CUSP 컨피그레이션 예

목차

소개

이 문서에서는 4가지 서로 다른 통화 라우팅 시나리오와 일치하는 디버그가 포함된 Cisco Unified SIP Proxy(CUSP)의 샘플 CLI 및 GUI 컨피그레이션에 대해 설명합니다.

사전 요구 사항

요구 사항

Cisco에서는 이러한 주제에 대한 기본적인 지식을 얻을 것을 권장합니다.

- SIP(Session Initiation Protocol)
- Cisco Unified SIP Proxy(CUSP)

사용되는 구성 요소

이 문서의 정보는 CUSP를 기반으로 합니다.

이 문서의 정보는 특정 랩 환경의 디바이스를 토대로 작성되었습니다.이 문서에 사용된 모든 디바이스는 초기화된(기본) 컨피그레이션으로 시작되었습니다.현재 네트워크가 작동 중인 경우, 모든 명령어의 잠재적인 영향을 미리 숙지하시기 바랍니다.

구성

이 섹션에서는 네 가지 통화 라우팅 시나리오의 컨피그레이션에 대해 설명합니다.

> **참고:**이 섹션에 사용된 명령에 대한 자세한 내용을 보려면 Command Lookup Tool(등록된 고객만 해당)을 사용합니다.

시나리오 1

통화 흐름:**IP Phone 1 — CME — SIP — CUSP — SIP — CUCM — IP Phone 2**

CUSP를 통해 Cisco CUCM(Unified Communications Manager)에 등록된 IP Phone 2에 연결하려면 CME(CallManager Express)에 등록된 IP Phone 1에서 408 2 202 2 2102로 전화를 겁니다.

CME는 이 시나리오에서 PSTN(Public Switched Telephone Network)의 역할을 합니다.

1. CME에서 SIP INVITE가 CUSP로 전송됩니다.

```
[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 ---
```

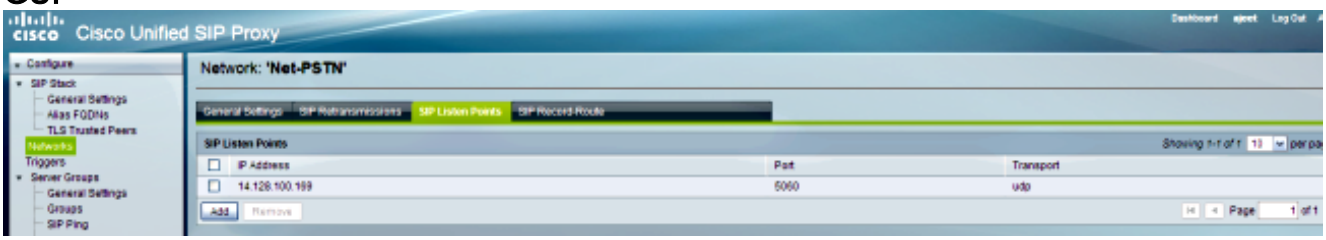
2. 일치하는 네트워크(Net-PSTN) 구성에 통화가 수락됩니다.

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
!
```

GUI



디버그

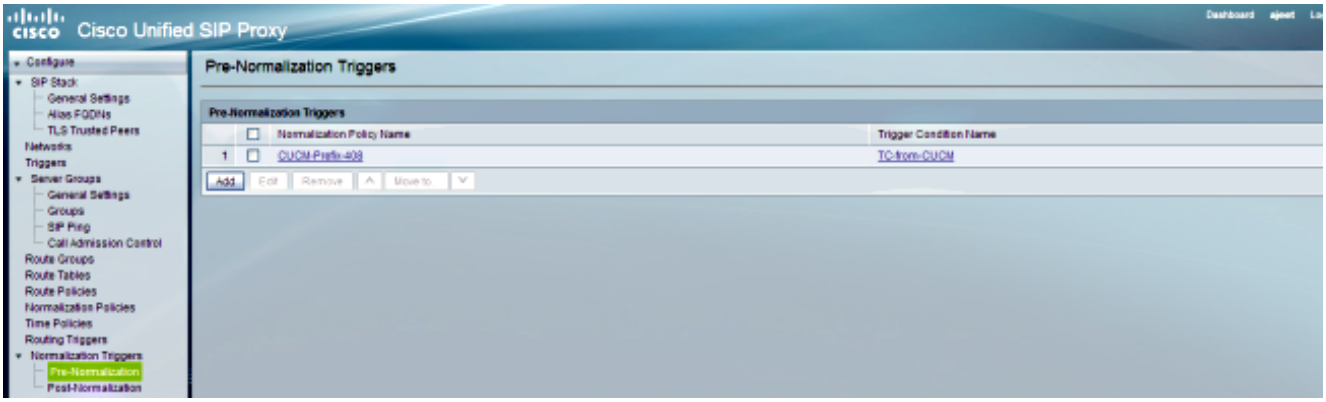
```
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:250
conditions.RegexCondition - inNetwork='Net-PSTN'
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:250
conditions.RegexCondition - IN_NETWORK: Net-PSTN
```

3. 정규화 전 시퀀스가 실행됩니다.

CLI

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

GUI



디버그

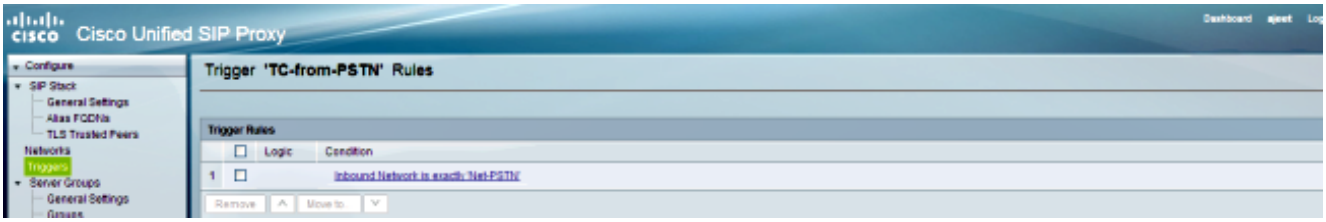
```
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 util.Normalization -
Entering Normalization(moduleRequest:pre-normalize)
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.RegexCondition -
inNetwork='Net-PSTN'
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.RegexCondition -
IN_NETWORK: Net-PSTN
[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. 트리거 조건(TC-from-PSTN)이 일치합니다.

CLI

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

GUI



디버그

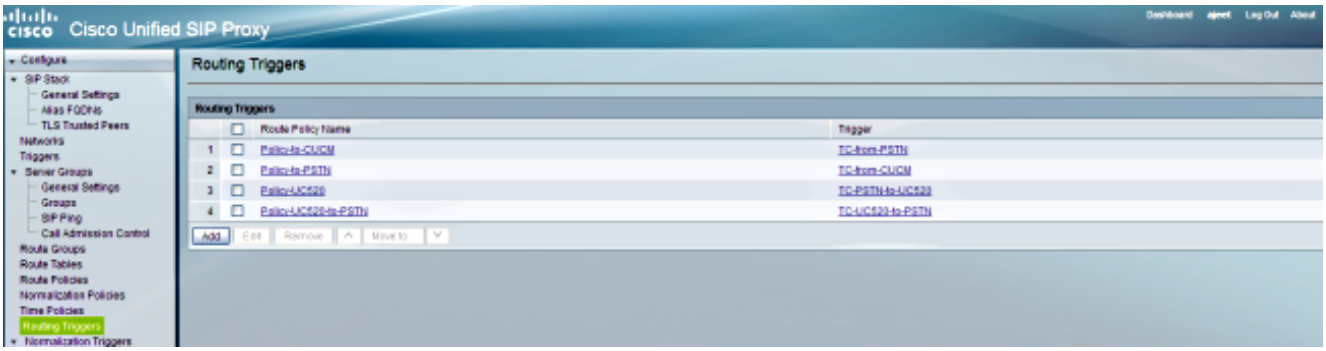
```
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.RegexCondition -
inNetwork='Net-PSTN'
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.RegexCondition -
IN_NETWORK: Net-PSTN
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:250 conditions.AbstractRegexCondition -
pattern(^\QNet-PSTN\E$), toMatch(Net-PSTN)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

5. Routing Trigger 컨피그레이션은 Trigger Condition(TC-from-PSTN)에 따라 일치하는 Route Policy(Policy-to-CUCM)를 찾기 위해 선택됩니다.

CLI

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

GUI



디버그

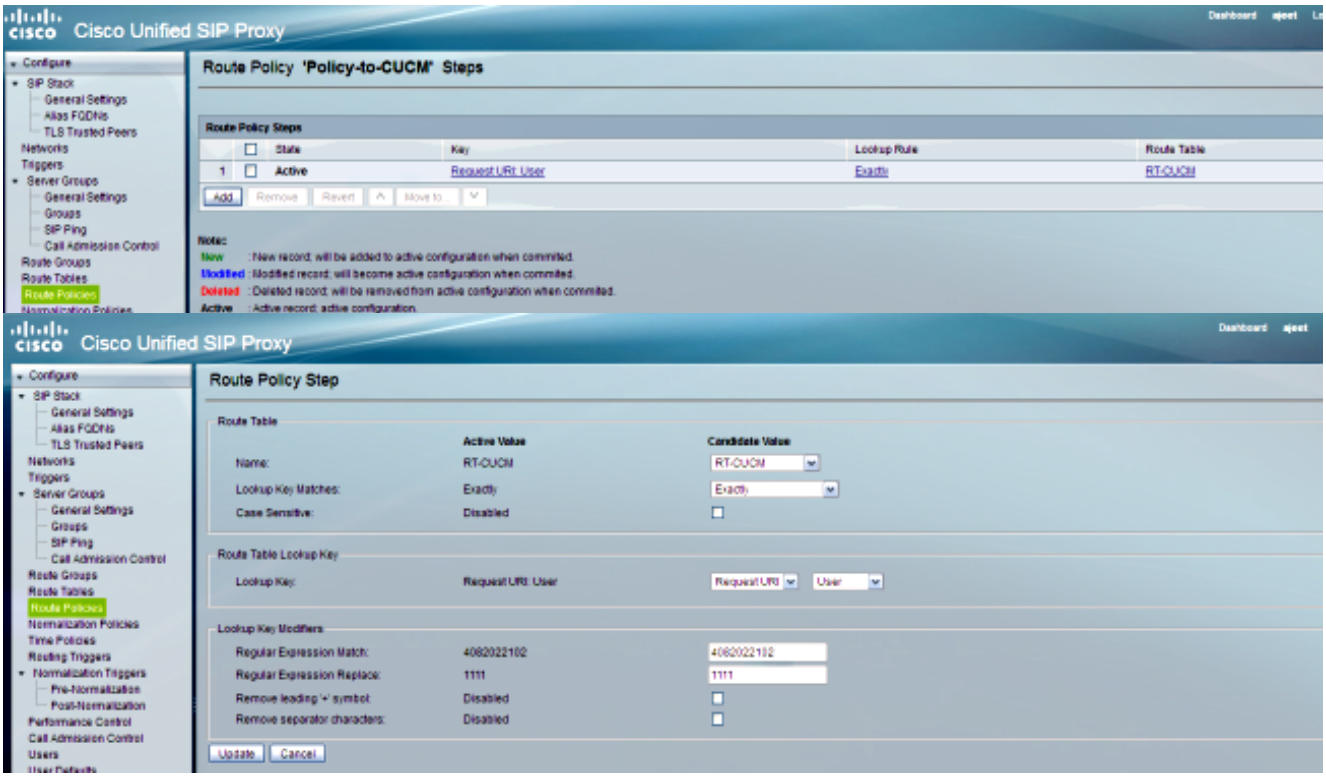
```
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 triggers.ModuleTrigger -
ModuleTrigger.eval() action<Policy-to-CUCM> actionParameter<>
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 triggers.ModuleTrigger -
ModuleTrigger.eval() got the policy, executing it ...
```

6. 일치하는 Route Table(RT-CUCM)을 찾기 위해 Route Policy(Policy-to-CUCM) 컨피그레이션이 선택됩니다.

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
!
```

GUI



디버그

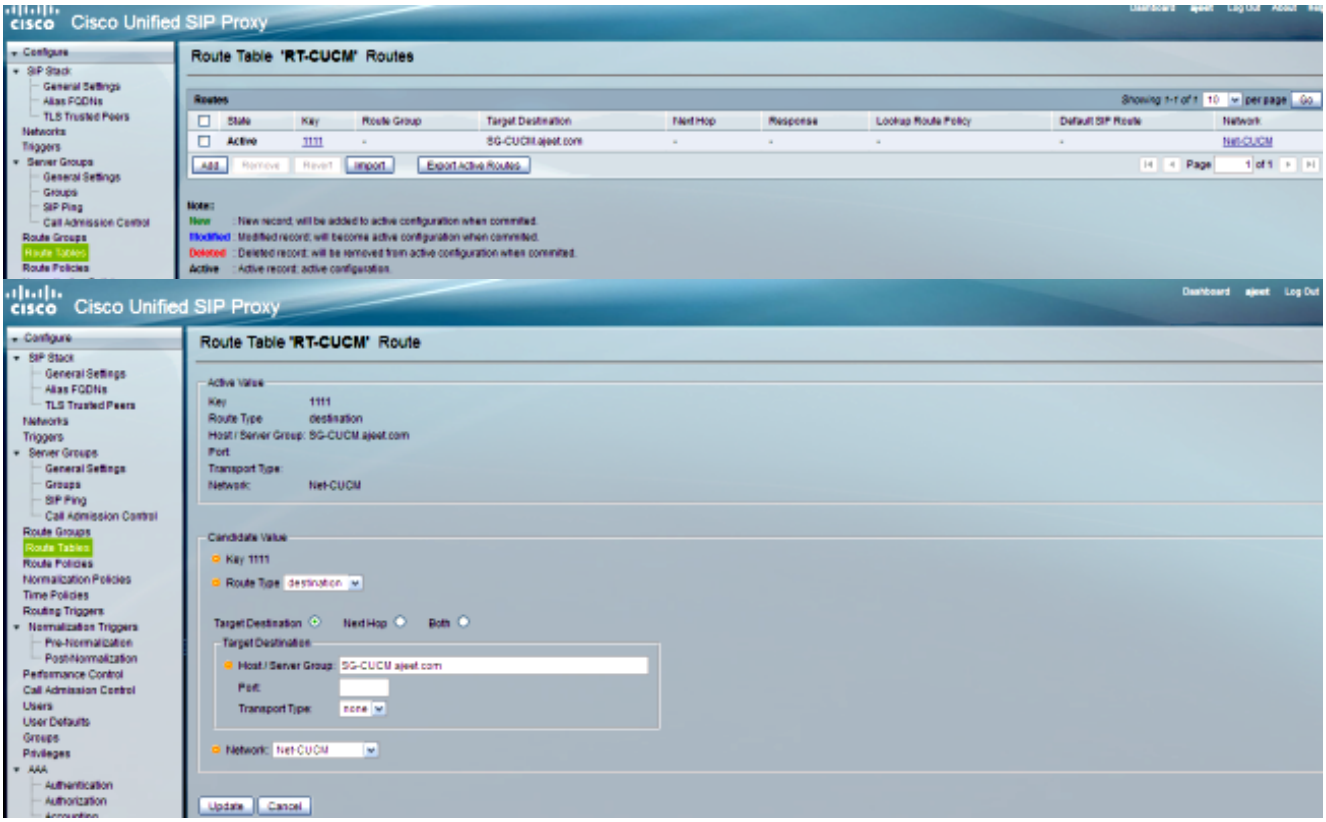
```
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 nrs.XCLPrefix -
Entering getKeyValue()
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 nrs.FieldSelector -
getUriPart: URI - sip:4082022102@14.128.100.169:5060 part 6
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:251 nrs.FieldSelector -
Requested field 45
[REQUESTI.12] 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=
1111, ignore case= false
[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. 대상(SG-CUCM.ajeet.com)을 찾기 위해 Route Table(RT-CUCM) 컨피그레이션이 선택됩니다
.

CLI

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

GUI



디버그

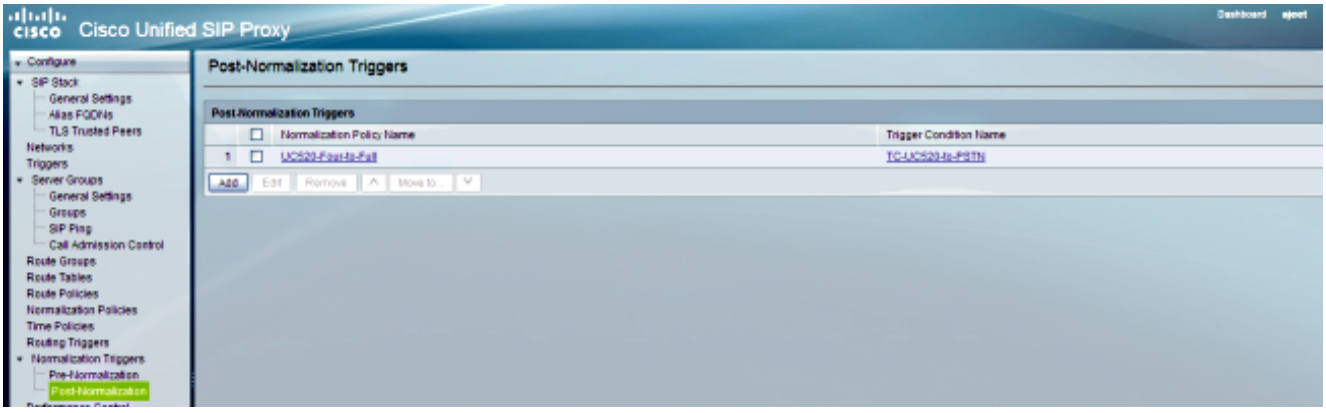
```
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 routingtables.RoutingTable -
Entering lookup()
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 routingtables.RoutingTable -
Looking up 1111 in table RT-CUCM with rule exact and modifiers=none
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:252 routingtables.RoutingTable -
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. 표준화 후 시퀀스가 실행됩니다.
   참고:이 시나리오에서는 사후 정규화를 사용하지 않으므로 디버그에서 사후 표준화를 건너뜁니다.

CLI

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

GUI



디버그

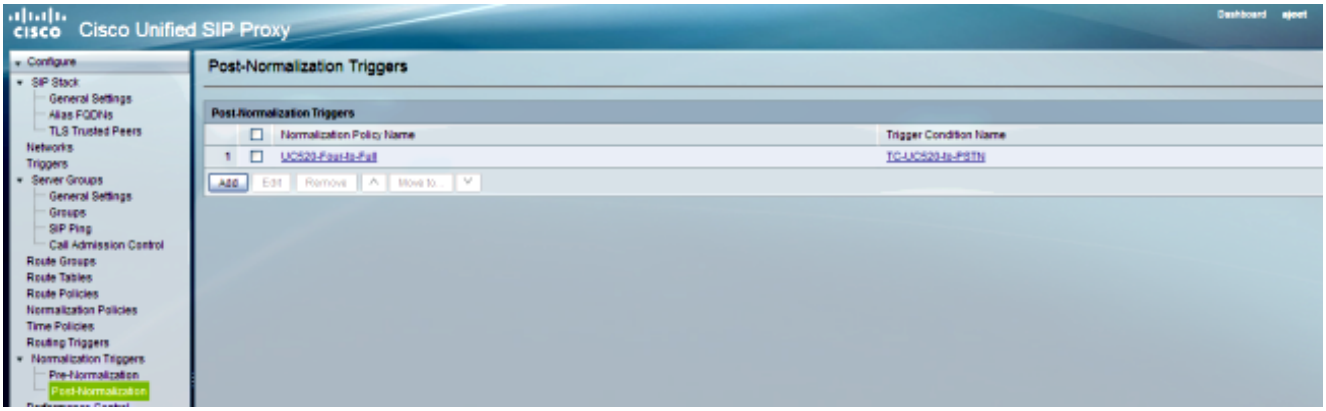
```
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 util.Normalization -
Entering Normalization(moduleRequest:post-normalize)
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 conditions.RegexCondition -
inNetwork='Net-PSTN'
[REQUESTI.12] DEBUG 2013.02.27 19:15:59:254 conditions.RegexCondition -
IN_NETWORK: Net-PSTN
[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. 요소 IP 주소를 찾기 위해 서버 그룹 컨피그레이션이 선택되고 Q-값 및 가중치 컨피그레이션을 기반으로 가능한 최상의 경로로 통화가 라우팅됩니다.

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
!
```

GUI



디버그

```
[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. SIP INVITE가 선택한 요소로 전송됩니다.

```
[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
```

참고:CUCM과 같은 일부 디바이스는 요청을 처리하기 전에 요청의 URI(Uniform Resource Identifier)를 검증합니다. 즉, 이 작업을 허용하려면 최종 디바이스가 FQDN(Fully Qualified Domain Name)으로 구성해야 합니다.

CUCM의 경우 **CUCM > System > Enterprise Parameter > Clusterwide Domain Configuration > Cluster Fully Qualified Domain Name**은 서버 그룹 이름과 같아야 합니다.

시나리오 2

통화 흐름:**IP Phone 1 — CUCM — SIP — CUSP — SIP — CME — IP Phone 2**

IP Phone 1에 연결하려면 IP Phone 2에서 Dial 202 2222를 먼저 사용해야 합니다. 408은 사전 정규화 접두사로 사용해야 합니다.

CME는 이 시나리오에서 PSTN으로 작동합니다.

1. CUCM에서 SIP INVITE가 CUSP에 옵니다.

```
[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 ---
```

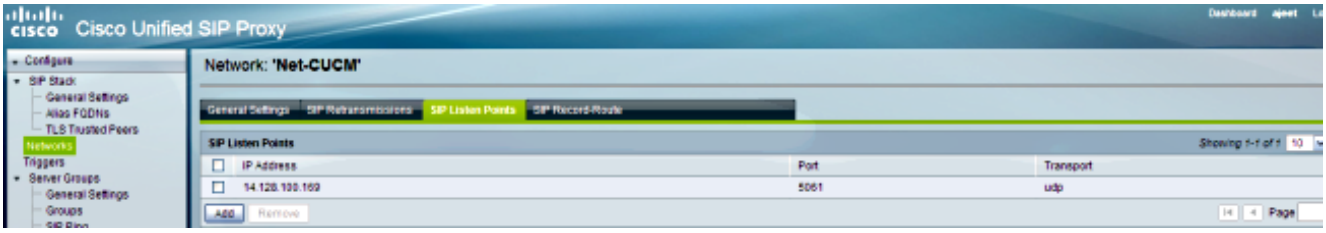
2. 일치하는 네트워크(Net-CUCM) 컨피그레이션에서 통화가 수락됩니다.

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
!
```

GUI



디버그

```
[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. 정규화 전 시퀀스가 실행됩니다.

CLI

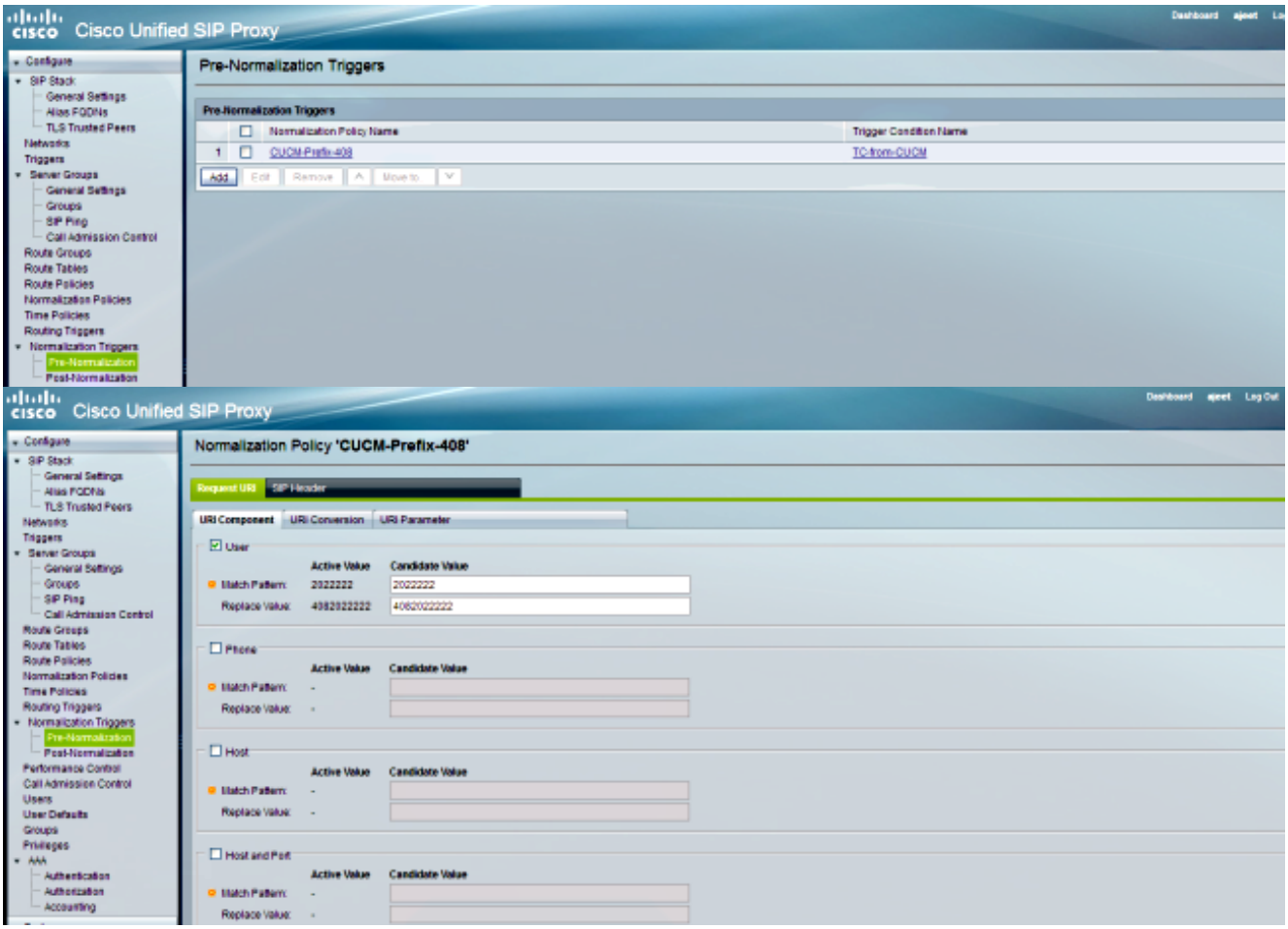
```
trigger pre-normalization sequence 1 policy CUCM-Prefix-408
condition TC-from-CUCM



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

```
end policy
!
```

GUI



디버그

```
[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()
```

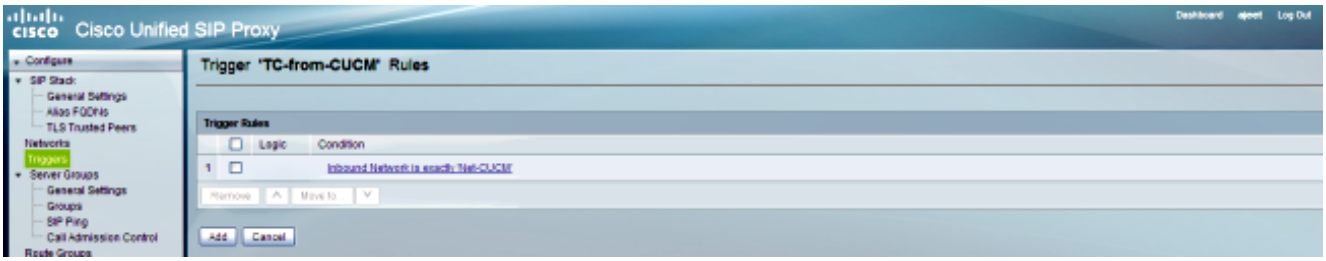
4. 트리거 조건(TC-from-CUCM)이 일치합니다.

CLI

```
!
trigger condition TC-from-CUCM
```

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

GUI



디버그

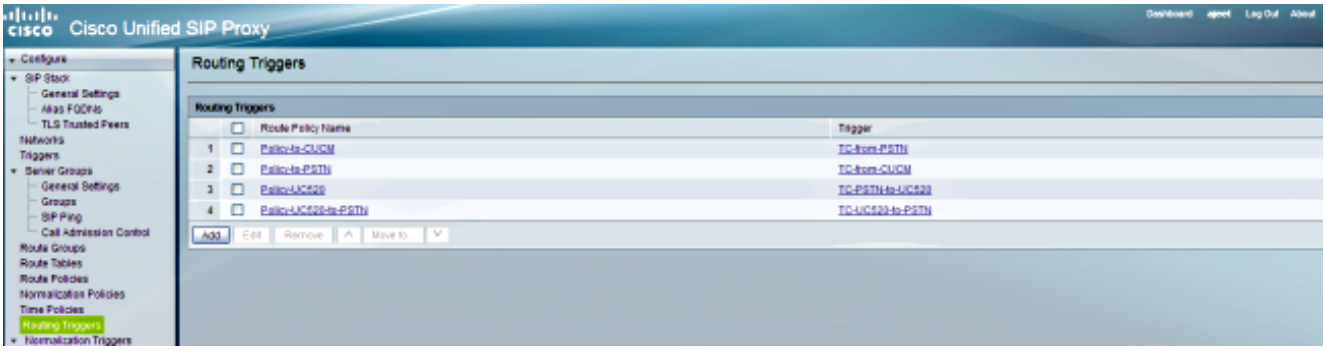
```
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.RegexCondition -
inNetwork='Net-CUCM'
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.RegexCondition -
IN_NETWORK: Net-CUCM
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.AbstractRegexCondition -
pattern(^\QNet-CUCM\E$), toMatch(Net-CUCM)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

5. Trigger Condition(TC-from-CUCM)에 따라 일치하는 Route Policy(Policy-to-PSTN)를 검색하기 위해 Routing Trigger 컨피그레이션이 선택됩니다.

CLI

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

GUI



디버그

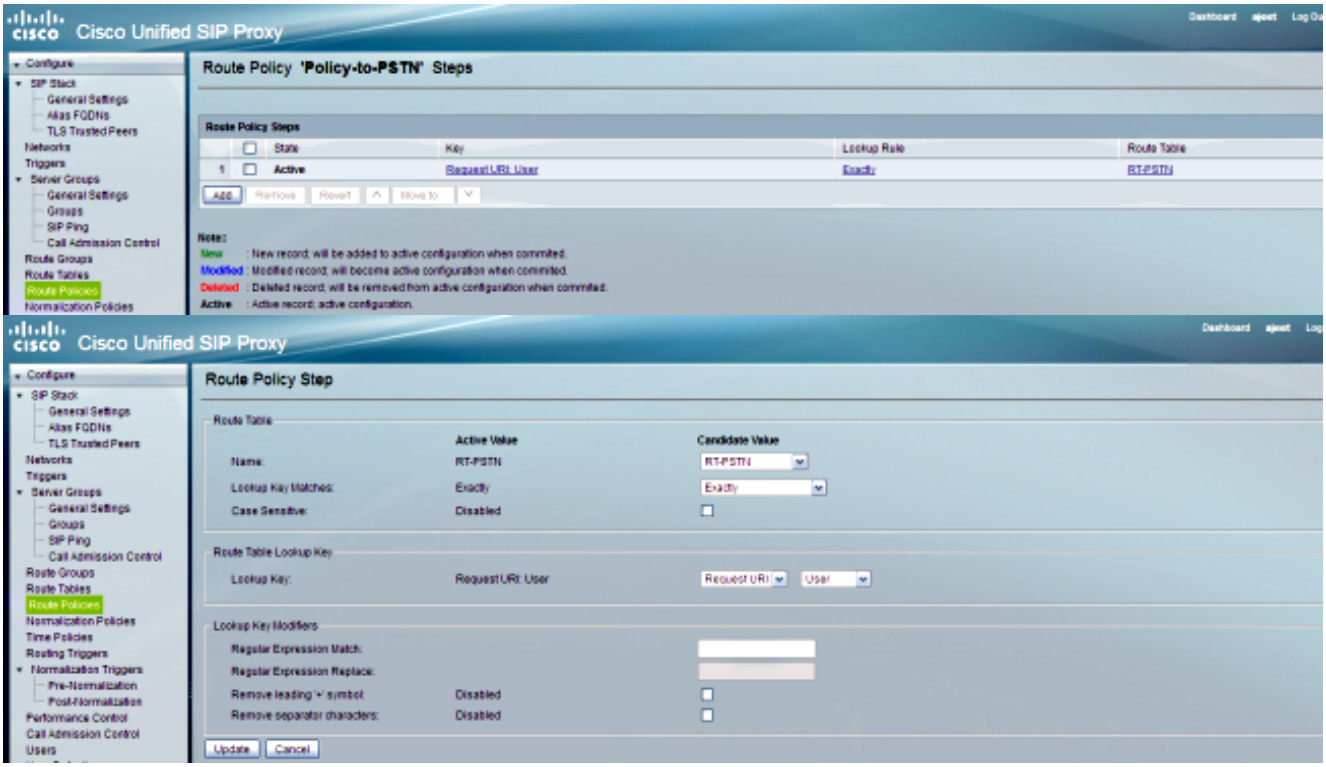
```
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.RegexCondition -
inNetwork='Net-CUCM'
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.RegexCondition -
IN_NETWORK: Net-CUCM
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:374 conditions.AbstractRegexCondition -
pattern(^\QNet-CUCM\E$), toMatch(Net-CUCM) 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. 일치하는 Route Table(RT-PSTN)을 찾기 위해 Route Policy(Policy-to-PSTN) 컨피그레이션을 확인합니다.

CLI

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

GUI



디버그

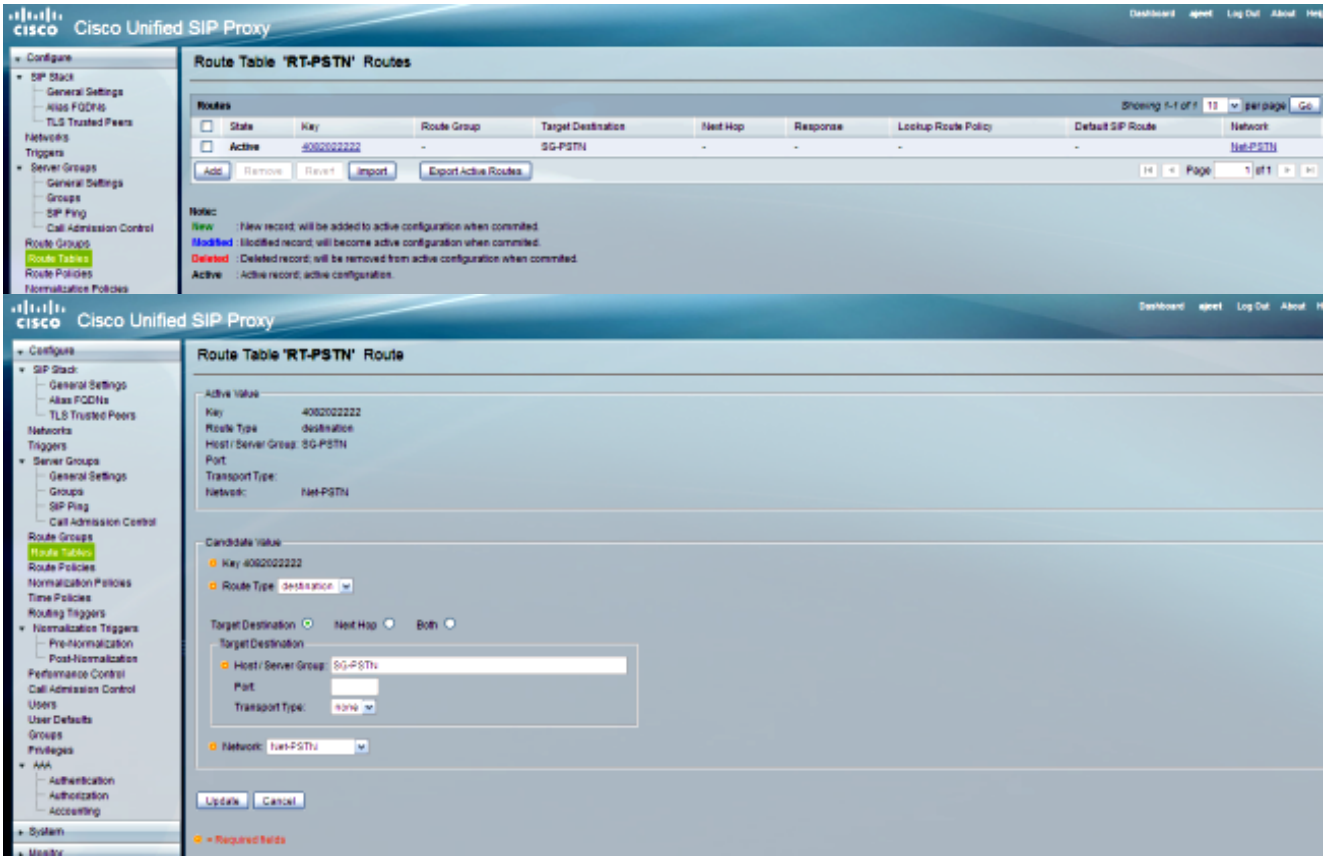
```
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 nrs.XCLPrefix -
Entering getKeyValue()
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 nrs.FieldSelector -
getUriPart: URI - sip:4082022222@14.128.100.169:5061 part 6
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:375 nrs.FieldSelector -
Requested field 45
[REQUESTI.12] 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. 대상(SG-PSTN)을 찾기 위해 Route Table(RT-PSTN) 컨피그레이션이 선택되어 있습니다.

CLI

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

GUI



디버그

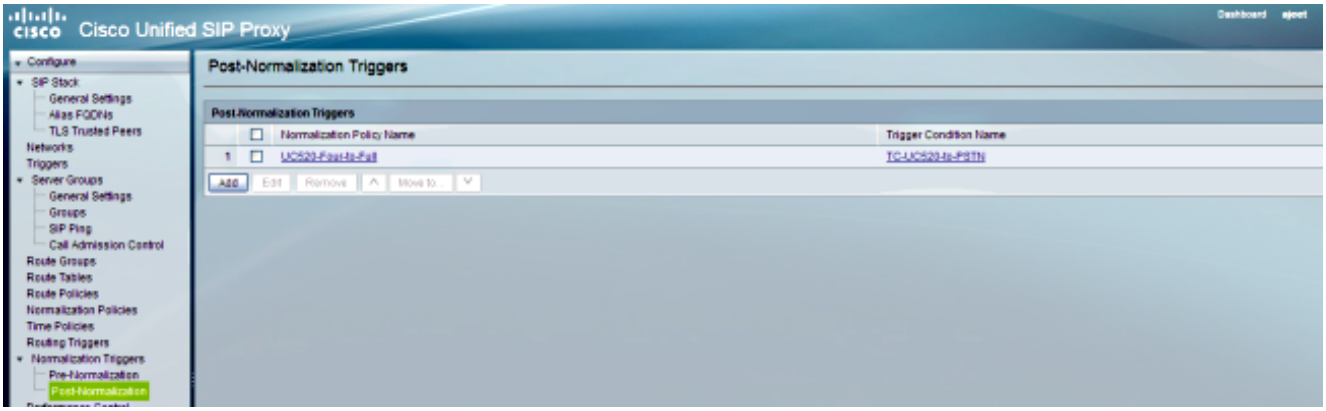
```
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 routingtables.RoutingTable -
Entering lookup()
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 routingtables.RoutingTable -
Looking up 4082022222 in table RT-PSTN with rule exact and modifiers=none
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:376 routingtables.RoutingTable -
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. 표준화 후 시퀀스가 실행됩니다.

CLI

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

GUI



디버그

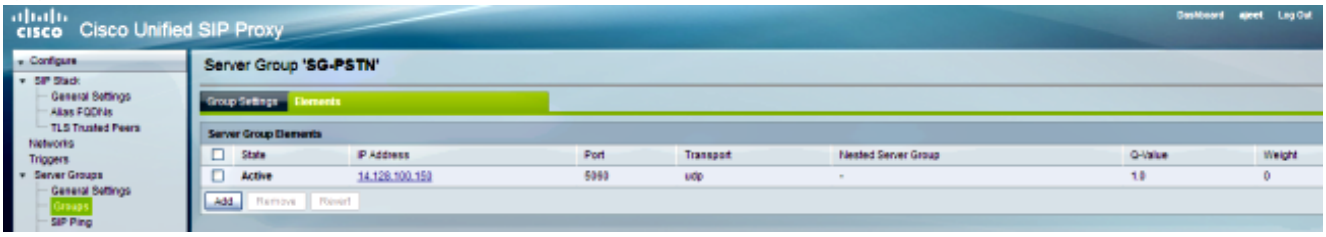
```
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 util.Normalization -
Entering Normalization(moduleRequest:post-normalize)
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 conditions.RegexCondition -
inNetwork='Net-CUCM'
[REQUESTI.12] DEBUG 2013.02.28 00:34:03:378 conditions.RegexCondition -
IN_NETWORK: Net-CUCM
[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
```

9. 요소 IP 주소를 찾기 위해 서버 그룹(SG-PSTN) 컨피그레이션이 확인되고 Q-value 및 Weight 컨피그레이션을 기반으로 가능한 최상의 경로로 통화가 라우팅됩니다.

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
!
```

GUI



디버그

```
[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=
2--->isServerAvailable(): true
[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. SIP INVITE가 선택한 요소로 전송됩니다.

```
[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
```

시나리오 3

통화 흐름:IP Phone 1 — CME 1 — SIP — CUSP — SIP — CME 2 — IP Phone 2

IP Phone 2에서 내선 번호로 연결하려면 IP Phone 1에서 4001 또는 4002로 전화를 겁니다.

CME 2는 이 시나리오에서 UC520이며 CME 1은 PSTN 역할을 합니다.

1. SIP INVITE는 CME 1(PSTN)에서 CUSP로 전송됩니다.

```
[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:8522404444@14.128.100.150>
;party=calling;screen=no;privacy=off
From: <sip:8522404444@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:8522404444@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 ---
```

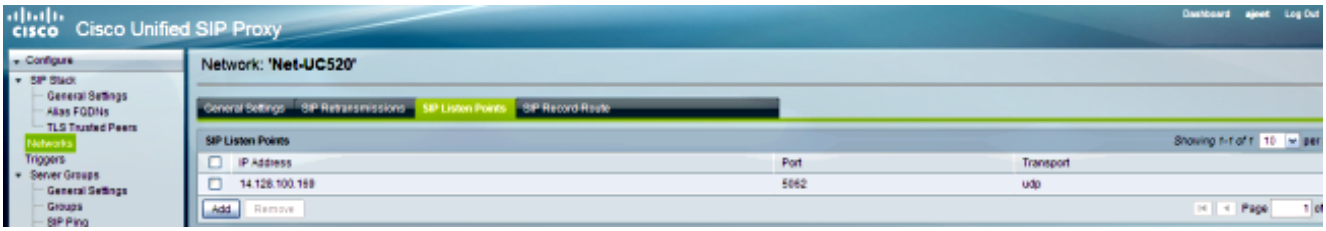
2. 일치하는 네트워크(Net-UC520) 구성에서 통화가 수락됩니다.

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
!
```

GUI



디버그

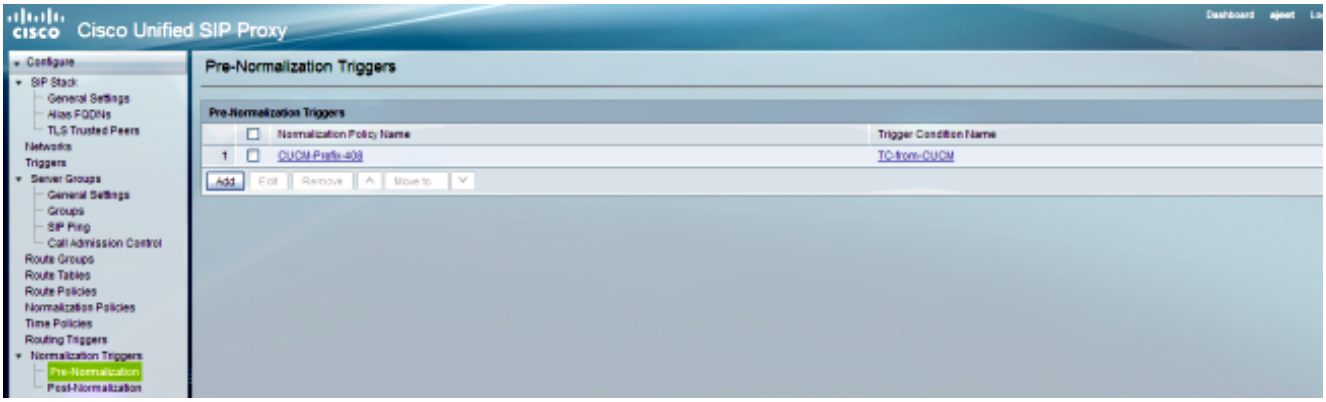
```
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 conditions.RegexCondition -
inNetwork='Net-UC520'
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 conditions.RegexCondition -
IN_NETWORK: Net-UC520
```

3. 정규화 전 시퀀스가 실행됩니다.

CLI

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

GUI



디버그

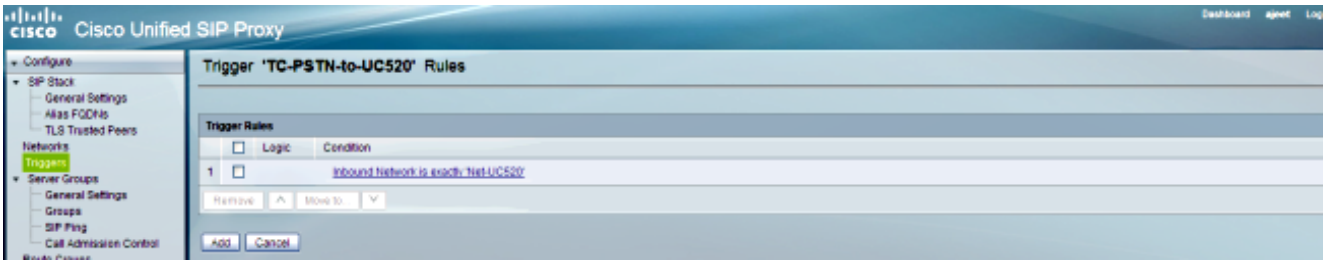
```
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 util.Normalization -
Entering Normalization(moduleRequest:pre-normalize)
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 conditions.RegexCondition -
inNetwork='Net-UC520'
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:362 conditions.RegexCondition -
IN_NETWORK: Net-UC520
[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. 트리거 조건(TC-PSTN-to-UC520)이 일치합니다.

CLI

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

GUI



디버그

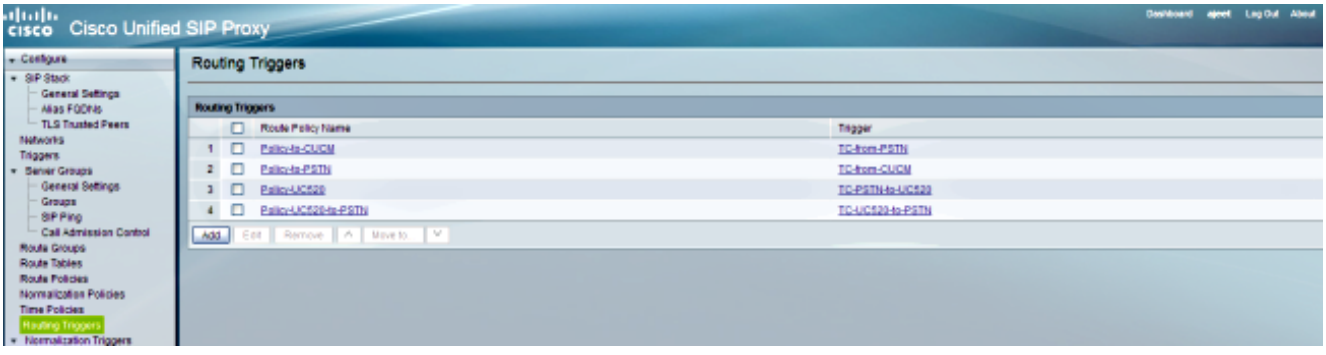
```
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 conditions.RegexCondition -
inNetwork='Net-UC520'
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 conditions.RegexCondition -
IN_NETWORK: Net-UC520
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 conditions.AbstractRegexCondition -
pattern(^\QNet-UC520\E$), toMatch(Net-UC520)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

5. 트리거 조건(TC-PSTN-to-UC520)에 따라 일치하는 경로 정책(Policy-UC520)을 찾기 위해 라우팅 트리거 컨피그레이션을 확인합니다.

CLI

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

GUI



디버그

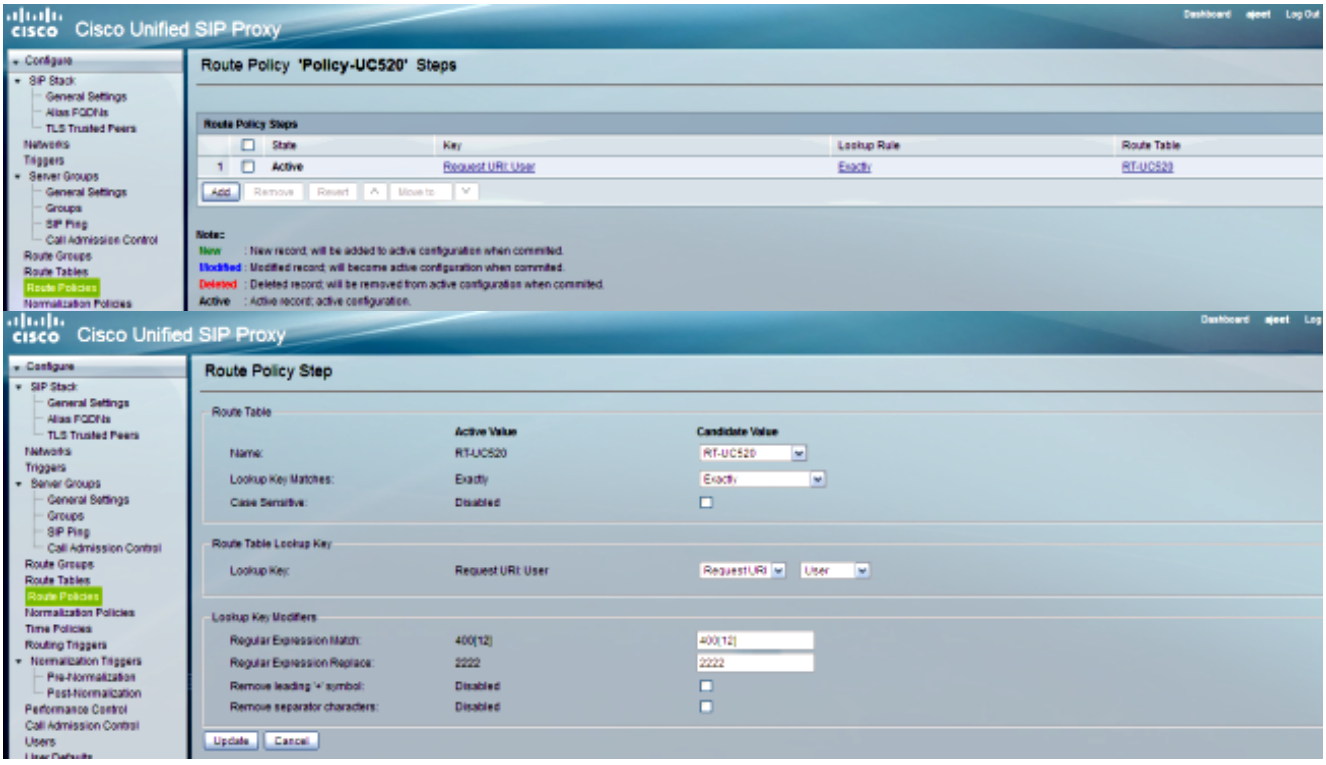
```
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 triggers.ModuleTrigger -
ModuleTrigger.eval() action<Policy-UC520> actionParameter<>
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 triggers.ModuleTrigger -
ModuleTrigger.eval() got the policy, executing it ...
```

6. 경로 정책(Policy-UC520) 컨피그레이션은 일치하는 경로 테이블(RT-UC520)을 찾기 위해 선택됩니다.

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
!
```

GUI



디버그

```
[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
```

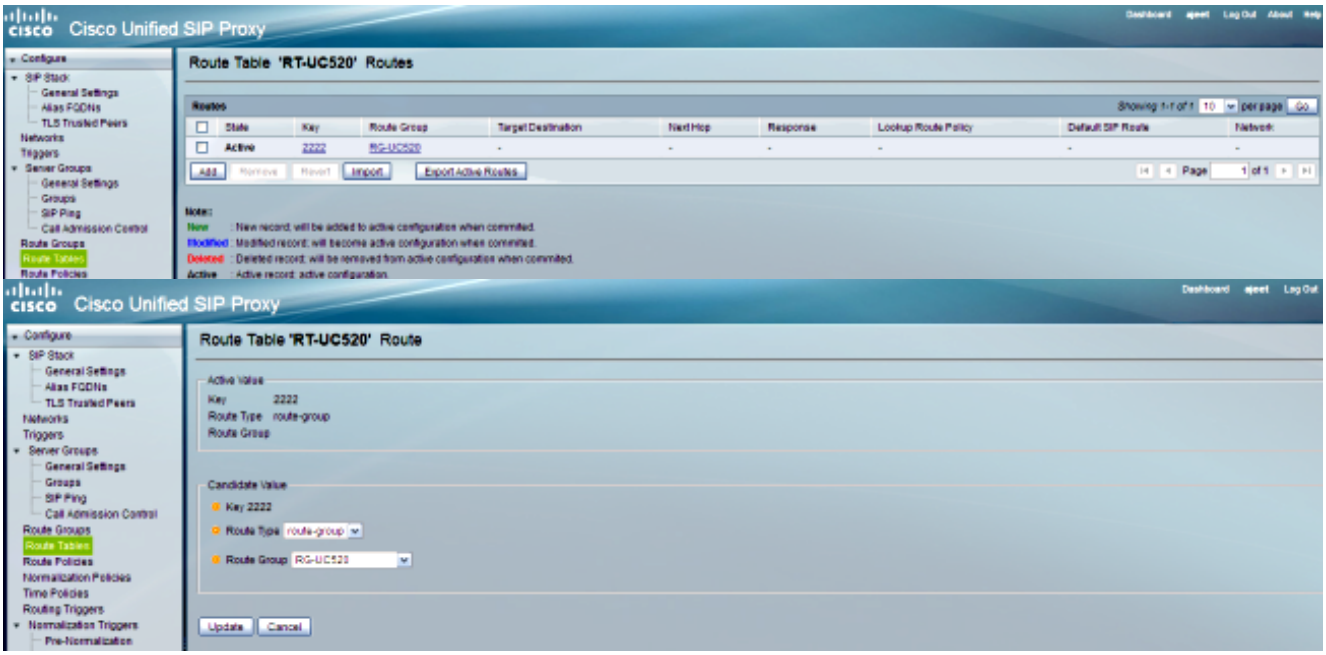
```
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 nrs.FieldSelector -
Modified field: 2222
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 nrs.XCLPrefix -
Leaving getKeyValue()
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:363 modules.XCLLookup -
table=RT-UC520, key=2222
[REQUESTI.10] INFO 2013.02.28 05:28:57:364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

7. 대상(RG-UC520)을 찾기 위해 경로 테이블(RT-UC520) 컨피그레이션이 점검됩니다.

CLI

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

GUI



디버그

```
[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.
```

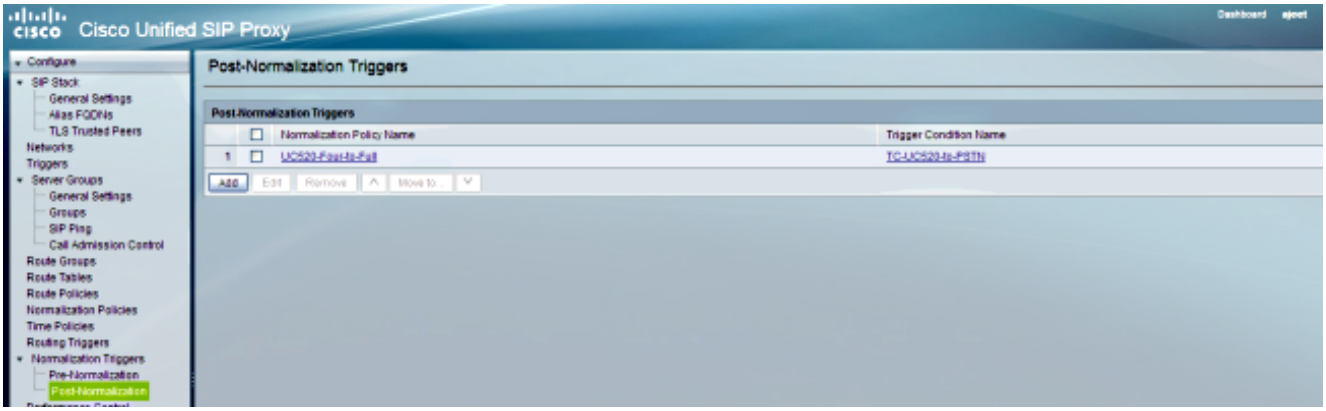
```
0radvance=[502, 503]], PolicyAdvance=null
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 nrs.NRSAlgResult -
set policyAdvance as specified in route=RouteTable:RT-UC520, RouteKey:2222,
RouteGroup:RG-UC520
[REQUESTI.10] DEBUG 2013.02.28 05:28:57:364 nrs.NRSAlgResult -
no policyAdvance specified in route
[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. 표준화 후 시퀀스가 실행됩니다.

CLI

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

GUI



디버그

```
[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
```

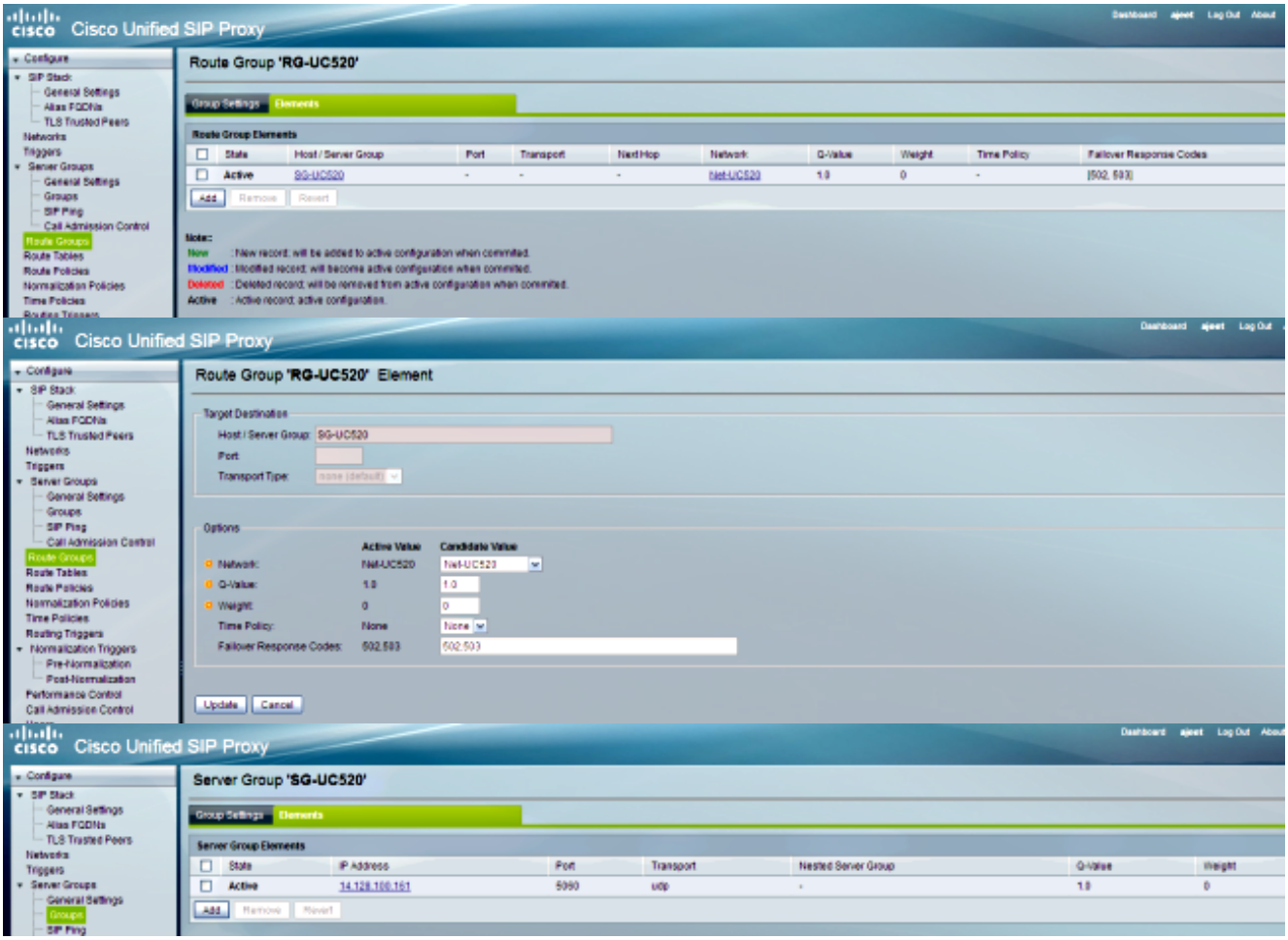
9. 요소 IP 주소를 찾기 위해 Route Group(경로 그룹) 컨피그레이션이 선택되고 Q-값 및 가중치 설정에 따라 가능한 최상의 경로로 통화가 라우팅됩니다.

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
!
```

GUI



디버그

```
[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=
2--->isServerAvailable(): true
[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. SIP INVITE가 선택한 요소로 전송됩니다.

```
[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
14.128.100.169:5062;branch=z9hG4bK.ToYJFeKMyfZGySv.gcLjg~~237
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
```

시나리오 4

통화 흐름: IP Phone 1 — CME 1 — SIP — CUSP — SIP — CME 2 — IP Phone 2

IP Phone 1에 연결하려면 IP Phone 2에서 4444로 전화를 겁니다. 이 번호는 415 240 444로 변경되고 IP Phone 1에 연결되면 정상화가 이루어집니다.

CME 2는 이 시나리오에서 UC520이며 CME 1은 PSTN 역할을 합니다.

1. SIP INVITE는 CME 2(UC520)에서 CUSP로 전송됩니다.

```
[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 ---
```

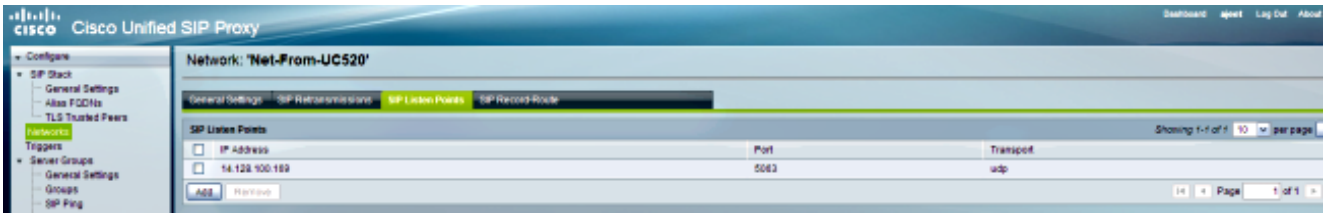
2. 일치하는 네트워크(Net-From-UC520) 구성에서 통화가 수락됩니다.

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
!
```

GUI



디버그

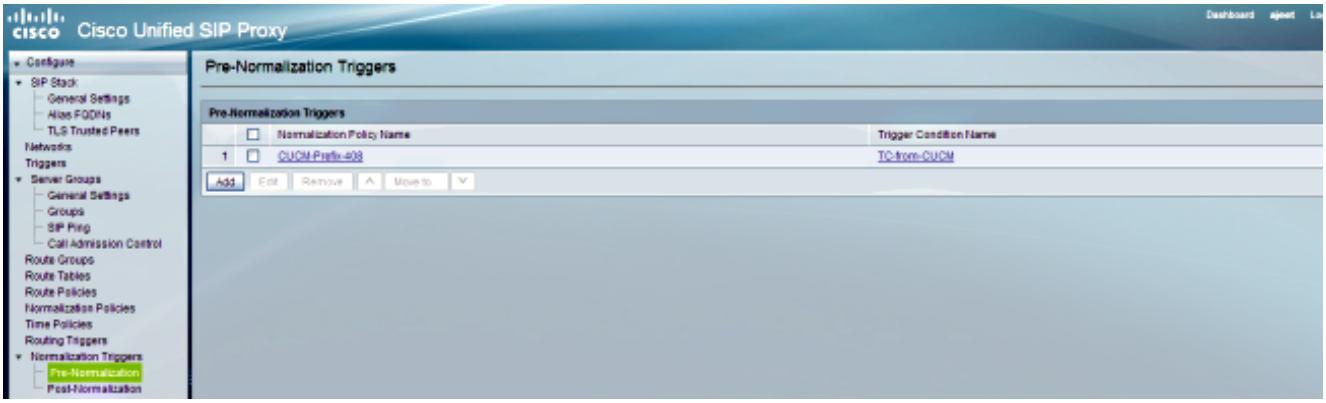
```
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.RegexCondition -
inNetwork='Net-From-UC520'
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.RegexCondition -
IN_NETWORK: Net-From-UC520
```

3. 정규화 전 시퀀스가 실행됩니다.

CLI

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

GUI



디버그

```
[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 -
```

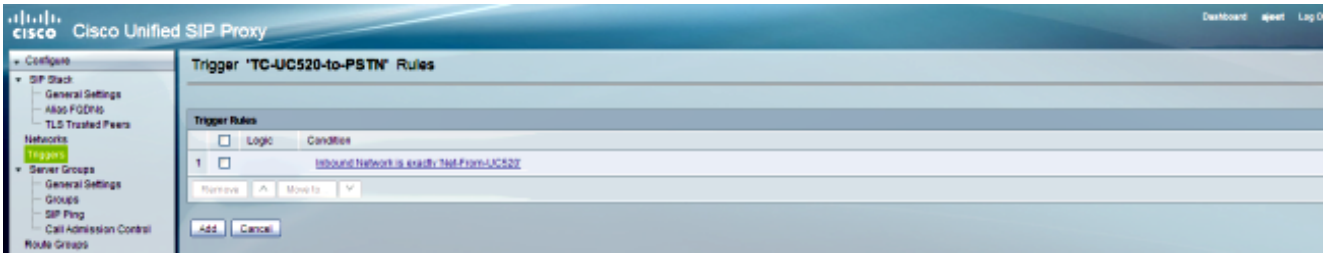
```
pattern(^\QNet-CUCM\E$), toMatch(Net-From-UC520) returning false
[REQUESTI.5] INFO 2013.02.28 07:06:57:229 util.Normalization -
skipping pre-normalize, due to either no trigger is configured or triggers
did not evaluate to true or is configured to by-pass
```

4. 트리거 조건(TC-UC520-to-PSTN)이 일치합니다.

CLI

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

GUI



디버그

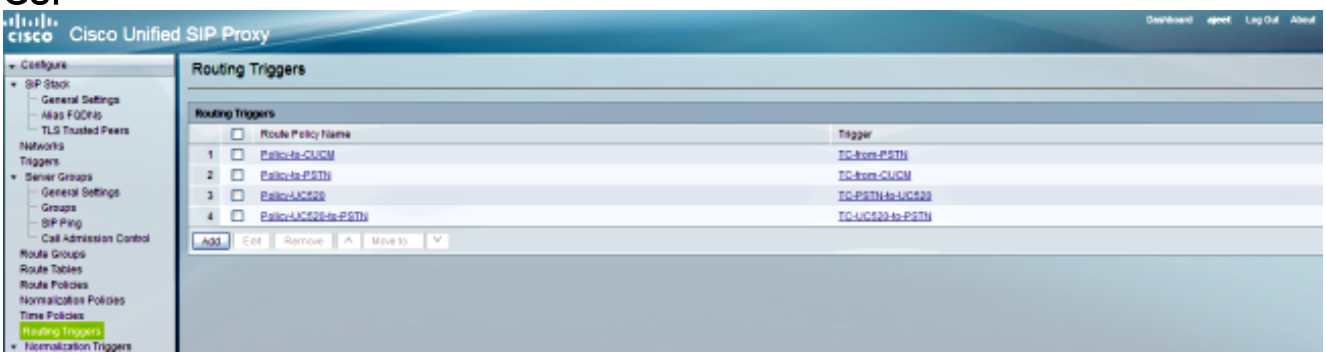
```
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.RegexCondition -
inNetwork='Net-From-UC520'
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:229 conditions.RegexCondition -
IN_NETWORK: Net-From-UC520
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 conditions.AbstractRegexCondition -
pattern(^\QNet-From-UC520\E$),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

5. 트리거 조건(TC-UC520-to-PSTN)에 따라 일치하는 경로 정책(Policy-UC520-to-PSTN)을 찾기 위해 라우팅 트리거 컨피그레이션이 선택됩니다.

CLI

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

GUI



디버그

```
[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. 경로 정책(Policy-UC520-to-PSTN) 컨피그레이션은 일치하는 경로 테이블(RT-UC520-PSTN)을 찾기 위해 선택됩니다.

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
!
```

GUI

디버그

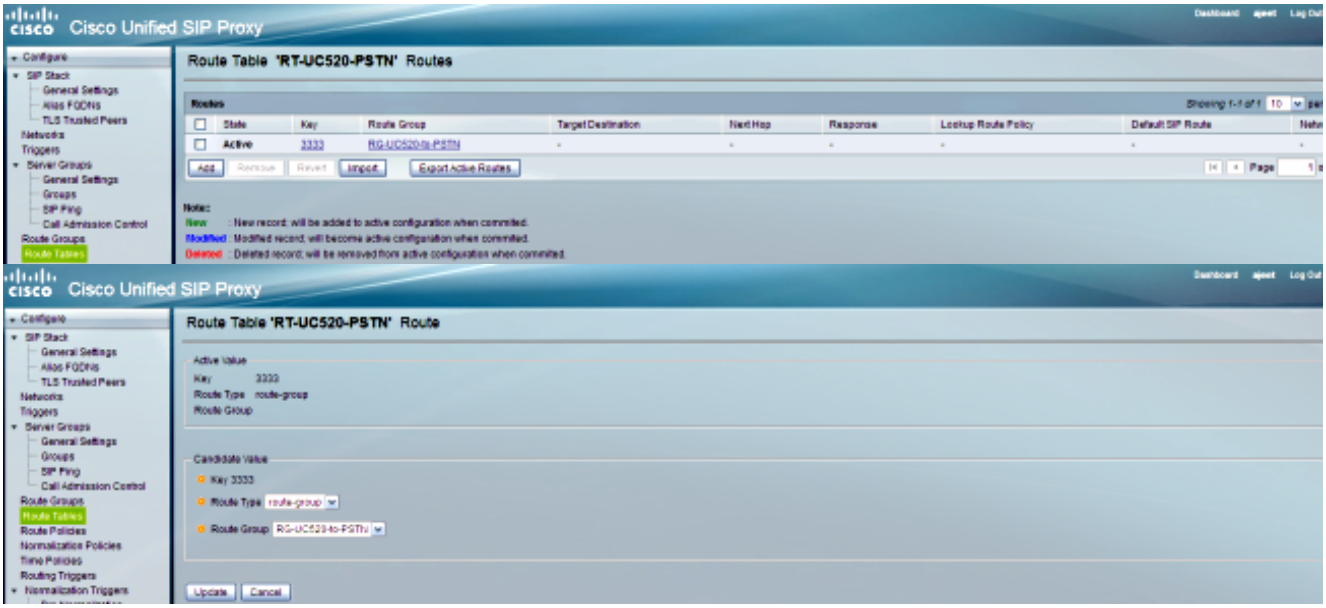
```
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.XCLPrefix -
Entering getKeyValue()
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.FieldSelector -
getUriPart: URI - sip:4444@14.128.100.169:5063 part 6
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:230 nrs.FieldSelector -
Requested field 45
[REQUESTI.5] DEBUG 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. 대상(RG-UC520)을 찾기 위해 경로 테이블(RT-UC520-PSTN) 컨피그레이션을 확인합니다.

CLI

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

GUI



디버그

```
[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
```

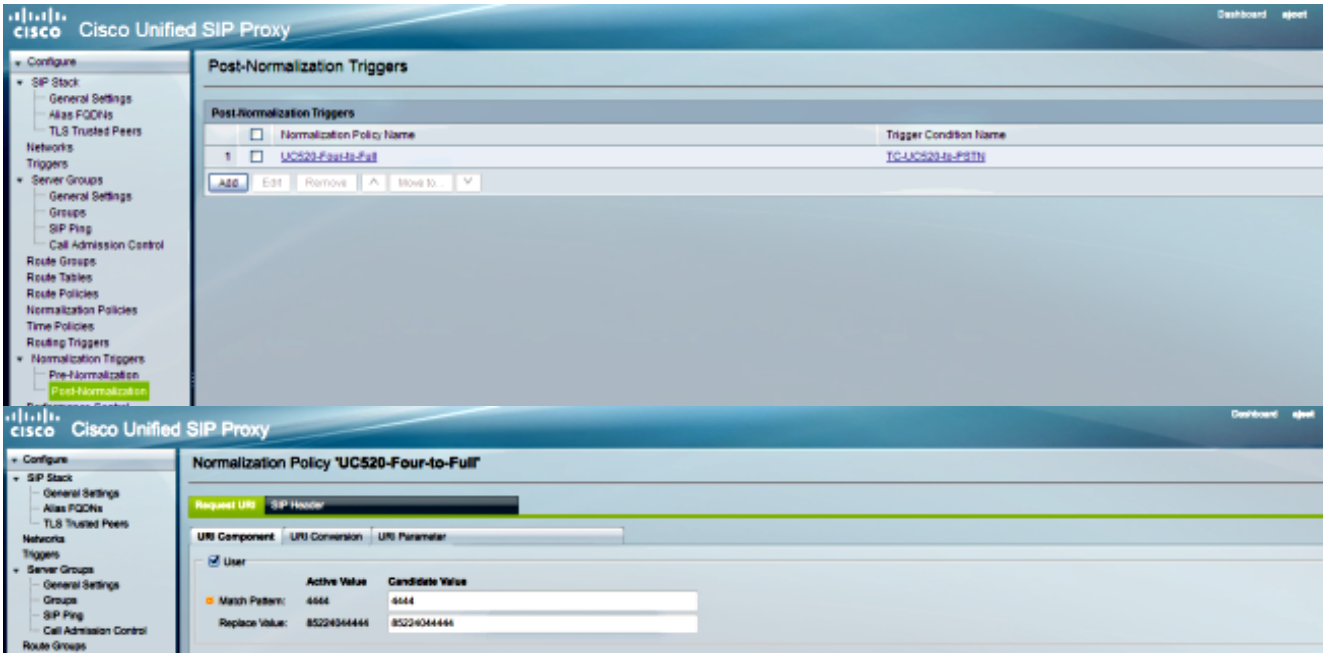
8. 표준화 후 시퀀스가 실행됩니다.

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
!
```

GUI



디버그

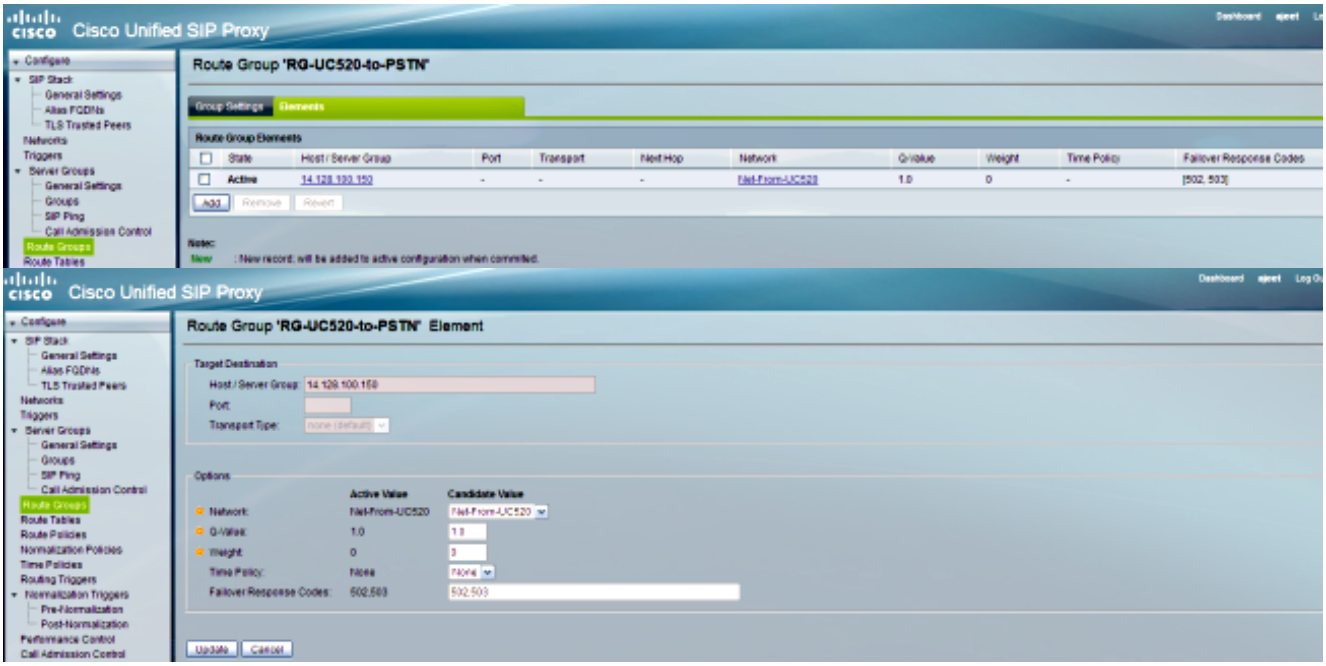
```
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 util.Normalization -
Entering Normalization(moduleRequest:post-normalize)
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 conditions.RegexCondition -
inNetwork='Net-From-UC520'
[REQUESTI.5] DEBUG 2013.02.28 07:06:57:232 conditions.RegexCondition -
IN_NETWORK: 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. 요소 IP 주소를 찾기 위해 Route Group(경로 그룹) 컨피그레이션이 선택되고 Q-값 및 가중치 설정에 따라 가능한 최상의 경로로 통화가 라우팅됩니다.

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
!
```

GUI



디버그

```
[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:
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 -
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. SIP INVITE가 선택한 요소로 전송됩니다.

```
[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
14.128.100.169:5063;branch=z9hG4bK.ToYJFeKMyfZGySv.gcLjg~~238
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
```

4가지 시나리오 모두 구성

이 문서에 설명된 네 가지 통화 시나리오에 대한 전체 CUSP 컨피그레이션은 다음과 같습니다.

```
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)#
```

다음을 확인합니다.

현재 이 구성에 대해 사용 가능한 확인 절차가 없습니다.

문제 해결

현재 이 컨피그레이션에 사용할 수 있는 특정 문제 해결 정보가 없습니다.

관련 정보

- Cisco Unified SIP Proxy 릴리스 8.5용 CLI 컨피그레이션 가이드
- Cisco Unified SIP Proxy 릴리스 8.5용 GUI 관리 설명서
- CUSP 통화 처리
- 기술 지원 및 문서 – Cisco Systems