                                                            Expires: 180
                   Remote-Party-ID: "4082025555" <sip:4082025555@14.128.100.150
                                        party=calling;screen=yes;privacy=off;<
                    Call-ID: F3E5F396-804811E2-9818EC62-1B7185EE@14.128.100.150
                                                        CSeq: 101 INVITE
                                                    Content-Length: 410
                                            Date: Wed, 27 Feb 2013 19:15:59 GMT
                    Supported: 100rel,timer,resource-priority,replaces,sdp-anat
                                                            Min-SE: 1800
                        Cisco-Guid: 4091813662-2152206818-2551376994-0460424686
                                            User-Agent: Cisco-SIPGateway/IOS-12.x
                ,Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER
                                            SUBSCRIBE, NOTIFY, INFO, REGISTER
                                                    Timestamp: 1361992559
                                                Allow-Events: telephone-event
                                                Content-Type: application/sdp
                                    Content-Disposition: session;handling=required

                                                                    v=0
                      o=CiscoSystemsSIP-GW-UserAgent 1007 629 IN IP4 14.128.100.150
                                                                s=SIP Call
                                                    c=IN IP4 14.128.100.150
                                                                    t=0 0
                                                m=audio 16930 RTP/AVP 18 101
```

```
c=IN IP4 14.128.100.150
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-16
m=video 17954 RTP/AVP 97
c=IN IP4 14.128.100.150
b=TIAS:1000000
a=rtpmap:97 H264/90000
a=fmtp:97 profile-level-id=42801E;packetization-mode=0
```

ملاحظة: تحقق بعض الأجهزة، مثل CUCM، من صحة معرف الموارد الموحد (URI) للطلبات قبل معالجتها، مما يعني أنه قد يلزم تكوين الجهاز الطرفي باسم المجال المؤهل بالكامل (FQDN) للسماح بذلك.

في حالة CUCM، يجب أن يكون **CUCM > System > Enterprise Parameter > CloudWide Domain Configuration > Cluster Qualified Domain Name** هو نفسه اسم مجموعة الخادم.



السيناريو 2

تدفق المكالمات: **هاتف بروتوكول الإنترنت 1 — CME — SIP — SIP — CUCM — هاتف بروتوكول الإنترنت 2**

يجب بادئة الطلب 202 222 من هاتف IP 2. 408 بما قبل التطبيع للوصول إلى هاتف IP 1.

يعمل CME كشبكة PSTN في هذا السيناريو.

1. تأتي دعوة SIP للتخفيف من CUCM.

```
- DsTransportListener-0] DEBUG 2013.02.28 00:34:03:370 DsSipLlApi.Wire]
Received UDP packet on 14.128.100.169:5061 ,source 14.128.64.192:5060
INVITE sip:2022222@14.128.100.169:5061 SIP/2.0
Via: SIP/2.0/UDP 14.128.64.192:5060;branch=z9hG4bK18012ae333f
;<From: "SJ Phone 1" <sip:2001@14.128.64.192
tag=534264~c1b77ee1-4af9-4a41-aed3-3846cd699427-49616146
<To: <sip:2022222@14.128.100.169
Date: Thu, 28 Feb 2013 00:34:03 GMT
Call-ID: 8be55500-12e1a5fb-ab-c040800e@14.128.64.192
Supported: timer,resource-priority,replaces
Min-SE: 1800
User-Agent: Cisco-CUCM8.6
,Allow: INVITE, OPTIONS, INFO, BYE, CANCEL, ACK, PRACK, UPDATE
REFER, SUBSCRIBE, NOTIFY
CSeq: 101 INVITE
Expires: 180
Allow-Events: presence, kpml
Supported: X-cisco-srtp-fallback,X-cisco-original-called
<Call-Info: <sip:14.128.64.192:5060
"method="NOTIFY;Event=telephone-event;Duration=500;
Cisco-Guid: 2347062528-0000065536-0000000107-3225452558
Session-Expires: 1800
<P-Asserted-Identity: "SJ Phone 1" <sip:2001@14.128.64.192
<Remote-Party-ID: "SJ Phone 1" <sip:2001@14.128.64.192
party=calling;screen=yes;privacy=off;
<Contact: <sip:2001@14.128.64.192:5060
```

```
Max-Forwards: 70
Content-Length: 0

--- end of packet ---
```

2. يتم قبول الاستدعاء في تكوين الشبكة (Net-CUCM) المتطابق.

CLI

```
sip listen Net-CUCM udp 14.128.100.169 5061

!
sip network Net-CUCM standard
no non-invite-provisional
allow-connections
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
udp max-datagram-size 1500
end network
!
```

واجهة المستخدم الرسومية

تصحيح الأخطاء

```
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:373 conditions.RegexCondition]
'inNetwork='Net-CUCM
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:373 conditions.RegexCondition]
IN_NETWORK: Net-CUCM
```

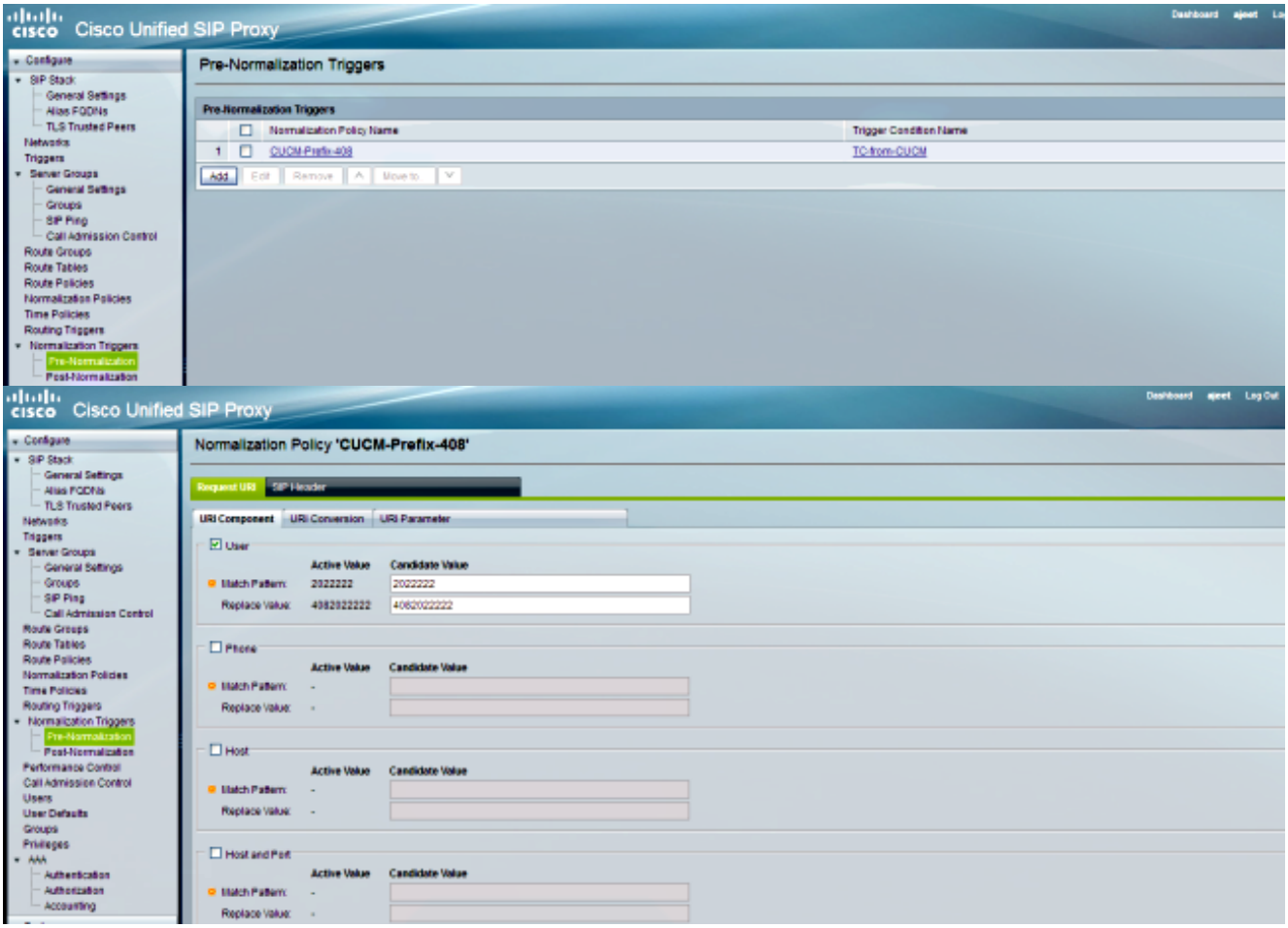
3. يتم تنفيذ تسلسل ما قبل التطبيع.

CLI

```
trigger pre-normalization sequence 1 policy CUCM-Prefix-408
condition TC-from-CUCM


!
policy normalization CUCM-Prefix-408
uri-component update request-uri user 2022222 4082022222
end policy
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

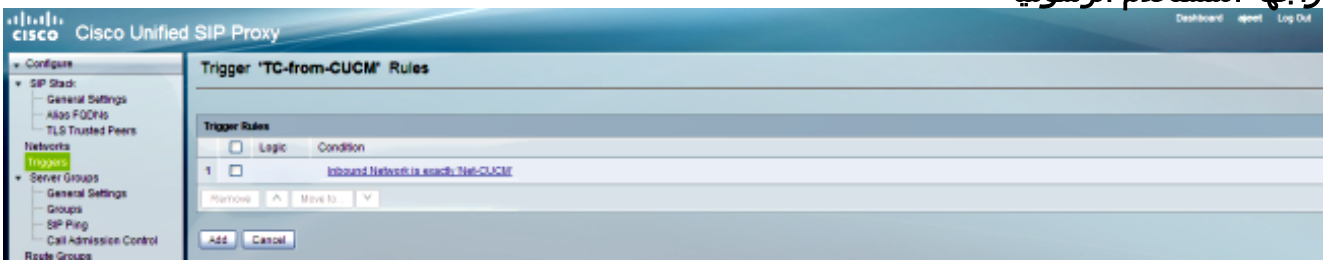
```
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:373 util.Normalization]
                                Entering Normalization(moduleRequest:pre-normalize
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:373 conditions.RegexCondition](
                                                'inNetwork='Net-CUCM
 - REQUESTI.12] DEBUG 2013.02.28 00:34:03:373 conditions.RegexCondition]
                                                IN_NETWORK: Net-CUCM
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.AbstractRegexCondition]
                        pattern(^\QNet-CUCM\E$), toMatch(Net-CUCM) returning true
 - REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 triggers.ModuleTrigger]
                             <>ModuleTrigger.eval() action<CUCM-Prefix-408> actionParameter
 - REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 triggers.ModuleTrigger]
                                ... ModuleTrigger.eval() got the policy, executing it
                             .REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 normalization]
                           URIComponentNormalizationAlgorithm - normalizing request-uri
                             .REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 normalization]
                                                - URIComponentNormalizationAlgorithm
        updating user/phone of the sip:2022222@14.128.100.169:5061 to 4082022222
 - REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 util.Normalization]
                                                ()Leaving Normalization.normalize
```

4. شرط المشغل (TC-from-CUCM) مطابق.

CLI

```
                                                !
                                trigger condition TC-from-CUCM
                                                sequence 1
                                    $in-network ^\QNet-CUCM\E
                                                end sequence
                                            end trigger condition
                                                !
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

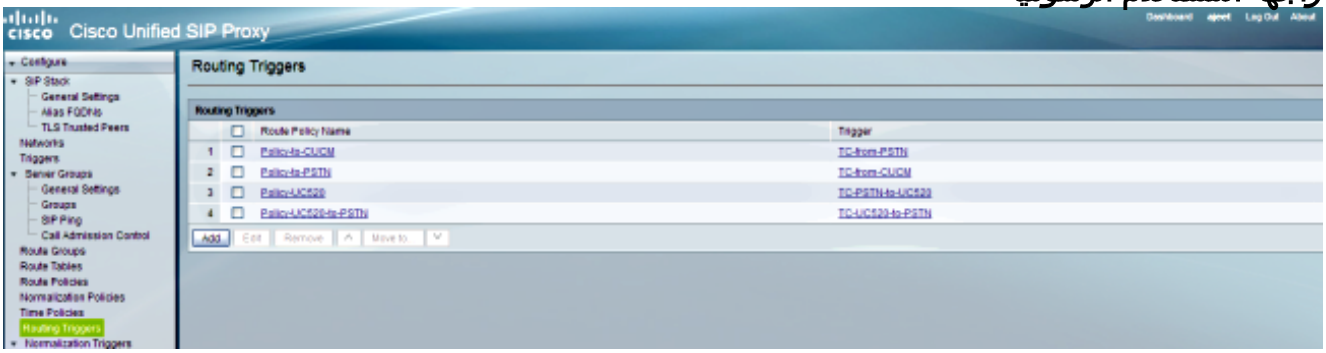
```
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.RegexCondition]
                                                    'inNetwork='Net-CUCM
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.RegexCondition]
                                                    IN_NETWORK: Net-CUCM
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.AbstractRegexCondition]
                                    pattern(^\QNet-CUCM\E$), toMatch(Net-CUCM) returning true
```

5. يتم التحقق من تكوين مشغل التوجيه لاكتشاف سياسة المسار (سياسة إلى PSTN) التي تطابق استنادا إلى شرط المشغل (TC-from-CUCM).

CLI

```
trigger routing sequence 2 policy Policy-to-PSTN condition TC-from-CUCM
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.RegexCondition]
                                                    'inNetwork='Net-CUCM
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.RegexCondition]
                                                    IN_NETWORK: Net-CUCM
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.AbstractRegexCondition]
                                    pattern(^\QNet-CUCM\E$), toMatch(Net-CUCM) returning true
                - REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 triggers.ModuleTrigger]
                      <>ModuleTrigger.eval() action<Policy-to-PSTN> actionParameter
                - REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 triggers.ModuleTrigger]
                                    ... ModuleTrigger.eval() got the policy, executing it
```

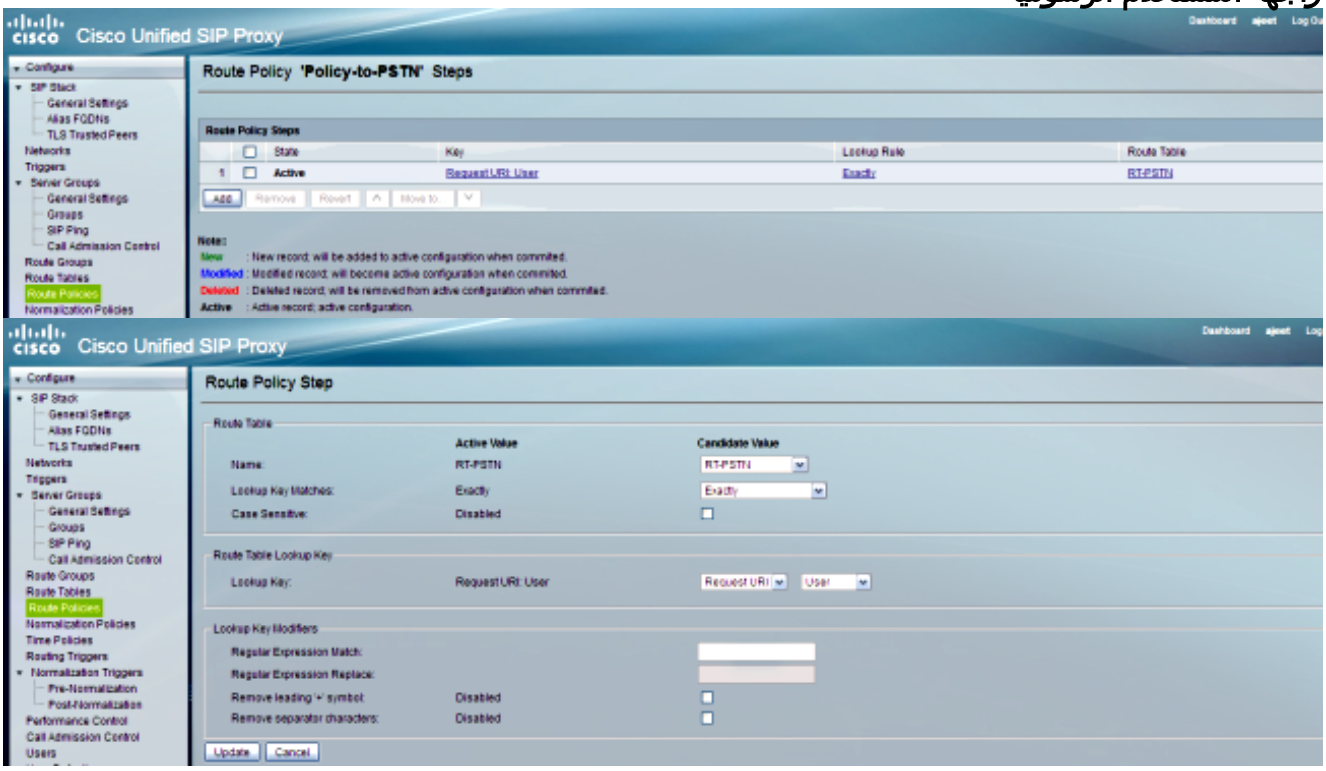
6. يتم التحقق من تكوين سياسة المسار (policy-to-PSTN) للعثور على جدول المسار (RT-PSTN) الذي يتطابق.

CLI

```
                                                                !
                                                  policy lookup Policy-to-PSTN
                                  sequence 100 RT-PSTN request-uri uri-component user
                                                                rule exact
```

```
end sequence
end policy
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

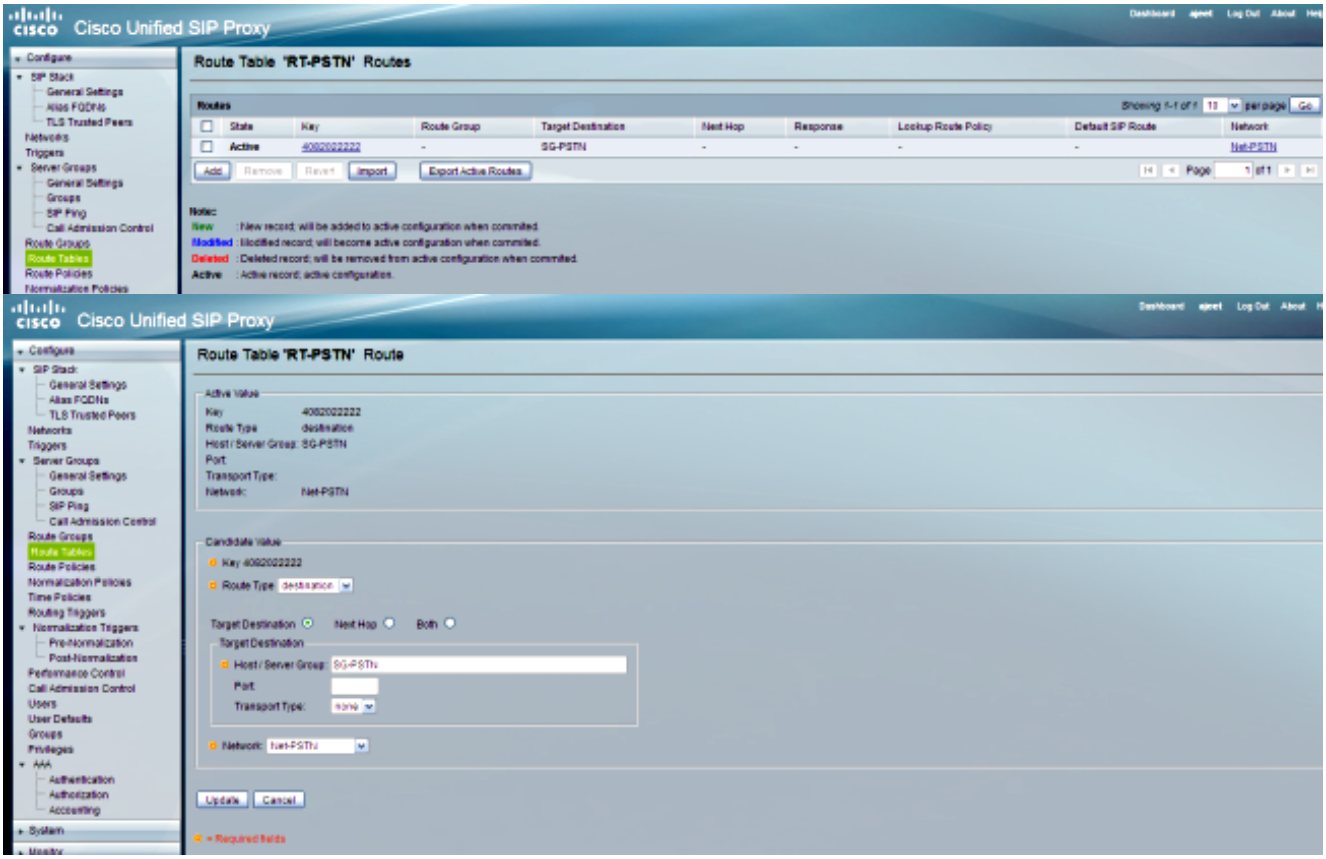
```
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 nrs.XCLPrefix]
                                                ()Entering getKeyValue
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 nrs.FieldSelector]
    getUriPart: URI - sip:4082022222@14.128.100.169:5061 part 6
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 nrs.FieldSelector]
                                                Requested field 45
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 nrs.FieldSelector]
                                              Returning key 4082022222
    - REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 nrs.XCLPrefix]
                                                ()Leaving getKeyValue
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 modules.XCLLookup]
                                          table=RT-PSTN, key=4082022222
 - REQUESTI.12] INFO 2013.02.28 00:34:03:376 modules.XCLLookup]
                                                table is RT-PSTN
```

7. يتم التحقق من تكوين جدول المسار (RT-PSTN) للعثور على الوجهة الهدف (SG-PSTN).

CLI

```
!
route table RT-PSTN
key 4082022222 target-destination SG-PSTN Net-PSTN
end route table
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

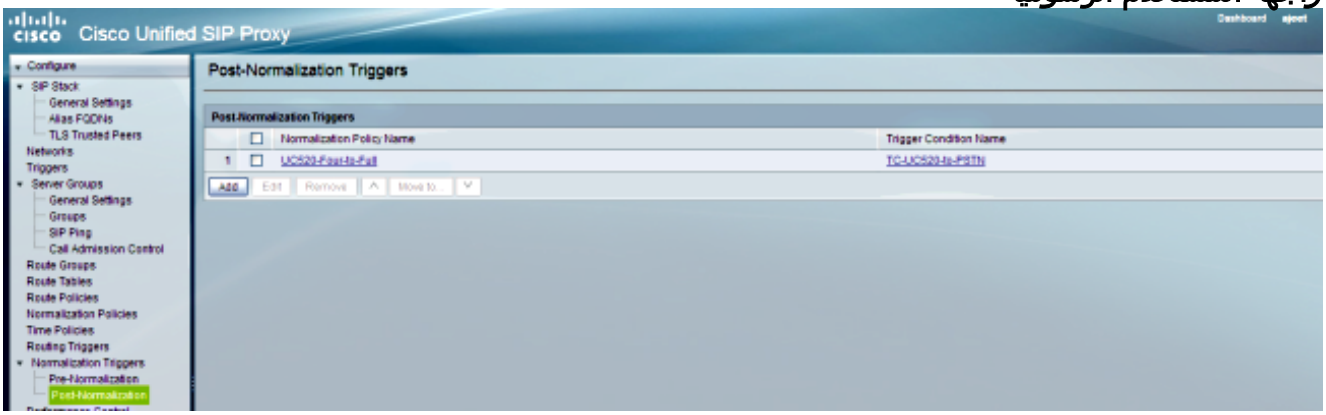
```
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 routingtables.RoutingTable]
                                                          ()Entering lookup
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 routingtables.RoutingTable]
Looking up 4082022222 in table RT-PSTN with rule exact and modifiers=none
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 routingtables.RoutingTable]
                                                  ()Entering applyModifiers
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 routingtables.RoutingTable]
                              Leaving applyModifiers(), returning 4082022222
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 routingtables.RoutingTable]
                                                          ()Leaving lookup
                  - REQUESTI.12] INFO 2013.02.28 00:34:03:376 nrs.XCLPrefix]
,NRS Routing decision is: RouteTable:RT-PSTN, RouteKey:4082022222
                                TargetDestination:SG-PSTN, Network:Net-PSTN
          - REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 loadbalancer.LBFactory]
                                                  ()Entering createLoadBalancer
           - REQUESTI.12] INFO 2013.02.28 00:34:03:376 loadbalancer.LBFactory]
                                                      (lbtype is 3(call-id
          - REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 loadbalancer.LBFactory]
                                                  ()Leaving createLoadBalancer
                  - REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 nrs.XCLPrefix]
,Stored NRSAlgResult=isFound=true, isFailure=false, Response=-1
.Routes=[Ruri: SG-PSTN, Route: null, Network: Net-PSTN, q-value=1
                                0radvance=[502, 503]], PolicyAdvance=null
                - REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 nrs.NRSAlgResult]
,set policyAdvance as specified in route=RouteTable:RT-PSTN, RouteKey:4082022222
                                TargetDestination:SG-PSTN, Network:Net-PSTN
                - REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 nrs.NRSAlgResult]
                                        no policyAdvance specified in route
                - REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 nrs.NRSAlgResult]
      ,set policyAdvance as specified in algorithm={lookuprule=0, lookupfield=45
          {lookuplenght=-1, lookuptable=RT-PSTN, sequence=100, algorithm=1
                - REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 nrs.NRSAlgResult]
                                    no policyAdvance specified in algorithm
```

8. يتم تنفيذ تسلسل ما بعد التطبيع.

CLI

```
trigger post-normalization sequence 1 policy UC520-Four-to-Full
condition TC-UC520-to-PSTN
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 util.Normalization]
(Entering Normalization(moduleRequest:post-normalize
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 conditions.RegexCondition]
'inNetwork='Net-CUCM
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 conditions.RegexCondition]
IN_NETWORK: Net-CUCM
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 conditions.AbstractRegexCondition]
pattern(^\QNet-From-UC520\E$), toMatch(Net-CUCM) returning false
- REQUESTI.12] INFO 2013.02.28 00:34:03:378 util.Normalization]
skipping post-normalize, due to either no trigger is configured or triggers
did not evaluate to true or is configured to by-pass
```

يتم التحقق من تكوين مجموعة الخوادم (SG-PSTN) للعثور على عنوان IP للعنصر، ويتم توجيه الاستدعاء إلى أفضل مسار ممكن استنادا إلى تكوين القيمة Q والوزن.

CLI

```
!
server-group sip group SG-PSTN Net-PSTN
element ip-address 14.128.100.150 5060 udp q-value 1.0 weight 0
failover-resp-codes 503
lbtype global
ping
end server-group
!
```

واجهة المستخدم الرسومية

تصحيح الأخطاء

```
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 loadbalancer.LBFactory]
                                                ()Entering createLoadBalancer
 - REQUESTI.12] INFO 2013.02.28 00:34:03:378 loadbalancer.LBFactory]
                                                    (lbtype is 0(global
 - REQUESTI.12] INFO 2013.02.28 00:34:03:378 loadbalancer.LBFactory]
                                                (Default lbtype is 3(call-id
- REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 loadbalancer.LBFactory]
                                                ()Leaving createLoadBalancer
   - REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 loadbalancer.LBBase]
                                                    ()Entering getServer
   - REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 loadbalancer.LBBase]
                                                ()Entering initializeDomains
            .REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 servergroups]
 =ServerGlobalStateWrapper - Net-PSTN:14.128.100.150:5060:1 numTries
                                            isServerAvailable(): true<2---
   - REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 loadbalancer.LBBase]
                                                ()Leaving initializeDomains
 - REQUESTI.12] INFO 2013.02.28 00:34:03:378 loadbalancer.LBHashBased]
            : list of elements in order on which load balancing is done
  ,reSgElementWeight=0, reSgElementSgName=SG-PSTN, reSgElementTransport=UDP}
 {reSgElementQValue=1.0, reSgElementPort=5060, reSgElementHost=14.128.100.150
 - REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 servergroups.AbstractNextHop] ,
                                                ()Entering compareDomainNames
  - REQUESTI.12] DEBUG 2013.02.28 00:34:03:379 servergroups.AbstractNextHop]
                                                ()Leaving compareDomainNames
   - REQUESTI.12] DEBUG 2013.02.28 00:34:03:379 loadbalancer.LBBase]
,Server group SG-PSTN selected {reSgElementWeight=0, reSgElementSgName=SG-PSTN
       ,reSgElementTransport=UDP, reSgElementQValue=1.0, reSgElementPort=5060
                                            {reSgElementHost=14.128.100.150
   - REQUESTI.12] DEBUG 2013.02.28 00:34:03:379 loadbalancer.LBBase]
                                                ()Leaving getServer
```

10. يتم إرسال دعوة SIP إلى العنصر المحدد.

```
          - CT_CALLBACK.13] DEBUG 2013.02.28 00:34:06:260 DsSipLlApi.Wire]
    :Sending UDP packet on 14.128.100.169:32772, destination 14.128.64.192
                                                5060SIP/2.0 200 OK
            Via: SIP/2.0/UDP 14.128.64.192:5060;branch=z9hG4bK18012ae333f
                        To: <sip:2022222@14.128.100.169>;tag=82FA7450-F53
                             <From: "SJ Phone 1" <sip:2001@14.128.64.192
                tag=534264~c1b77ee1-4af9-4a41-aed3-3846cd699427-49616146;
                            <Contact: <sip:4082022222@14.128.100.150:5060
                                                    Require: timer
                        <Remote-Party-ID: <sip:4082022222@14.128.100.150
                                        party=called;screen=no;privacy=off;
                    Call-ID: 8be55500-12e1a5fb-ab-c040800e@14.128.64.192
                                                    CSeq: 101 INVITE
                                                Content-Length: 276
                                    Date: Thu, 28 Feb 2013 00:34:03 GMT
         ,Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER
                                        SUBSCRIBE, NOTIFY, INFO, REGISTER
                                        Allow-Events: telephone-event
                                                Supported: replaces
                                                Supported: sdp-anat
                                                   Supported: timer
                                    Server: Cisco-SIPGateway/IOS-12.x
                                  Session-Expires: 1800;refresher=uac
                                        Content-Type: application/sdp
                            Content-Disposition: session;handling=required

                                                                  v=0
          o=CiscoSystemsSIP-GW-UserAgent 6810 2753 IN IP4 14.128.100.150
                                                            s=SIP Call
                                                c=IN IP4 14.128.100.150
```

```
t=0 0
m=audio 16862 RTP/AVP 18 101
c=IN IP4 14.128.100.150
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-16
a=ptime:20
```

السيناريو 3

Call Flow: **هاتف CME 2 — CUSP — SIP — CME 1 — IP 1 — هاتف بروتوكول الإنترنت 2**

اطلب 4001 أو 4002 من هاتف IP 1 للوصول إلى الملحقات على هاتف IP 2.

CME 2 هو UC520 في هذا السيناريو ويعمل CME 1 ك PSTN.

1. تأتي دعوة SIP إلى PSTN) CME 1).

```
- DsTransportListener-3] DEBUG 2013.02.28 05:28:57:360 DsSipLlApi.Wire]
Received UDP packet on 14.128.100.169:5062 ,source 14.128.100.150:56578
INVITE sip:4002@14.128.100.169:5062 SIP/2.0
Via: SIP/2.0/UDP 14.128.100.150:5060;branch=z9hG4bK2292567
<Remote-Party-ID: <sip:85224044444@14.128.100.150
party=calling;screen=no;privacy=off;
From: <sip:85224044444@14.128.100.150>;tag=84086F7C-10B8
<To: <sip:4002@14.128.100.169
Date: Thu, 28 Feb 2013 05:28:57 GMT
Call-ID: 9559E957-809E11E2-9856EC62-1B7185EE@14.128.100.150
Supported: 100rel,timer,resource-priority,replaces,sdp-anat
Min-SE: 1800
Cisco-Guid: 2446255913-2157842914-2555505762-0460424686
User-Agent: Cisco-SIPGateway/IOS-12.x
,Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER
SUBSCRIBE, NOTIFY, INFO, REGISTER
CSeq: 101 INVITE
Max-Forwards: 70
Timestamp: 1362029337
<Contact: <sip:85224044444@14.128.100.150:5060
Expires: 180
Allow-Events: telephone-event
Content-Type: application/sdp
Content-Disposition: session;handling=required
Content-Length: 276

v=0
o=CiscoSystemsSIP-GW-UserAgent 3653 4016 IN IP4 14.128.100.150
s=SIP Call
c=IN IP4 14.128.100.150
t=0 0
m=audio 19202 RTP/AVP 18 101
c=IN IP4 14.128.100.150
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-16
a=ptime:20

--- end of packet ---
```

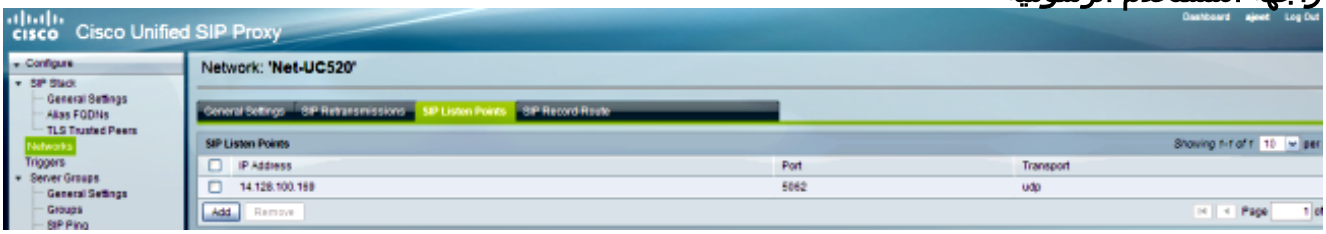
2. يتم قبول المكالمة على تكوين الشبكة (Net-UC520) الذي يتطابق.

CLI

```
sip listen Net-UC520 udp 14.128.100.169 5062

!
sip network Net-From-UC520 standard
no non-invite-provisional
allow-connections
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
udp max-datagram-size 1500
end network
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

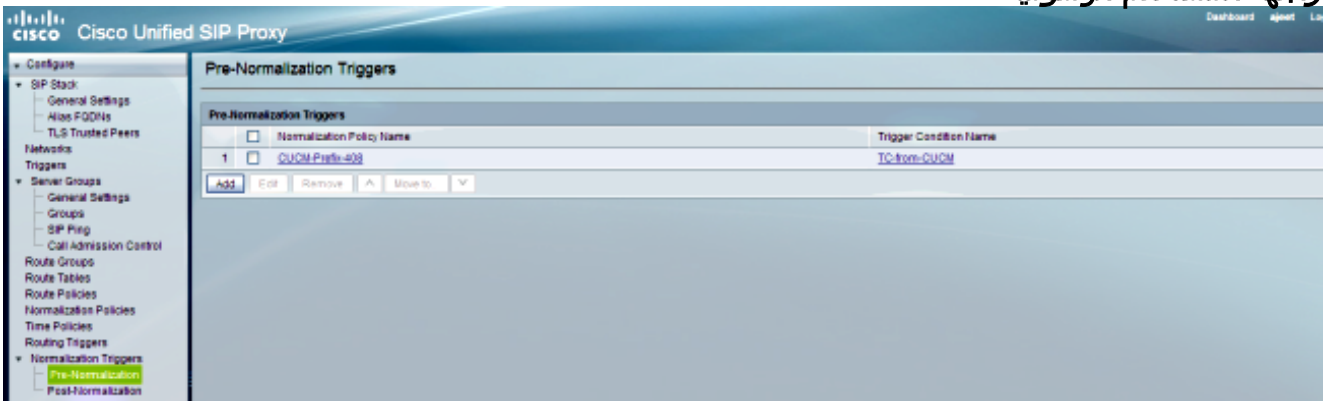
```
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 conditions.RegexCondition]
'inNetwork='Net-UC520
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 conditions.RegexCondition]
IN_NETWORK: Net-UC520
```

3. يتم تنفيذ تسلسل ما قبل التطبيع.

CLI

```
trigger pre-normalization sequence 1 policy CUCM-Prefix-408 condition
TC-from-CUCM
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 util.Normalization]
```

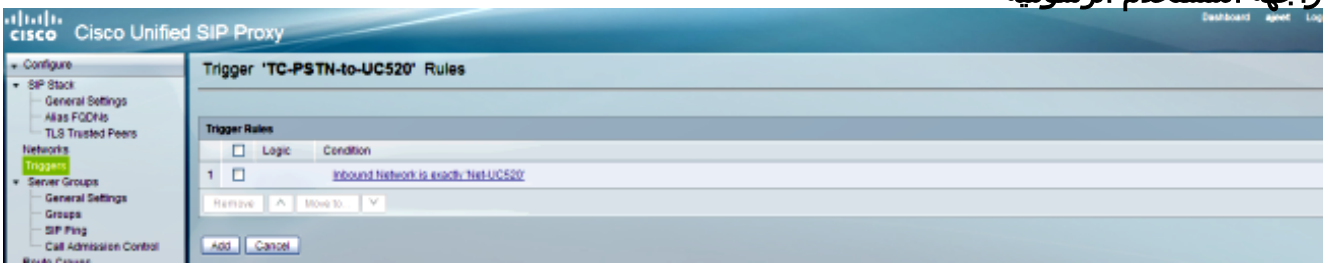
```
                                (Entering Normalization(moduleRequest:pre-normalize
          - REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 conditions.RegexCondition]
                                                        'inNetwork='Net-UC520
          - REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 conditions.RegexCondition]
                                                        IN_NETWORK: Net-UC520
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 conditions.AbstractRegexCondition]
                        pattern(^\QNet-CUCM\E$), toMatch(Net-UC520) returning false
                  - REQUESTI.10] INFO 2013.02.28 05:28:57:362 util.Normalization]
     skipping pre-normalize, due to either no trigger is configured or triggers
                                did not evaluate to true or is configured to by-pass
```

4. تمت مطابقة شرط المشغل (TC-PSTN-to-UC520).

CLI

```
                                                                              !
                                                  trigger condition TC-PSTN-to-UC520
                                                                  sequence 1
                                              $in-network ^\QNet-UC520\E
                                                                  end sequence
                                                  end trigger condition
                                                                              !
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

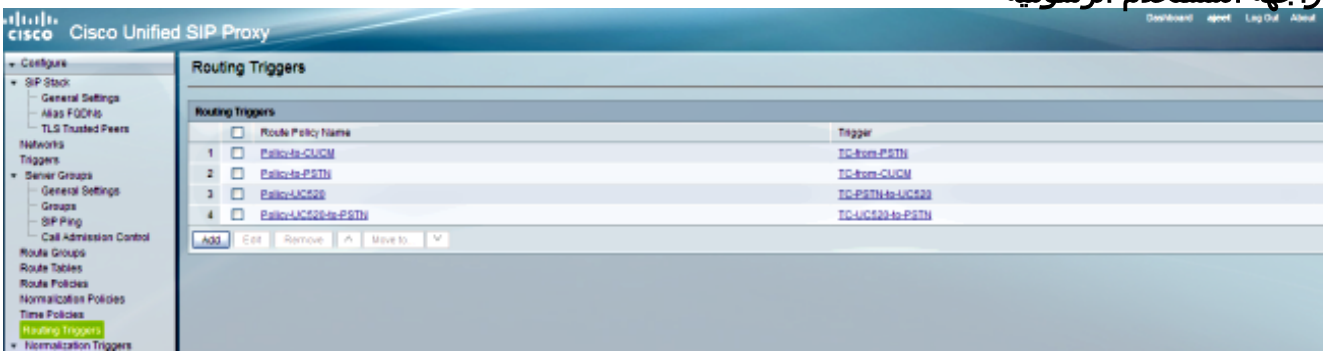
```
          - REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 conditions.RegexCondition]
                                                        'inNetwork='Net-UC520
          - REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 conditions.RegexCondition]
                                                        IN_NETWORK: Net-UC520
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 conditions.AbstractRegexCondition]
                        pattern(^\QNet-UC520\E$), toMatch(Net-UC520) returning true
```

5. يتم التحقق من تكوين مشغل التوجيه للعثور على سياسة المسار (Policy-UC520) التي تتطابق استنادا إلى شرط المشغل (TC-PSTN-to-UC520).

CLI

```
trigger routing sequence 3 policy Policy-UC520 condition TC-PSTN-to-UC520
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

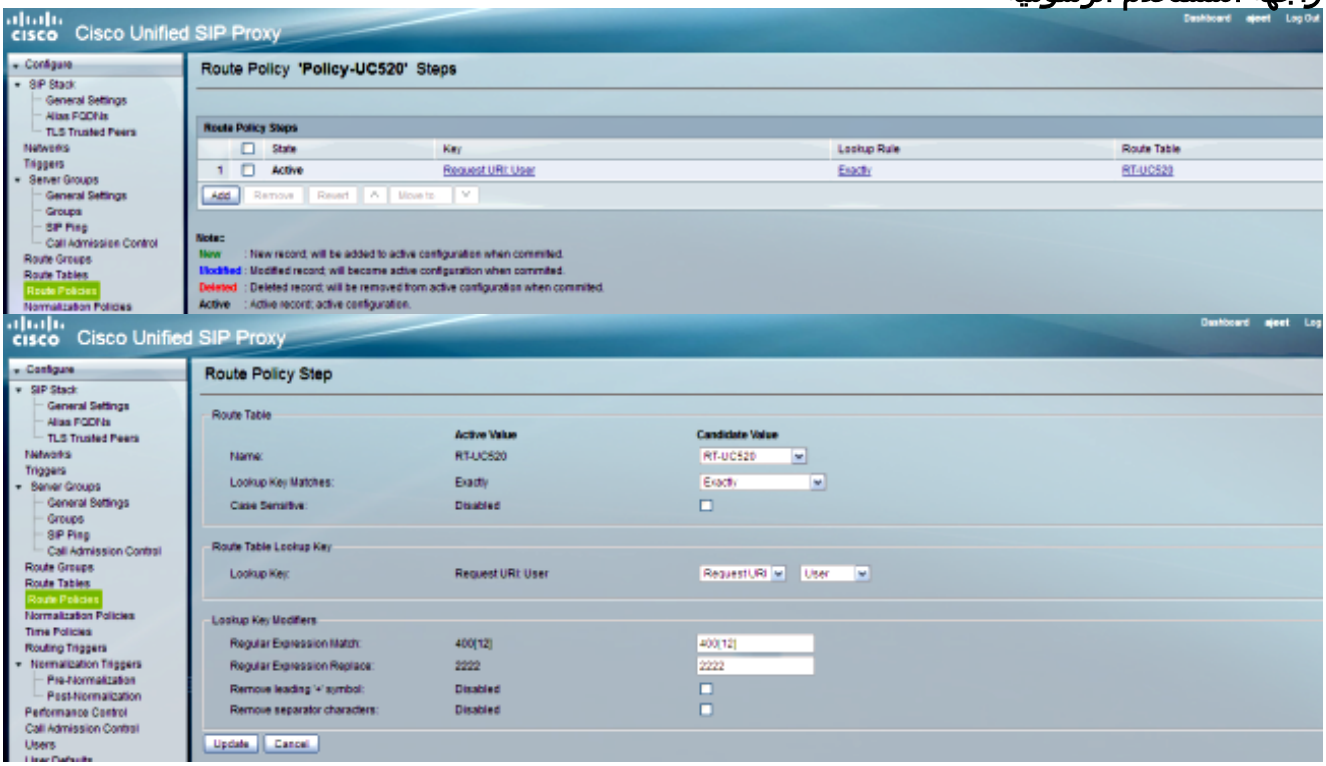
```
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 triggers.ModuleTrigger]
        <>ModuleTrigger.eval() action<Policy-UC520> actionParameter
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 triggers.ModuleTrigger]
        ... ModuleTrigger.eval() got the policy, executing it
```

6. يتم التحقق من تكوين سياسة المسار (Policy-UC520) للعثور على جدول المسار (RT-UC520) الذي يتطابق.

CLI

```
!
policy lookup Policy-UC520
sequence 100 RT-UC520 request-uri uri-component user
modify-key 400[12] 2222
rule exact
end sequence
end policy
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 nrs.XCLPrefix]
                                                ()Entering getKeyValue
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 nrs.FieldSelector]
        getUriPart: URI - sip:4002@14.128.100.169:5062 part 6
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 nrs.FieldSelector]
                                                Requested field 45
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 nrs.FieldSelector]
                                                Returning key 4002
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 nrs.FieldSelector]
,Retrieved Modifier RegexModifier: match= 400[12], replace= 2222
                                                ignore case= false
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 nrs.FieldSelector]
                                                 Input field: 4002
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 nrs.FieldSelector]
                                                Modified field: 2222
```

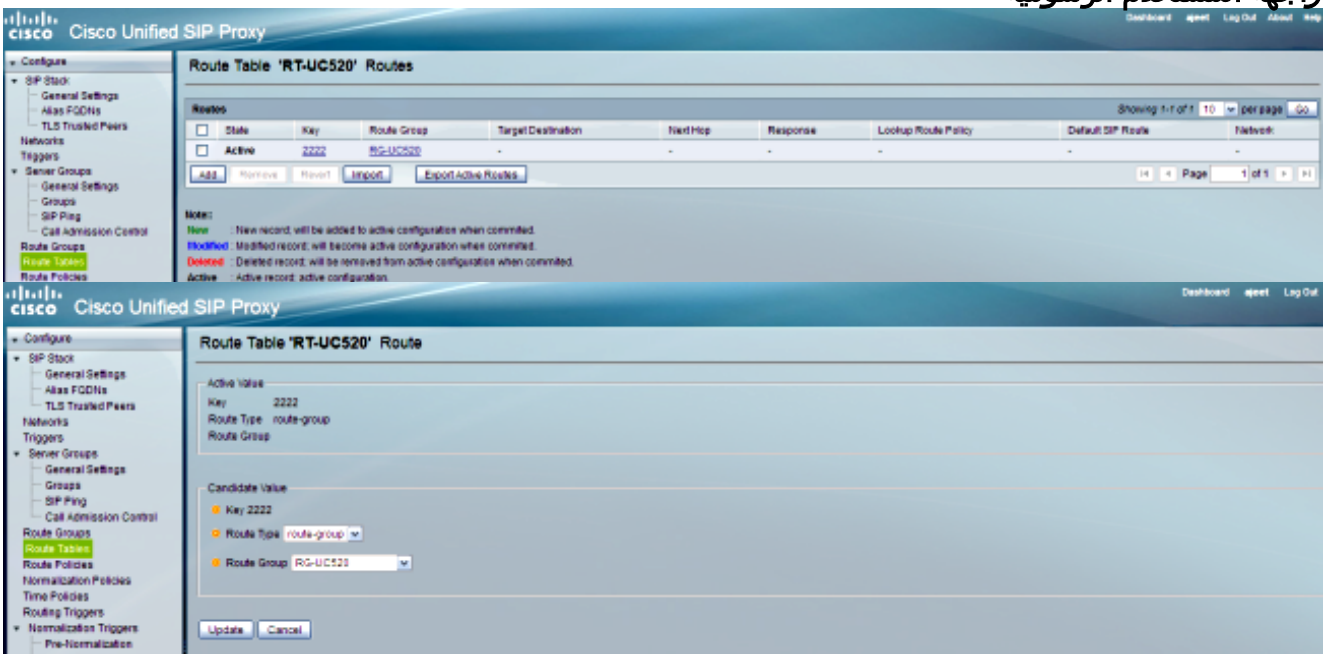
```
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 nrs.XCLPrefix]
                                                ()Leaving getKeyValue
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 modules.XCLLookup]
                                              table=RT-UC520, key=2222
 - REQUESTI.10] INFO 2013.02.28 05:28:57:364 modules.XCLLookup]
                                                 table is RT-UC520
```

7. يتم التحقق من تكوين جدول المسار (RT-UC520) للعثور على الوجهة الهدف (RG-UC520).

CLI

```
!
route table RT-UC520
key 2222 group RG-UC520
end route table
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 routingtables.RoutingTable]
                                                    ()Entering lookup
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 routingtables.RoutingTable]
    Looking up 2222 in table RT-UC520 with rule exact and modifiers=none
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 routingtables.RoutingTable]
                                                ()Entering applyModifiers
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 routingtables.RoutingTable]
                                     Leaving applyModifiers(), returning 2222
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 routingtables.RoutingTable]
                                                    ()Leaving lookup
                    - REQUESTI.10] INFO 2013.02.28 05:28:57:364 nrs.XCLPrefix]
NRS Routing decision is: RouteTable:RT-UC520, RouteKey:2222, RouteGroup:RG-UC520
            - REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 loadbalancer.LBFactory]
                                                 ()Entering createLoadBalancer
             - REQUESTI.10] INFO 2013.02.28 05:28:57:364 loadbalancer.LBFactory]
                                                    (lbtype is 3(call-id
            - REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 loadbalancer.LBFactory]
                                                 ()Leaving createLoadBalancer
                    - REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 nrs.XCLPrefix]
                ,Stored NRSAlgResult=isFound=true, isFailure=false, Response=-1
             .Routes=[Ruri: SG-UC520, Route: null, Network: Net-UC520, q-value=1
                                     0radvance=[502, 503]], PolicyAdvance=null
            - REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 nrs.NRSAlgResult]
```

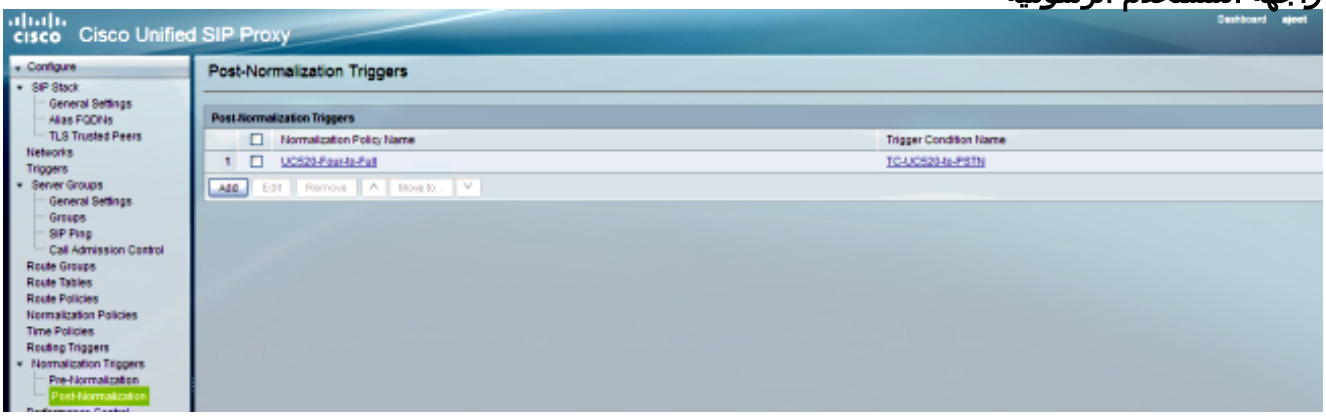
```
,set policyAdvance as specified in route=RouteTable:RT-UC520, RouteKey:2222
                                                                RouteGroup:RG-UC520
                    - REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 nrs.NRSAlgResult]
                                                    no policyAdvance specified in route
                    - REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 nrs.NRSAlgResult]
                   =set policyAdvance as specified in algorithm={lookupkeymodifier
                ,[RegexModifier: match= 400[12], replace= 2222, ignore case= false ]
                ,lookuprule=0, lookupfield=45, lookuplenght=-1, lookuptable=RT-UC520
                                                                {sequence=100, algorithm=1
                    - REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 nrs.NRSAlgResult]
                                                    no policyAdvance specified in algorithm
```

8. يتم تنفيذ تسلسل ما بعد التطبيع.

CLI

```
trigger post-normalization sequence 1 policy UC520-Four-to-Full
                                        condition TC-UC520-to-PSTN
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
                    - REQUESTI.10] DEBUG 2013.02.28 05:28:57:365 util.Normalization]
                                    (Entering Normalization(moduleRequest:post-normalize
                - REQUESTI.10] DEBUG 2013.02.28 05:28:57:365 conditions.RegexCondition]
                                                                'inNetwork='Net-UC520
                - REQUESTI.10] DEBUG 2013.02.28 05:28:57:365 conditions.RegexCondition]
                                                                IN_NETWORK: Net-UC520
        - REQUESTI.10] DEBUG 2013.02.28 05:28:57:365 conditions.AbstractRegexCondition]
                        pattern(^\QNet-From-UC520\E$), toMatch(Net-UC520) returning false
                          - REQUESTI.10] INFO 2013.02.28 05:28:57:365 util.Normalization]
                        skipping post-normalize, due to either no trigger is configured or
                            triggers did not evaluate to true or is configured to by-pass
```

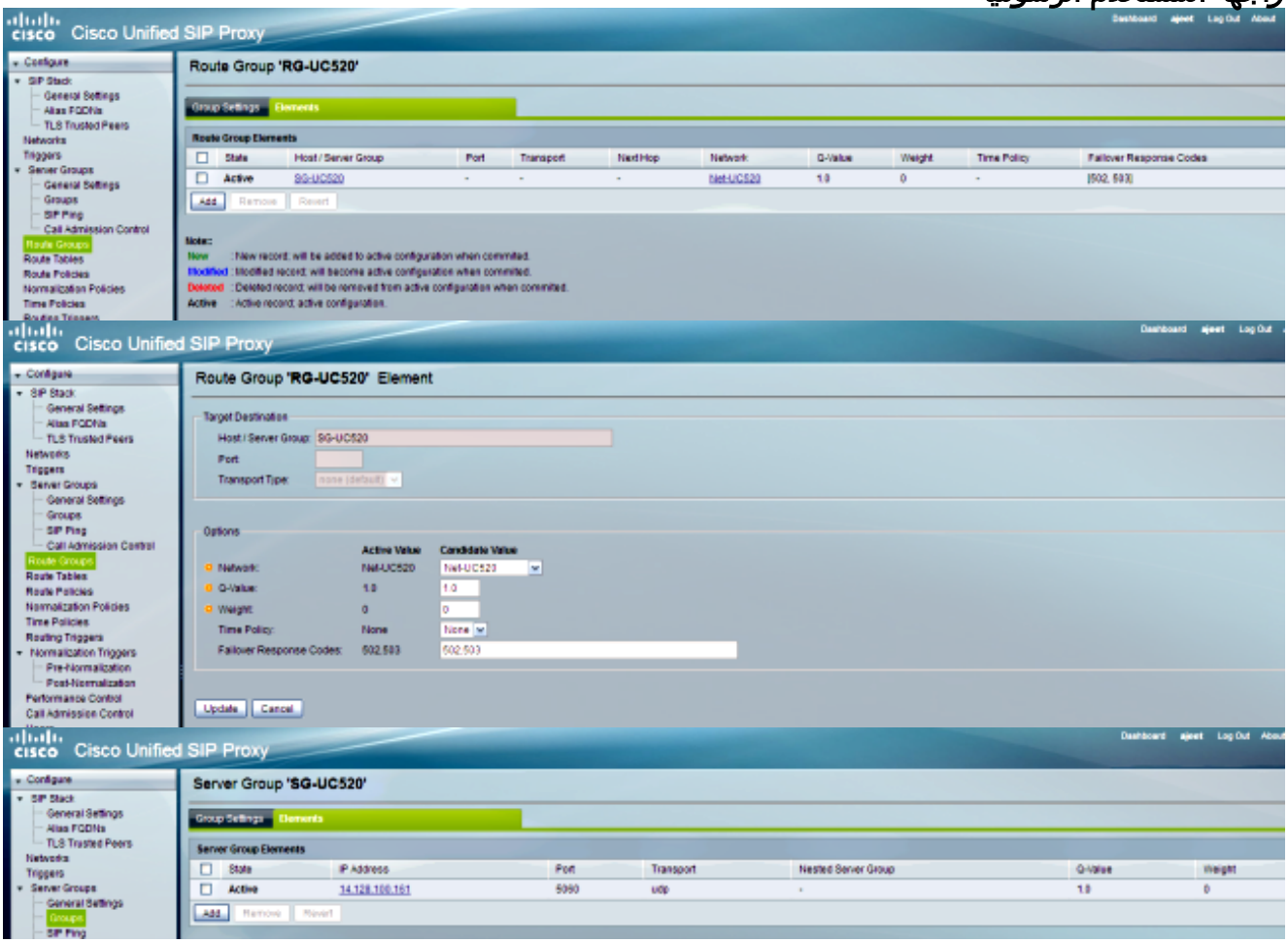
9. يتم التحقق من تكوين مجموعة المسارات للعثور على عنوان IP للعنصر، ويتم توجيه الاستدعاء إلى أفضل مسار ممكن استنادا إلى إعداد القيمة Q والوزن.

CLI

```
                                                                !
                                                        route group RG-UC520
                        element target-destination SG-UC520 Net-UC520 q-value 1.0
                                                        failover-codes 502 - 503
                                                                weight 0
                                                            end element
                                                              end route
                                                                !
```

```
!
                                server-group sip group SG-UC520 Net-UC520
                element ip-address 14.128.100.161 5060 udp q-value 1.0 weight 0
                                                    failover-resp-codes 503
                                                            lbtype global
                                                                    ping
                                                    end server-group
                                                                    !
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:365 loadbalancer.LBFactory]
                                                ()Entering createLoadBalancer
 - REQUESTI.10] INFO 2013.02.28 05:28:57:365 loadbalancer.LBFactory]
                                                    (lbtype is 0(global
 - REQUESTI.10] INFO 2013.02.28 05:28:57:365 loadbalancer.LBFactory]
                                                (Default lbtype is 3(call-id
- REQUESTI.10] DEBUG 2013.02.28 05:28:57:365 loadbalancer.LBFactory]
                                                ()Leaving createLoadBalancer
   - REQUESTI.10] DEBUG 2013.02.28 05:28:57:365 loadbalancer.LBBase]
                                                    ()Entering getServer
   - REQUESTI.10] DEBUG 2013.02.28 05:28:57:365 loadbalancer.LBBase]
                                                ()Entering initializeDomains
            .REQUESTI.10] DEBUG 2013.02.28 05:28:57:365 servergroups]
=ServerGlobalStateWrapper - Net-UC520:14.128.100.161:5060:1 numTries
                                            isServerAvailable(): true<2---
   - REQUESTI.10] DEBUG 2013.02.28 05:28:57:366 loadbalancer.LBBase]
                                                ()Leaving initializeDomains
 - REQUESTI.10] INFO 2013.02.28 05:28:57:366 loadbalancer.LBHashBased]
            : list of elements in order on which load balancing is done
,reSgElementWeight=0, reSgElementSgName=SG-UC520, reSgElementTransport=UDP}
```

```
,{reSgElementQValue=1.0, reSgElementPort=5060, reSgElementHost=14.128.100.161
   - REQUESTI.10] DEBUG 2013.02.28 05:28:57:366 servergroups.AbstractNextHop]
                                                 ()Entering compareDomainNames
   - REQUESTI.10] DEBUG 2013.02.28 05:28:57:366 servergroups.AbstractNextHop]
                                                 ()Leaving compareDomainNames
            - REQUESTI.10] DEBUG 2013.02.28 05:28:57:366 loadbalancer.LBBase]
,Server group SG-UC520 selected {reSgElementWeight=0, reSgElementSgName=SG-UC520
         ,reSgElementTransport=UDP, reSgElementQValue=1.0, reSgElementPort=5060
                                                 {reSgElementHost=14.128.100.161
            - REQUESTI.10] DEBUG 2013.02.28 05:28:57:366 loadbalancer.LBBase]
                                                 ()Leaving getServer
```

10. يتم إرسال دعوة SIP إلى العنصر المحدد.

```
                - REQUESTI.10] DEBUG 2013.02.28 05:28:57:367 DsSipLlApi.Wire]
   Sending UDP packet on 14.128.100.169:32773, destination 14.128.100.161:5060
                                          INVITE sip:4002@SG-UC520 SIP/2.0
                                                        Via: SIP/2.0/UDP
                 branch=z9hG4bK.ToYJFeKMyfZGySv.gcLjg~~237;14.128.100.169:5062
                    Via: SIP/2.0/UDP 14.128.100.150:5060;branch=z9hG4bK2292567
                                                        Max-Forwards: 69
                                              <To: <sip:4002@14.128.100.169
                      From: <sip:85224044444@14.128.100.150>;tag=84086F7C-10B8
                                 <Contact: <sip:85224044444@14.128.100.150:5060
                                                        Expires: 180
                           <Remote-Party-ID: <sip:85224044444@14.128.100.150
                                       party=calling;screen=no;privacy=off;
                  Call-ID: 9559E957-809E11E2-9856EC62-1B7185EE@14.128.100.150
                                                        CSeq: 101 INVITE
                                                   Content-Length: 276
                                        Date: Thu, 28 Feb 2013 05:28:57 GMT
                  Supported: 100rel,timer,resource-priority,replaces,sdp-anat
                                                        Min-SE: 1800
                      Cisco-Guid: 2446255913-2157842914-2555505762-0460424686
                                       User-Agent: Cisco-SIPGateway/IOS-12.x
            ,Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER
                                        SUBSCRIBE, NOTIFY, INFO, REGISTER
                                                   Timestamp: 1362029337
                                               Allow-Events: telephone-event
                                               Content-Type: application/sdp
                                   Content-Disposition: session;handling=required

                                                                        v=0
                    o=CiscoSystemsSIP-GW-UserAgent 3653 4016 IN IP4 14.128.100.150
                                                                  s=SIP Call
                                                       c=IN IP4 14.128.100.150
                                                                    t=0 0
                                                  m=audio 19202 RTP/AVP 18 101
                                                       c=IN IP4 14.128.100.150
                                                         a=rtpmap:18 G729/8000
                                                           a=fmtp:18 annexb=no
                                                a=rtpmap:101 telephone-event/8000
                                                           a=fmtp:101 0-16
                                                                a=ptime:20
```

السيناريو 4

تدفق المكالمات: **هاتف بروتوكول الإنترنت 1 — CME 2 — SIP — SIP — CME 1 — هاتف بروتوكول الإنترنت IP 2**

اطلب 4444 من هاتف IP 2 الذي تم تغييره إلى 415 240 444 مع ما بعد التطبيع للوصول إلى هاتف IP 1.

CME 2 هو UC520 في هذا السيناريو ويعمل CME 1 ك PSTN.

1. تأتي دعوة SIP لتكفي من UC520) CME 2).

```
- DsTransportListener-1] DEBUG 2013.02.28 07:06:57:220 DsSipLlApi.Wire]
Received UDP packet on 14.128.100.169:5063 ,source 14.128.100.161:59404
                            INVITE sip:4444@14.128.100.169:5063 SIP/2.0
                                  Date: Thu, 28 Feb 2013 07:09:20 GMT
        ,Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER
                                    SUBSCRIBE, NOTIFY, INFO, REGISTER
                      From: <sip:4001@14.128.100.161>;tag=256D566C-22AC
                                    Allow-Events: telephone-event
           Supported: 100rel,timer,resource-priority,replaces,sdp-anat
                                                        Min-SE: 1800
                            <Remote-Party-ID: <sip:4001@14.128.100.161
                                  party=calling;screen=no;privacy=off;
              Cisco-Guid: 2598740490-2158760418-2150671243-2598404062
                                              Timestamp: 1362035360
                                                Content-Length: 543
                                 User-Agent: Cisco-SIPGateway/IOS-12.x
                                        <To: <sip:4444@14.128.100.169
                                <Contact: <sip:4001@14.128.100.161:5060
                                                        Expires: 180
                      Content-Type: multipart/mixed;boundary=uniqueBoundary
           Call-ID: 9B62C157-80AC11E2-8035A38B-9AE07FDE@14.128.100.161
              Via: SIP/2.0/UDP 14.128.100.161:5060;branch=z9hG4bK21E82
                                                    CSeq: 101 INVITE
                                                    Max-Forwards: 70
                                                  Mime-Version: 1.0

                                                    uniqueBoundary--
                                            Content-Type: application/sdp
                                Content-Disposition: session;handling=required

                                                                v=0
                 o=CiscoSystemsSIP-GW-UserAgent 3418 2914 IN IP4 14.128.100.161
                                                        s=SIP Call
                                                c=IN IP4 14.128.100.161
                                                             t=0 0
                                           m=audio 17618 RTP/AVP 18 101
                                                c=IN IP4 14.128.100.161
                                                  a=rtpmap:18 G729/8000
                                                    a=fmtp:18 annexb=no
                                        a=rtpmap:101 telephone-event/8000
                                                     a=fmtp:101 0-16
                                                          a=ptime:20

                                                  uniqueBoundary--
                                            Content-Type: application/gtd
                                Content-Disposition: signal;handling=optional

                                                                ,IAM
                                           GCI,9ae5a20a80ac11e28030a38b9ae07fde

                                                    --- end of packet ---
```

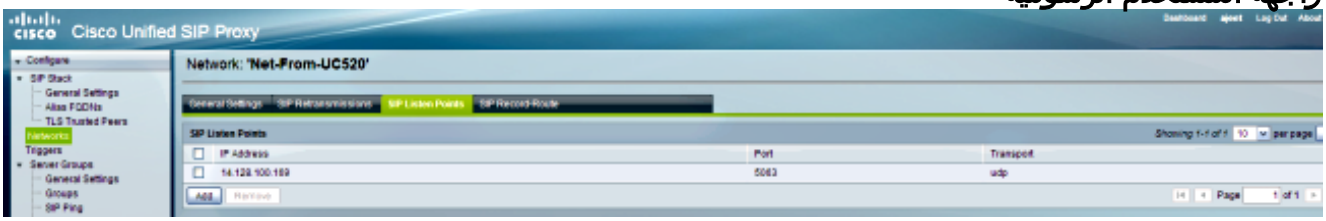
2. يتم قبول المكالمة على تكوين الشبكة (NET-FROM-UC520) الذي يتطابق.

CLI

```
                                sip listen Net-From-UC520 udp 14.128.100.169 5063
                                                                              !
```

```
sip network Net-From-UC520 standard
no non-invite-provisional
allow-connections
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
udp max-datagram-size 1500
end network
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

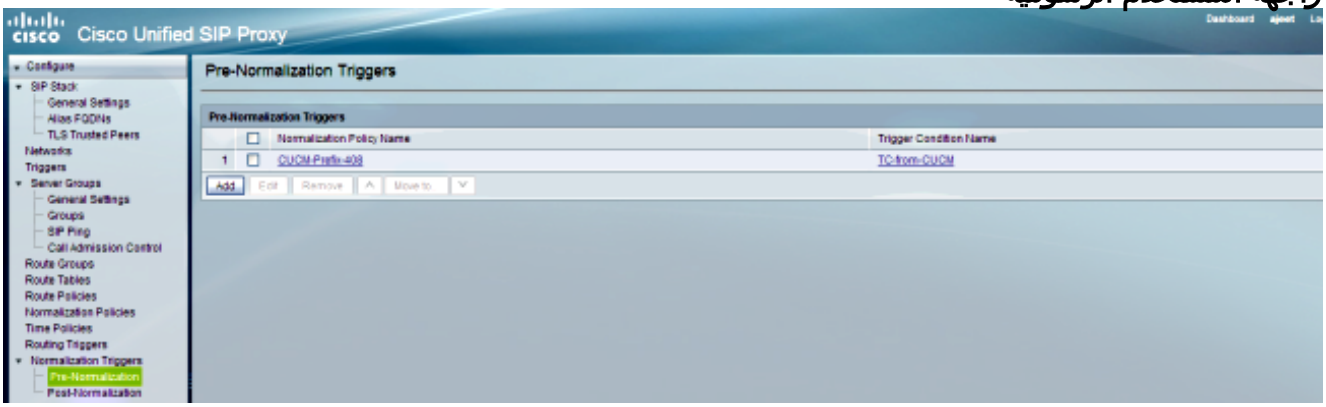
```
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.RegexCondition]
'inNetwork='Net-From-UC520
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.RegexCondition]
IN_NETWORK: Net-From-UC520
```

3. يتم تنفيذ تسلسل ما قبل التطبيع.

CLI

```
trigger pre-normalization sequence 1 policy CUCM-Prefix-408 condition
TC-from-CUCM
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 util.Normalization]
(Entering Normalization(moduleRequest:pre-normalize
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.RegexCondition]
'inNetwork='Net-From-UC520
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.RegexCondition]
IN_NETWORK: Net-From-UC520
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.AbstractRegexCondition]
```

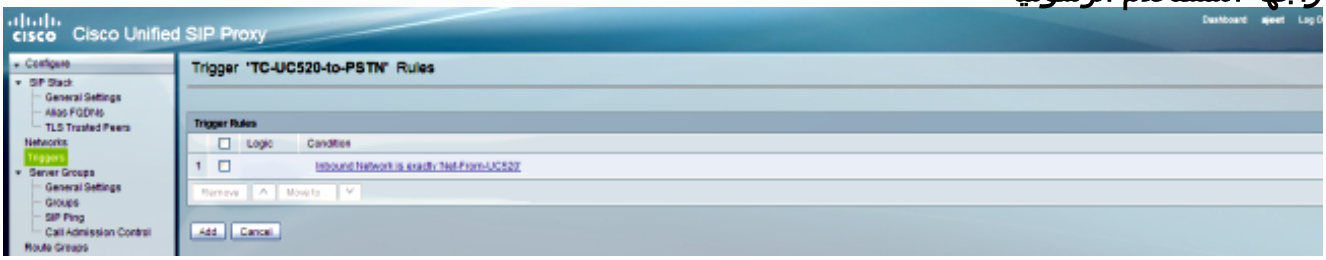
```
pattern(^\QNet-CUCM\E$), toMatch(Net-From-UC520) returning false
  - REQUESTI.5] INFO 2013.02.28 07:06:57:229 util.Normalization]
skipping pre-normalize, due to either no trigger is configured or triggers
                did not evaluate to true or is configured to by-pass
```

4. شرط المشغل (TC-UC520-to-PSTN) مطابق.

CLI

```
!
trigger condition TC-UC520-to-PSTN
                                sequence 1
          $in-network ^\QNet-From-UC520\E
                                end sequence
                      end trigger condition
                                !
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

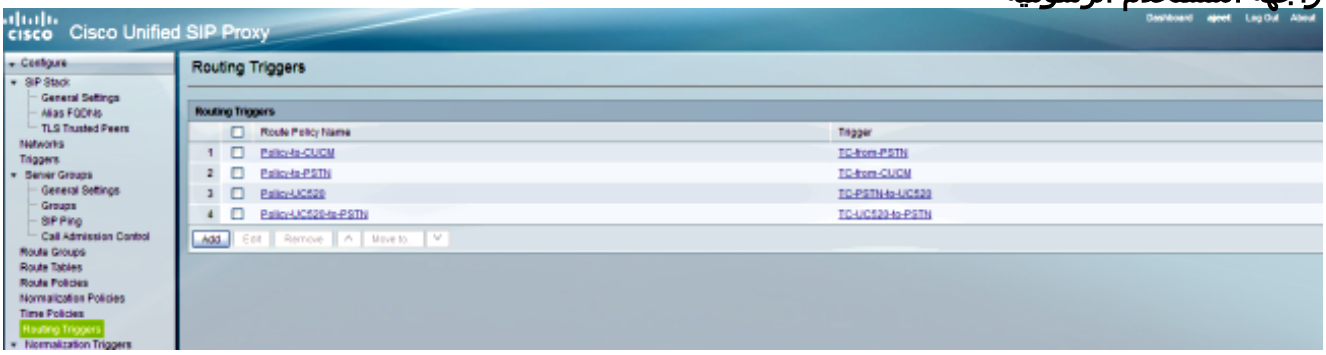
```
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.RegexCondition]
                                'inNetwork='Net-From-UC520
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.RegexCondition]
                                IN_NETWORK: Net-From-UC520
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 conditions.AbstractRegexCondition]
          pattern(^\QNet-From-UC520\E$), toMatch(Net-From-UC520) returning true
```

5. يتم التحقق من تكوين مشغل التوجيه للعثور على سياسة المسار (Policy-UC520-to-PSTN) التي تتطابق استنادا إلى شرط المشغل (TC-UC520-PSTN).

CLI

```
trigger routing sequence 4 policy Policy-UC520-to-PSTN condition
                                TC-UC520-to-PSTN
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

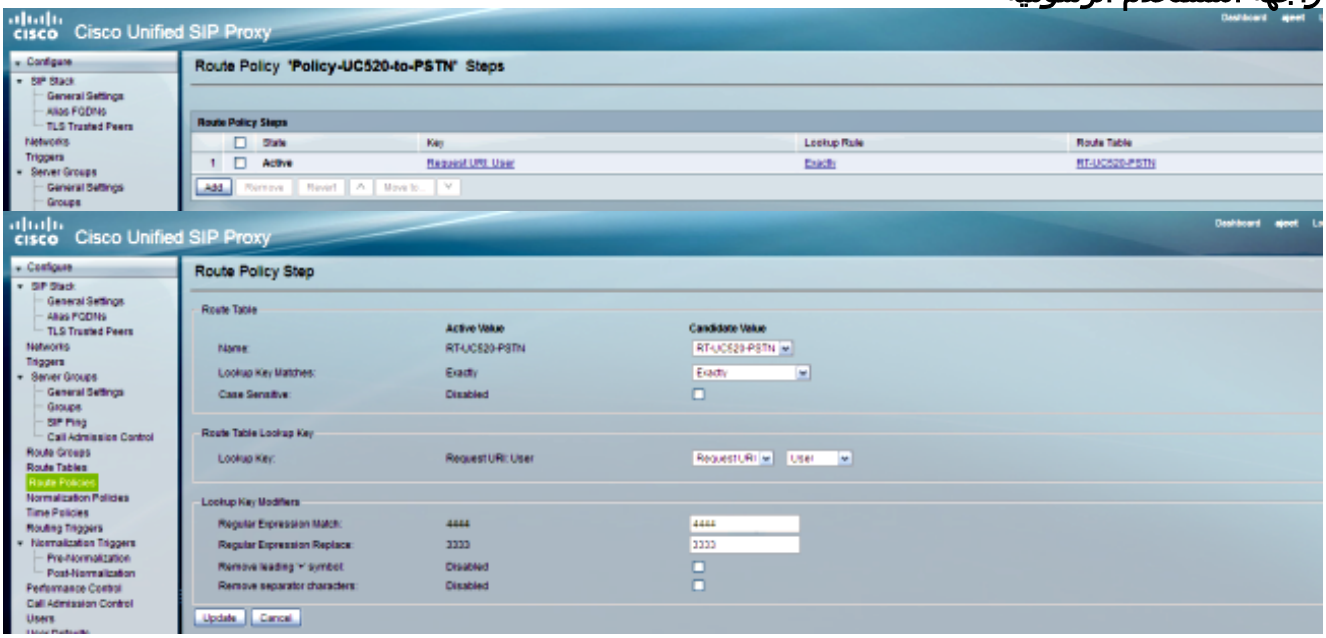
```
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 triggers.ModuleTrigger]
<>ModuleTrigger.eval() action<Policy-UC520-to-PSTN> actionParameter
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 triggers.ModuleTrigger]
                ... ModuleTrigger.eval() got the policy, executing it
```

6. يتم التحقق من تكوين سياسة المسار (Policy-UC520-to-PSTN) للعثور على جدول المسار (RT-UC520-PSTN) الذي يتطابق.

CLI

```
!
policy lookup Policy-UC520-to-PSTN
sequence 100 RT-UC520-PSTN request-uri uri-component user
modify-key 4444 3333
rule exact
end sequence
end policy
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

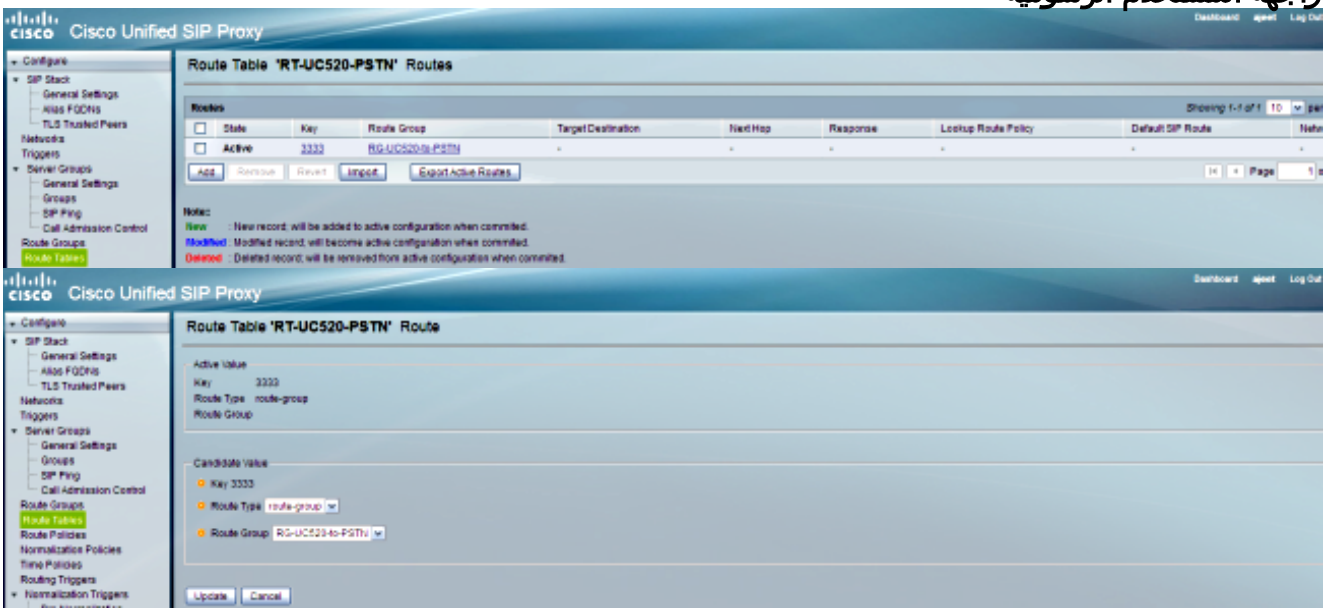
```
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.XCLPrefix]
                                                ()Entering getKeyValue
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.FieldSelector]
        getUriPart: URI - sip:4444@14.128.100.169:5063 part 6
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.FieldSelector]
                                                Requested field 45
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.FieldSelector]
                                                Returning key 4444
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.FieldSelector]
 ,Retrieved Modifier RegexModifier: match= 4444, replace= 3333
                                                ignore case= false
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.FieldSelector]
                                                 Input field: 4444
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.FieldSelector]
                                               Modified field: 3333
    - REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.XCLPrefix]
                                                ()Leaving getKeyValue
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 modules.XCLLookup]
                                        table=RT-UC520-PSTN, key=3333
 - REQUESTI.5] INFO 2013.02.28 07:06:57:230 modules.XCLLookup]
                                                table is RT-UC520-PSTN
```

7. يتم التحقق من تكوين جدول المسار (RT-UC520-PSTN) للعثور على الوجهة الهدف (RG-UC520).

CLI

```
!
route table RT-UC520-PSTN
key 3333 group RG-UC520-to-PSTN
end route table
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 routingtables.RoutingTable]
                                                          ()Entering lookup
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 routingtables.RoutingTable]
Looking up 3333 in table RT-UC520-PSTN with rule exact and modifiers=none
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 routingtables.RoutingTable]
                                                  ()Entering applyModifiers
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 routingtables.RoutingTable]
                                      Leaving applyModifiers(), returning 3333
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 routingtables.RoutingTable]
                                                          ()Leaving lookup
                - REQUESTI.5] INFO 2013.02.28 07:06:57:231 nrs.XCLPrefix]
    ,NRS Routing decision is: RouteTable:RT-UC520-PSTN, RouteKey:3333
                                                RouteGroup:RG-UC520-to-PSTN
    - REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 loadbalancer.LBFactory]
                                                  ()Entering createLoadBalancer
     - REQUESTI.5] INFO 2013.02.28 07:06:57:231 loadbalancer.LBFactory]
                                                      (lbtype is 3(call-id
    - REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 loadbalancer.LBFactory]
                                                  ()Leaving createLoadBalancer
            - REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 nrs.XCLPrefix]
        ,Stored NRSAlgResult=isFound=true, isFailure=false, Response=-1
    ,Routes=[Ruri: 14.128.100.150, Route: null, Network: Net-From-UC520
                    q-value=1.0radvance=[502, 503]], PolicyAdvance=null
          - REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 nrs.NRSAlgResult]
      ,set policyAdvance as specified in route=RouteTable:RT-UC520-PSTN
                                  RouteKey:3333, RouteGroup:RG-UC520-to-PSTN
          - REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 nrs.NRSAlgResult]
                                        no policyAdvance specified in route
          - REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 nrs.NRSAlgResult]
        =set policyAdvance as specified in algorithm={lookupkeymodifier
      ,[RegexModifier: match= 4444, replace= 3333, ignore case= false ]
,lookuprule=0, lookupfield=45, lookuplenght=-1, lookuptable=RT-UC520-PSTN
                                                  {sequence=100, algorithm=1
```

```
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 nrs.NRSAlgResult]
no policyAdvance specified in algorithm
```

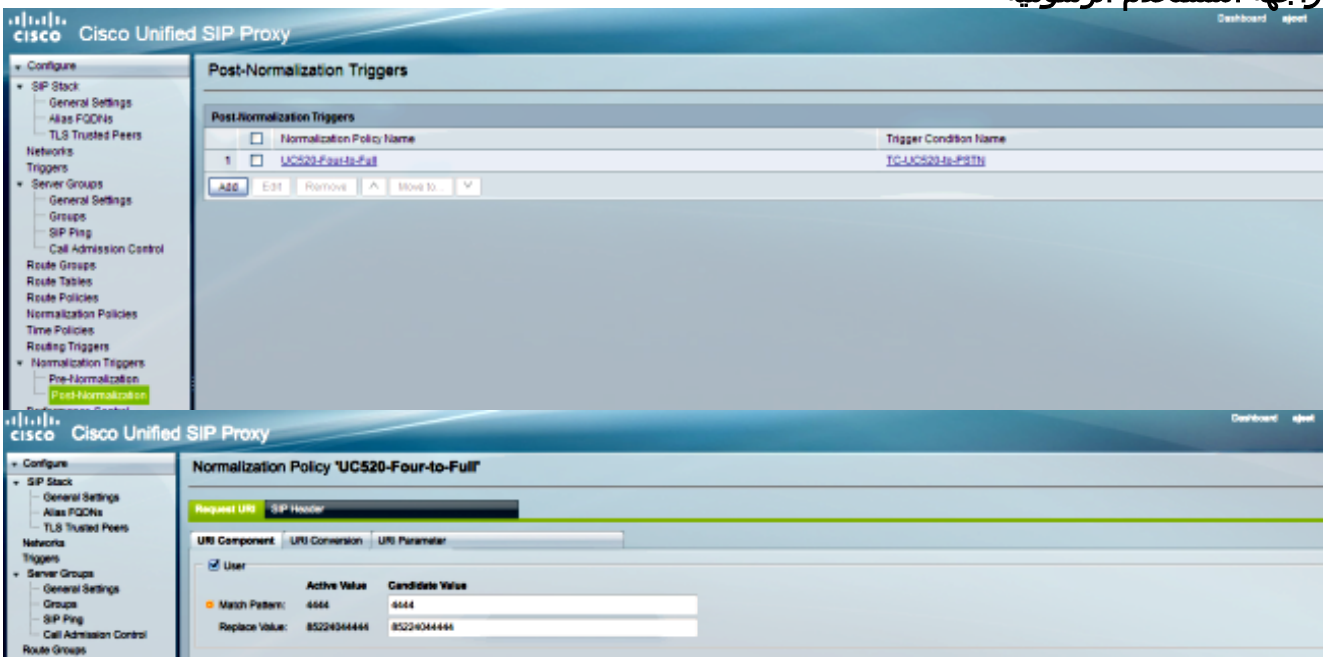
8. يتم تنفيذ تسلسل ما بعد التطبيع.

CLI

```
trigger post-normalization sequence 1 policy UC520-Four-to-Full
condition TC-UC520-to-PSTN


!
policy normalization UC520-Four-to-Full
uri-component update request-uri user 4444 85224044444
end policy
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

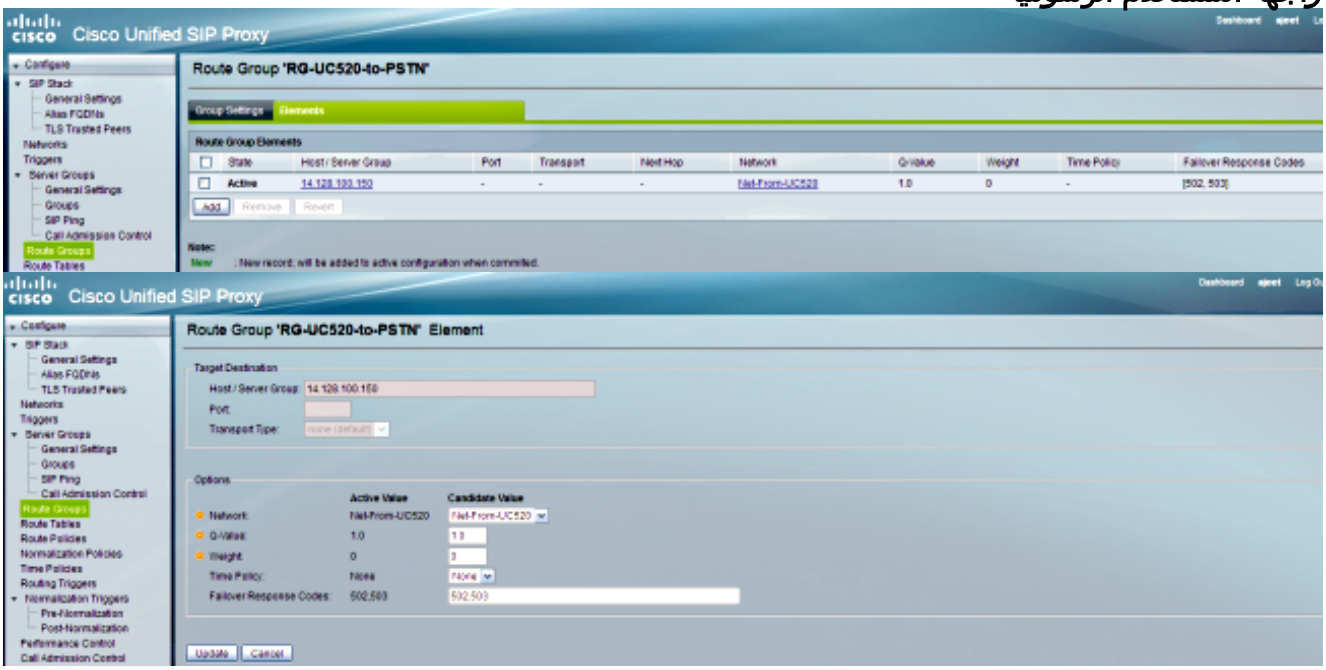
```
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 util.Normalization]
(Entering Normalization(moduleRequest:post-normalize
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 conditions.RegexCondition]
'inNetwork='Net-From-UC520
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 conditions.RegexCondition]
IN_NETWORK: Net-From-UC520
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 conditions.AbstractRegexCondition]
pattern(^\QNet-From-UC520\E$), toMatch(Net-From-UC520) returning true
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 triggers.ModuleTrigger]
<>ModuleTrigger.eval() action<UC520-Four-to-Full> actionParameter
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 triggers.ModuleTrigger]
... ModuleTrigger.eval() got the policy, executing it
REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 normalization.URIComponentNormalizationAlgorithm]
-
normalizing request-uri
REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 normalization.URIComponentNormalizationAlgorithm]
-
updating user/phone of the sip:4444@14.128.100.150 to 85224044444
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 util.Normalization]
()Leaving Normalization.normalize
```

9. يتم التحقق من تكوين مجموعة المسارات للعثور على عنوان IP للعنصر، ويتم توجيه الاستدعاء إلى أفضل مسار ممكن استنادا إلى إعداد القيمة Q والوزن.

CLI

```
!
route group RG-UC520-to-PSTN
element target-destination 14.128.100.150 Net-From-UC520 q-value 1.0
failover-codes 502 - 503
weight 0
end element
end route
!
```

واجهة المستخدم الرسومية



تصحيح الأخطاء

```
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 loadbalancer.LBBase]
()Entering getServer
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 loadbalancer.LBBase]
()Entering initializeDomains
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 nrs.NRSRoutes]
,routes before applying time policies: [Ruri: 14.128.100.150
[[Route: null, Network: Net-From-UC520, q-value=1.0radvance=[502, 503
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 nrs.NRSRoutes]
:routes after applying time policies: [Ruri: 14.128.100.150, Route
[[null, Network: Net-From-UC520, q-value=1.0radvance=[502, 503
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:231 loadbalancer.LBBase]
()Leaving initializeDomains
- REQUESTI.5] INFO 2013.02.28 07:06:57:231 loadbalancer.LBHashBased]
:list of elements in order on which load balancing is done : Ruri
=Route: null, Network: Net-From-UC520, q-value ,14.128.100.150
,[1.0radvance=[502, 503
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 loadbalancer.LBBase]
,Server group route-sg selected Ruri: 14.128.100.150, Route: null
[Network: Net-From-UC520, q-value=1.0radvance=[502, 503
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 loadbalancer.LBBase]
()Leaving getServer
```

10. يتم إرسال دعوة SIP إلى العنصر المحدد.

```
- REQUESTI.5] DEBUG 2013.02.28 07:06:57:233 DsSipLlApi.Wire]
Sending UDP packet on 14.128.100.169:32770, destination 14.128.100.150:5060
```

```
INVITE sip:85224044444@14.128.100.150 SIP/2.0
Via: SIP/2.0/UDP
branch=z9hG4bK.ToYJFeKMyfZGySv.gcLjg~~238;14.128.100.169:5063
Via: SIP/2.0/UDP 14.128.100.161:5060;branch=z9hG4bK21E82
Max-Forwards: 69
<To: <sip:4444@14.128.100.169
From: <sip:4001@14.128.100.161>;tag=256D566C-22AC
<Contact: <sip:4001@14.128.100.161:5060
Expires: 180
<Remote-Party-ID: <sip:4001@14.128.100.161
party=calling;screen=no;privacy=off;
Call-ID: 9B62C157-80AC11E2-8035A38B-9AE07FDE@14.128.100.161
CSeq: 101 INVITE
Content-Length: 543
Date: Thu, 28 Feb 2013 07:09:20 GMT
,Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER
SUBSCRIBE, NOTIFY, INFO, REGISTER
Allow-Events: telephone-event
Supported: 100rel,timer,resource-priority,replaces,sdp-anat
Min-SE: 1800
Cisco-Guid: 2598740490-2158760418-2150671243-2598404062
Timestamp: 1362035360
User-Agent: Cisco-SIPGateway/IOS-12.x
Content-Type: multipart/mixed;boundary=uniqueBoundary
MIME-Version: 1.0

uniqueBoundary--
Content-Type: application/sdp
Content-Disposition: session;handling=required

v=0
o=CiscoSystemsSIP-GW-UserAgent 3418 2914 IN IP4 14.128.100.161
s=SIP Call
c=IN IP4 14.128.100.161
t=0 0
m=audio 17618 RTP/AVP 18 101
c=IN IP4 14.128.100.161
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-16
a=ptime:20

uniqueBoundary--
Content-Type: application/gtd
Content-Disposition: signal;handling=optional

,IAM
GCI,9ae5a20a80ac11e28030a38b9ae07fde
```

تهيئة جميع السيناريوهات الأربعة

فيما يلي التكوين الكامل ل CUSP لجميع سيناريوهات المكالمات الأربعة الموضحة في هذا المستند:

```
ajeesing-cusp-8.5.3(cusp)# show configuration active verbose
...Building CUSP configuration
!
server-group sip global-load-balance call-id
server-group sip retry-after 0
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
                                            !
                                    sip logging
                                 sip max-forwards 70
                          sip network Net-CUCM standard
                              no non-invite-provisional
                                      allow-connections
    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
                        udp max-datagram-size 1500
                                    end network
                                            !
                    sip network Net-From-UC520 standard
                              no non-invite-provisional
                                      allow-connections
    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
                        udp max-datagram-size 1500
                                    end network
                                            !
                       sip network Net-PSTN standard
                              no non-invite-provisional
                                      allow-connections
    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
                        udp max-datagram-size 1500
                                    end network
                                            !
                      sip network Net-UC520 standard
                              no non-invite-provisional
                                      allow-connections
```

```
    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
                     udp max-datagram-size 1500
                                end network
                                          !
               sip overload reject retry-after 0
                        sip peg-counting 2 86400
                             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
                                                                  !
                                                  trigger condition TC-PSTN-to-UC520
                                                                  sequence 1
                                                          $in-network ^\QNet-UC520\E
                                                                end sequence
                                                                  sequence 2
                                                           $in-network ^\QNet-CUCM\E
                                                                end sequence
                                                             end trigger condition
                                                                  !
                                                  trigger condition TC-UC520-to-PSTN
                                                                  sequence 1
                                                     $in-network ^\QNet-From-UC520\E
                                                                end sequence
                                                             end trigger condition
                                                                  !
                                                      trigger condition TC-from-CUCM
                                                                  sequence 1
                                                           $in-network ^\QNet-CUCM\E
                                                                end sequence
                                                             end trigger condition
                                                                  !
                                                      trigger condition TC-from-PSTN
                                                                  sequence 1
                                                           $in-network ^\QNet-PSTN\E
                                                                end sequence
                                                                  sequence 2
                                                           $in-network ^\QNet-CUCM\E
                                                                     message request
                                                                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 SG-CUCM.ajeet.com Net-CUCM
                                             element ip-address 14.128.64.191 5060 udp q-value 1 weight 50
                                          element ip-address 14.128.64.192 5060 udp q-value 1.0 weight 100
                                                                failover-resp-codes 503
                                                                     lbtype global
                                                                           ping
                                                                end server-group
                                                                  !
                                                          server-group sip group SG-PSTN Net-PSTN
                                           element ip-address 14.128.100.150 5060 udp q-value 1.0 weight 0
                                                                failover-resp-codes 503
                                                                     lbtype global
```

```
                                                                ping
                                                        end server-group
                                                                !
                                        server-group sip group SG-UC520 Net-UC520
                element ip-address 14.128.100.161 5060 udp q-value 1.0 weight 0
                                                failover-resp-codes 503
                                                          lbtype global
                                                                ping
                                                        end server-group
                                                                !
                                                    route group RG-UC520
                      element target-destination SG-UC520 Net-UC520 q-value 1.0
                                                failover-codes 502 - 503
                                                               weight 0
                                                            end element
                                                              end route
                                                                !
                                               route group RG-UC520-to-PSTN
            element target-destination 14.128.100.150 Net-From-UC520 q-value 1.0
                                                failover-codes 502 - 503
                                                               weight 0
                                                            end element
                                                              end route
                                                                !
                                                   route table RT-CUCM
                        key 1111 target-destination SG-CUCM.ajeet.com Net-CUCM
                                                        end route table
                                                                !
                                                   route table RT-PSTN
                            key 4082022222 target-destination SG-PSTN Net-PSTN
                                                        end route table
                                                                !
                                                  route table RT-UC520
                                                key 2222 group RG-UC520
                                                        end route table
                                                                !
                                             route table RT-UC520-PSTN
                                        key 3333 group RG-UC520-to-PSTN
                                                        end route table
                                                                !
                                      policy normalization CUCM-Prefix-408
                       uri-component update request-uri user 2022222 4082022222
                                                             end policy
                                                                !
                                    policy normalization UC520-Four-to-Full
                         uri-component update request-uri user 4444 85224044444
                                                             end policy
                                                                !
                                           policy lookup Policy-UC520
                              sequence 100 RT-UC520 request-uri uri-component user
                                                  modify-key 400[12] 2222
                                                               rule exact
                                                            end sequence
                                                              end policy
                                                                !
                                    policy lookup Policy-UC520-to-PSTN
                       sequence 100 RT-UC520-PSTN request-uri uri-component user
                                                  modify-key 4444 3333
                                                               rule exact
                                                            end sequence
                                                              end policy
                                                                !
                                           policy lookup Policy-to-CUCM
                                sequence 100 RT-CUCM request-uri uri-component user
```

```
modify-key 4082022102 1111
rule exact
end sequence
end policy
!
policy lookup Policy-to-PSTN
sequence 100 RT-PSTN request-uri uri-component user
rule exact
end sequence
end policy
!
trigger routing sequence 1 policy Policy-to-CUCM condition
TC-from-PSTN
trigger routing sequence 2 policy Policy-to-PSTN condition
TC-from-CUCM
trigger routing sequence 3 policy Policy-UC520 condition
TC-PSTN-to-UC520
trigger routing sequence 4 policy Policy-UC520-to-PSTN condition
TC-UC520-to-PSTN
trigger pre-normalization sequence 1 policy CUCM-Prefix-408
condition TC-from-CUCM
trigger post-normalization sequence 1 policy UC520-Four-to-Full
condition TC-UC520-to-PSTN
!
server-group sip ping-options Net-CUCM 14.128.100.169 4001
method OPTIONS
ping-type proactive 2500
timeout 2000
end ping
!
server-group sip global-ping
sip cac session-timeout 720
sip cac Net-CUCM 14.128.64.191 5060 udp limit -1
sip cac Net-CUCM 14.128.64.192 5060 udp limit -1
sip cac Net-PSTN 14.128.100.150 5060 udp limit -1
sip cac Net-UC520 14.128.100.161 5060 udp limit -1
!
no sip cac
!
sip listen Net-CUCM udp 14.128.100.169 5061
sip listen Net-From-UC520 udp 14.128.100.169 5063
sip listen Net-PSTN udp 14.128.100.169 5060
sip listen Net-UC520 udp 14.128.100.169 5062
!
call-rate-limit 200
!
end
#(ajeesing-cusp-8.5.3(cusp
```

التحقق من الصحة

لا يوجد حاليًا إجراء للتحقق من صحة هذا التكوين.

استكشاف الأخطاء وإصلاحها

لا تتوفر حاليًا معلومات محددة لاستكشاف الأخطاء وإصلاحها لهذا التكوين.

معلومات ذات صلة

- CLI تشكيل مرشد ل Cisco Unified SIP Proxy، الإصدار 8.5
- دليل إدارة GUI ل Cisco Unified SIP Proxy، الإصدار 8.5
- معالجة مكالمة CUSP
- الدعم التقني والمستندات - Cisco Systems

حول هذه الترجمة
ترجمت Cisco هذا المستند باستخدام مجموعة من التقنيات الآلية والبشرية لتقديم محتوى دعم للمستخدمين في جميع أنحاء العالم بلغتهم الخاصة. يُرجى ملاحظة أن أفضل ترجمة آلية لن تكون دقيقة كما هو الحال مع الترجمة الاحترافية التي يقدمها مترجم محترف. تخلي Cisco Systems مسئوليتها عن دقة هذه الترجمات وتُوصي بالرجوع دائمًا إلى المستند الإنجليزي الأصلي (الرابط متوفر).