

# SIP

( )

**2003-10-06**

**VoIP Forum  
SIP WG**



# 1.

IETF RFC3261 SIP

, 3GPP, 4G

가  
가

## 1.1

( ) SIP

( )

## 1.2

( ) SIP

“SIP

( )”

## 2.

- (call):
- (dialog): UA INVITE 2xx SIP, call identifier, local tag, remote tag
- Address-of-Record (AOR): URI 가 URI (location service) SIP SIPS URI (public address)
- (Final Response): Provisional SIP 2xx, 3xx, 4xx, 5xx, 6xx ..

## 3.

- SIP
- SIP (User Agent): SIP SIP Server , SIP User Agent

User Agent Client .

- (Proxy Server): , 가
- (Registrar): REGISTER , REGISTER 가 가 .
- (Redirect Server): URI  
3xx User Agent Server .

#### 4.

[1] IETF RFC3261 “Session Initiation Protocol”

[2] IETF RFC3263 “Locating SIP Servers”

[3] IETF RFC3264 “Offer and Answer Model in Session Description Protocol”

[4] IETF draft-ietf-sip-call-flows-05 “SIP Call Flow Examples”

[5] ETSI TIPHON DTS03018 “Interface Protocol Requirements Definition: Implementation of TIPHON architecture using SIP”

## 5.

SIP 가 (Personal Mobility) 가  
 가 / 가/  
 / .

### 5.1

UA Registrar , UA  
 Registrar .

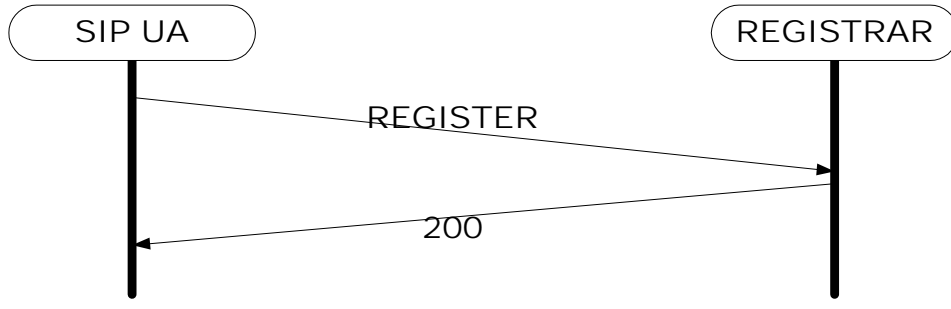
#### 5.1.1

SIP	<ul style="list-style-type: none"> <li>● REGISTER</li> </ul>
Registrar	<ul style="list-style-type: none"> <li>● REGISTER</li> </ul>

#### 5.1.2

SIP	<ul style="list-style-type: none"> <li>● Registrar : ( IP ),</li> <li>● Registrar User ID/SIP URL</li> </ul>
Registrar	<ul style="list-style-type: none"> <li>● SIP User ID/SIP URL</li> </ul>

5.1.3



가

“

가”

가

.

1.

SIP	<ul style="list-style-type: none"> <li>● REGISTER , 200</li> <li>● 200 Contact</li> </ul>
Registrar	<ul style="list-style-type: none"> <li>● Location Server</li> </ul>

“

”

,

.

2.

--	--

SIP	<ul style="list-style-type: none"> <li>● REGISTER , 200</li> <li>● 200 Contact</li> </ul>
Registrar	<ul style="list-style-type: none"> <li>● Location Server</li> </ul>

“ ” ,  
 .  
 3

SIP	<ul style="list-style-type: none"> <li>● REGISTER , 200</li> <li>● 200 Contact</li> </ul>
Registrar	<ul style="list-style-type: none"> <li>● Location Server</li> </ul>

## 5.2

가 가

### 5.2.1

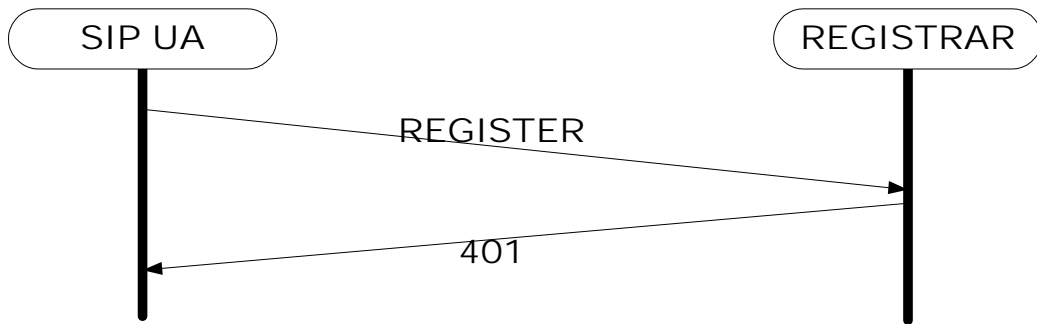
SIP	<ul style="list-style-type: none"> <li>● (Digest )</li> </ul>
Registrar	<ul style="list-style-type: none"> <li>● (Digest )</li> </ul>



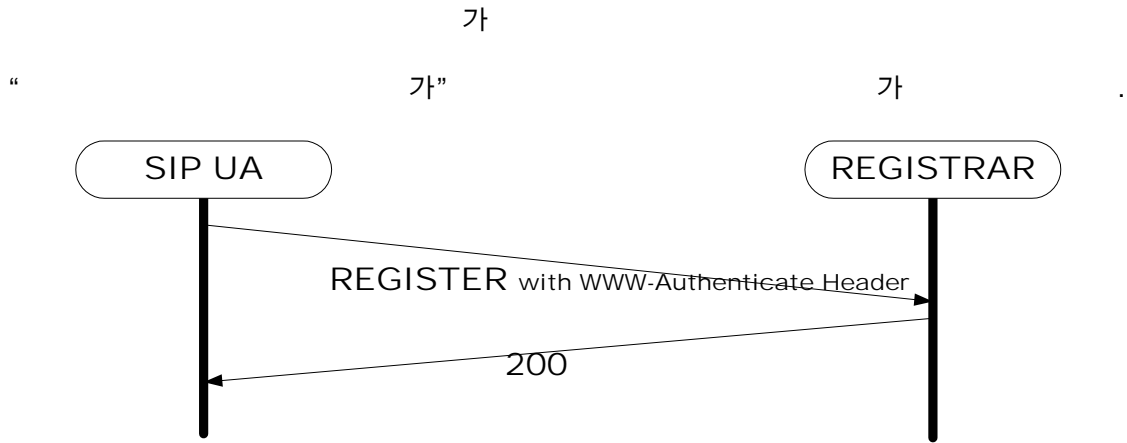
5.2.2

SIP	<ul style="list-style-type: none"> <li>● Registrar : ( IP ), Port</li> <li>● Registrar</li> <li>● Registrar User ID/SIP URL</li> <li>● User ID</li> </ul>
Registrar	<ul style="list-style-type: none"> <li>● SIP User ID/SIP URL/</li> </ul>

5.2.3



SIP	<ul style="list-style-type: none"> <li>● REGISTER , 401</li> <li>● 401 Authenticate</li> <li>● Authenticate</li> </ul>
Registrar	<ul style="list-style-type: none"> <li>● 401</li> <li>● Authenticate</li> </ul>



SIP	<ul style="list-style-type: none"> <li>●</li> <li>● REGISTER , 200</li> <li>● 200 Contact</li> </ul>
Registrar	<ul style="list-style-type: none"> <li>● Location Server</li> </ul>

“ ”

SIP	<ul style="list-style-type: none"> <li>●</li> <li>● REGISTER , 200</li> <li>● 200 Contact</li> </ul>
Registrar	<ul style="list-style-type: none"> <li>● Location Server</li> </ul>

“ ”

SIP	<ul style="list-style-type: none"><li>●</li><li>● REGISTER , 200</li><li>● 200 Contact</li></ul>
Registrar	<ul style="list-style-type: none"><li>● Location Server</li></ul>

# 6.

## 6.1

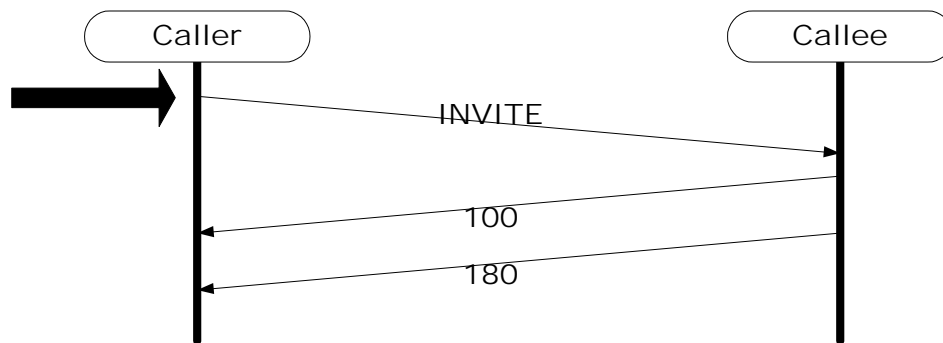
### 6.1.1

Caller	SIP	●
Callee	SIP	●

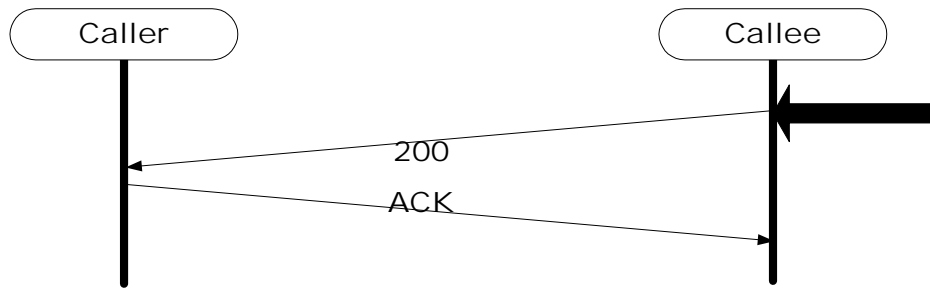
### 6.1.2

Caller	SIP	● Callee SIP : IP, Port, User ID, SIP URL
Callee	SIP	●

### 6.1.3



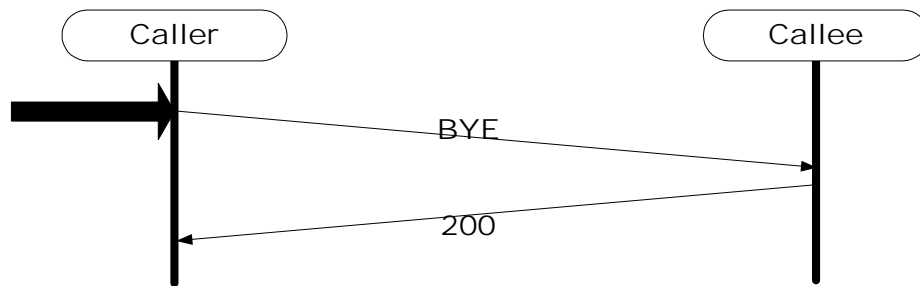
Caller SIP	<ul style="list-style-type: none"> <li>●</li> <li>● 1xx : User Notification</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> <li>● : User Notification</li> </ul>



Caller SIP	<ul style="list-style-type: none"> <li>● 2xx :</li> <li>● Codec</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>● 2xx :</li> <li>● Codec</li> </ul>

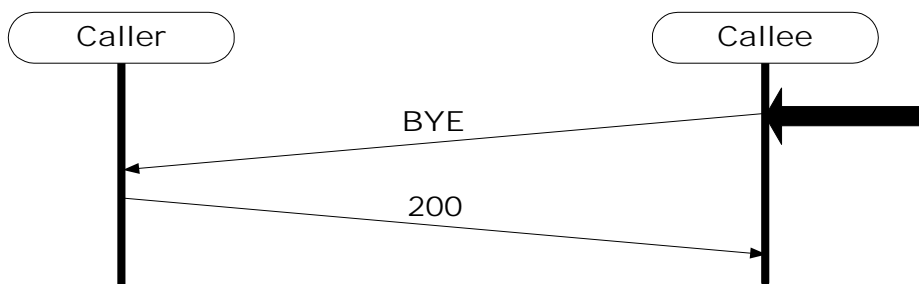
Caller

Caller                      Caller    Route Set



Caller SIP	<ul style="list-style-type: none"> <li>• BYE</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>• BYE</li> </ul>

Callee  
 1~2                      Callee                      .  
 Callee                      Callee                      Route Set



Caller SIP	<ul style="list-style-type: none"> <li>● BYE</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>● BYE</li> </ul>

## 6.2

### 6.2.1

Caller SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> </ul>

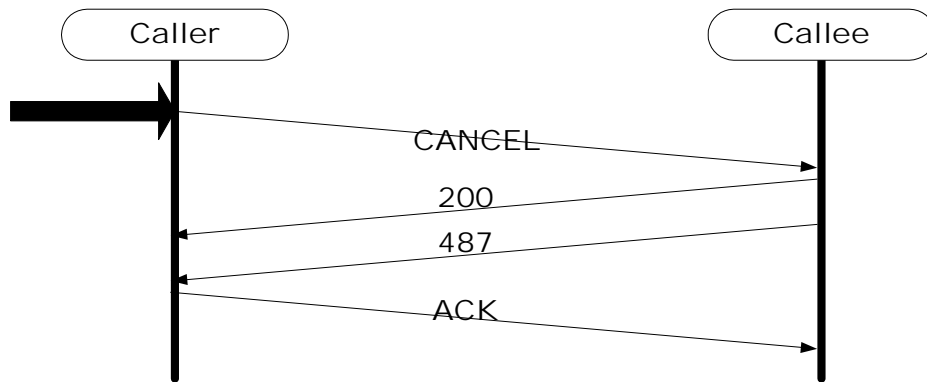
### 6.2.2

Caller SIP	<ul style="list-style-type: none"> <li>● Callee SIP : IP, Port, User ID, SIP URL</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> </ul>

### 6.2.3

“6.1.3

”



Caller SIP	<ul style="list-style-type: none"> <li>● CANCEL</li> <li>● CANCEL 200</li> <li>● INVITE 487</li> <li>● INVITE 487</li> </ul>			ACK
Callee SIP	<ul style="list-style-type: none"> <li>● CANCEL</li> <li>● INVITE 487</li> <li>● INVITE 487</li> </ul>	CANCEL	200	ACK

### 6.3

#### 6.3.1

Caller SIP		●
Callee SIP		●

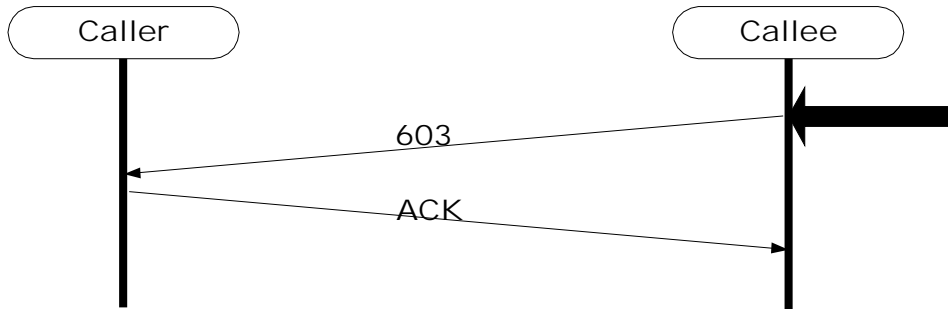


6.3.2

Caller SIP	● Callee SIP : IP, Port, User ID, SIP URL
Callee SIP	●

6.3.3

“6.1.3 ”



Caller SIP	● 603
Callee SIP	● 603

## 7. Proxy

### 7.1

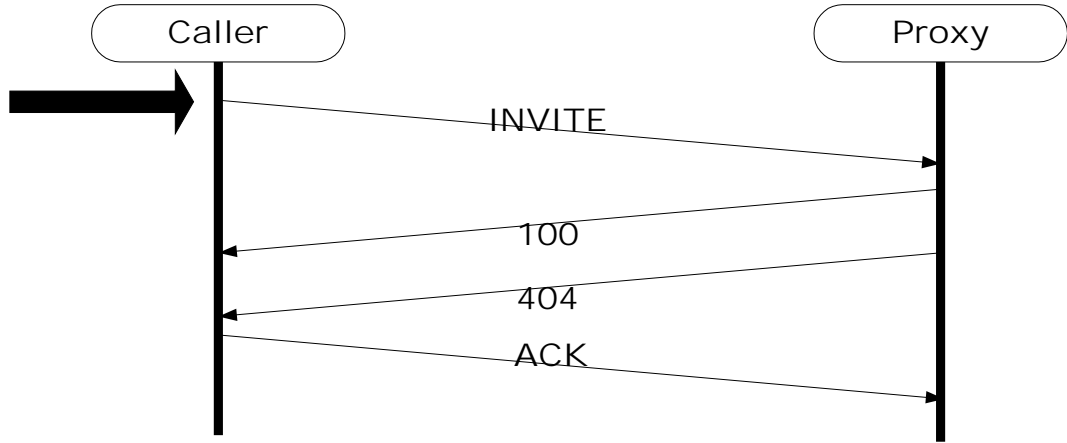
#### 7.1.1

Caller SIP	●
Callee SIP	●
Proxy	● Location Server ● Final Response(408, 404 )

#### 7.1.2

Caller SIP	● Proxy ( IP , )
Callee SIP	●
Proxy	●

#### 7.1.3



Proxy

Caller	SIP	<ul style="list-style-type: none"> <li>● 404 480</li> <li>● ACK</li> </ul>
Callee	SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Proxy		<ul style="list-style-type: none"> <li>● 404 480</li> <li>● ACK</li> </ul>

## 7.2 / Request (Outbound Proxying)

### 7.2.1

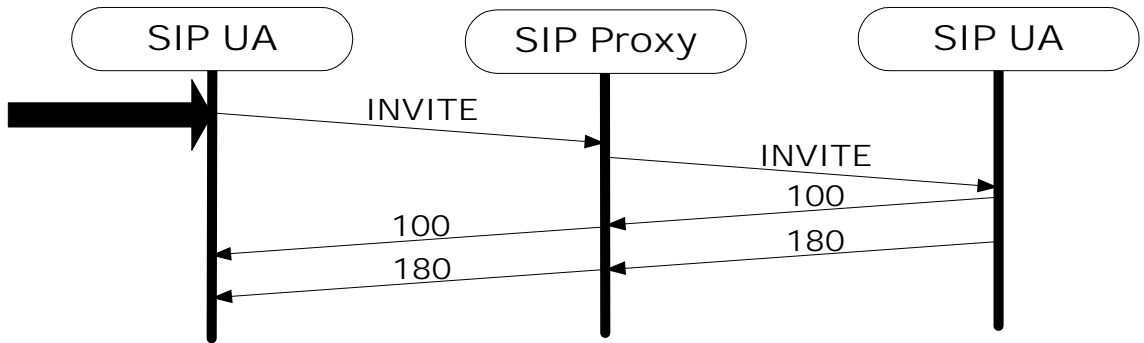
Caller	SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Callee	SIP	<ul style="list-style-type: none"> <li>●</li> </ul>

Proxy	<ul style="list-style-type: none"> <li>● Location Server</li> <li>● Outbound Proxying</li> </ul>
-------	--

7.2.2

Caller SIP	<ul style="list-style-type: none"> <li>● Proxy ( IP , )</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>●</li> </ul>

7.2.3



Caller UA가 Request-URI가 Callee , Route 가 SIP Proxy  
 INVITE , .

--	--

Caller SIP	<ul style="list-style-type: none"> <li>● Pre-Existing Route Set 가</li> <li>● Outbound</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● Outbound</li> </ul>

### 7.3

#### 7.3.1

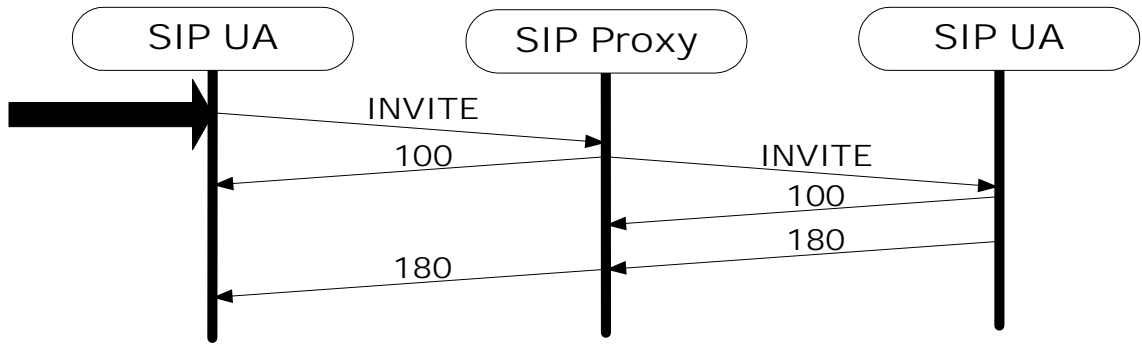
Caller SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set 가</li> <li>●</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● (Stateful or Stateless)</li> <li>● Location Server</li> <li>● Proxying</li> </ul>

#### 7.3.2

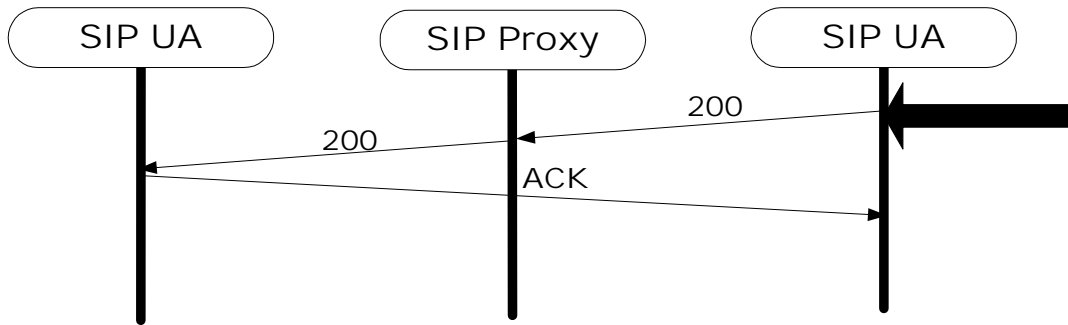
--	--

Caller SIP	<ul style="list-style-type: none"> <li>● Proxy (Callee SIP IP, URL)</li> <li>● Proxy</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● Callee 가</li> </ul>

7.3.3



Caller SIP	<ul style="list-style-type: none"> <li>● 180 : User Notification</li> <li>● 100 INVITE</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> <li>● : User Notification</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● INVITE 100</li> <li>● INVITE</li> <li>● 100 INVITE</li> <li>● 100 1xx (upstream)</li> </ul>



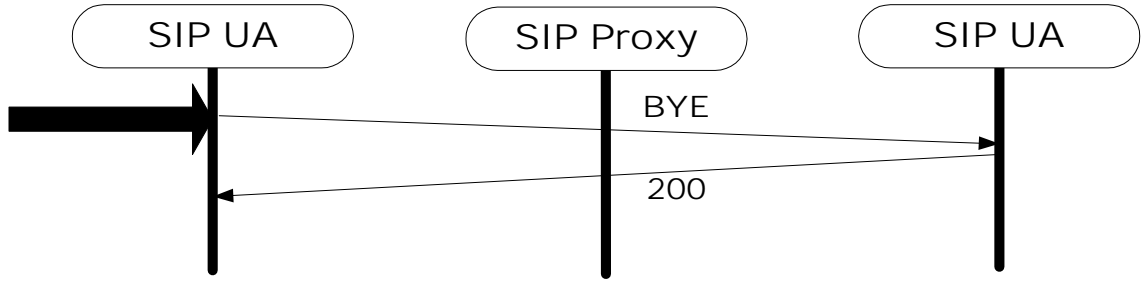
Caller SIP	<ul style="list-style-type: none"> <li>● 2xx :</li> <li>● Codec</li> <li>● ACK 가 Callee</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>● 2xx :</li> <li>● Codec</li> <li>● ACK Caller</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● 200</li> </ul>

Caller

Caller Route Set

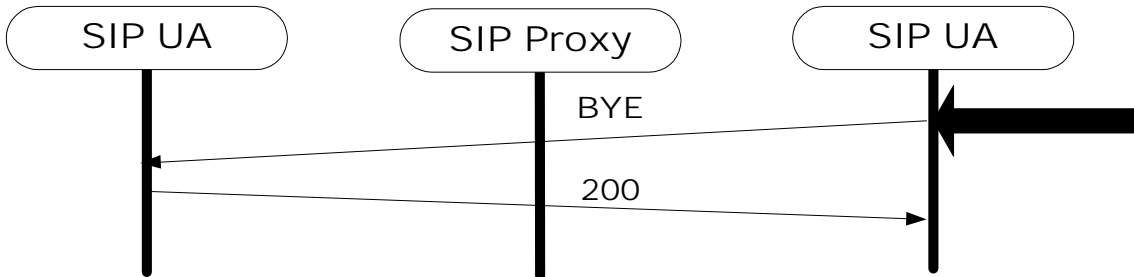
Route 가 BYE

Callee User Agent



Caller	SIP	● BYE
Callee	SIP	● BYE
Proxy		●

Callee  
 1~2  
 Callee  
 Callee Route Set





Caller SIP	<ul style="list-style-type: none"> <li>● BYE</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>● BYE</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>●</li> </ul>

## 7.4

### 7.4.1

Caller SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> <li>● 가</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>●</li> <li>● Location Server</li> <li>● Proxying</li> </ul>

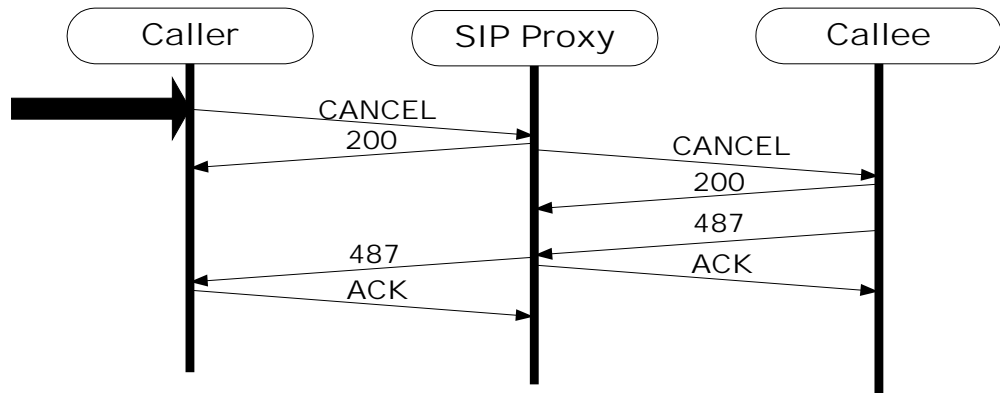
### 7.4.2

--	--

Caller SIP	<ul style="list-style-type: none"> <li>● Proxy</li> <li>● Proxy ( Callee SIP URL IP , )</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>●</li> </ul>

7.4.3

“7.2.3 . ”



Caller SIP	<ul style="list-style-type: none"> <li>● CANCEL</li> <li>● CANCEL 200</li> <li>● INVITE 487</li> <li>● INVITE 487 ACK</li> </ul>
------------	--

Callee SIP	<ul style="list-style-type: none"> <li>● CANCEL CANCEL 200</li> <li>● INVITE 487</li> <li>● INVITE 487 ACK</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● CANCEL Caller 200</li> <li>● CANCEL Callee CANCEL</li> <li>● Callee CANCEL 200</li> <li>● Callee INVITE 487</li> <li>● Callee 487 ACK</li> <li>● Caller INVITE 487</li> <li>● INVITE 487 ACK</li> </ul>

## 7.5

### 7.5.1

Caller SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> <li>● 가</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>●</li> <li>● Location Server</li> <li>● Proxying</li> </ul>

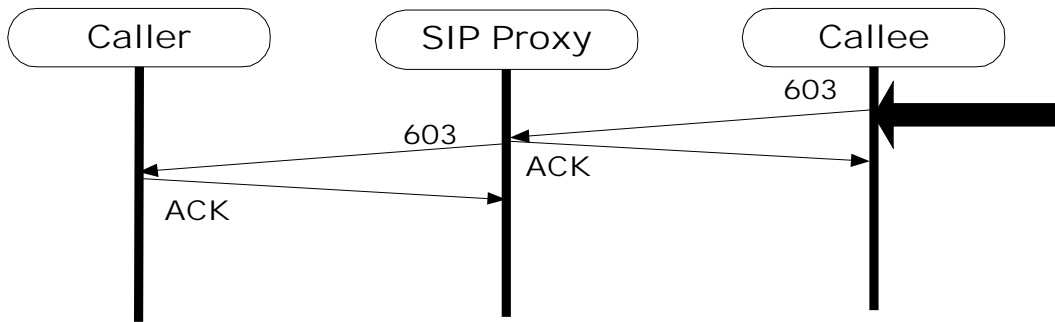
### 7.5.2

--	--

Caller SIP	<ul style="list-style-type: none"> <li>● Proxy</li> <li>● Proxy ( Callee SIP URL IP , )</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>●</li> </ul>

7.5.3

“7.2.3 . ”



Caller SIP	<ul style="list-style-type: none"> <li>● 6xx</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>● 6xx</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● 6xx ACK</li> <li>● 6xx ACK</li> </ul>

## 7.6

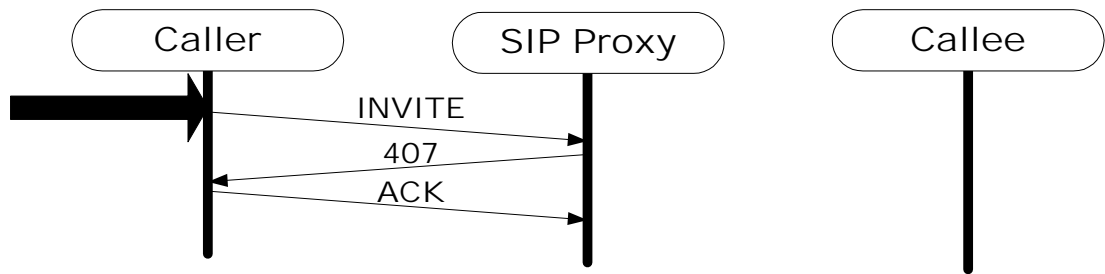
### 7.6.1

Caller SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> <li>●</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> <li>● 가</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● (Stateful or Stateless)</li> <li>●</li> <li>● Location Server</li> <li>● Proxying</li> </ul>

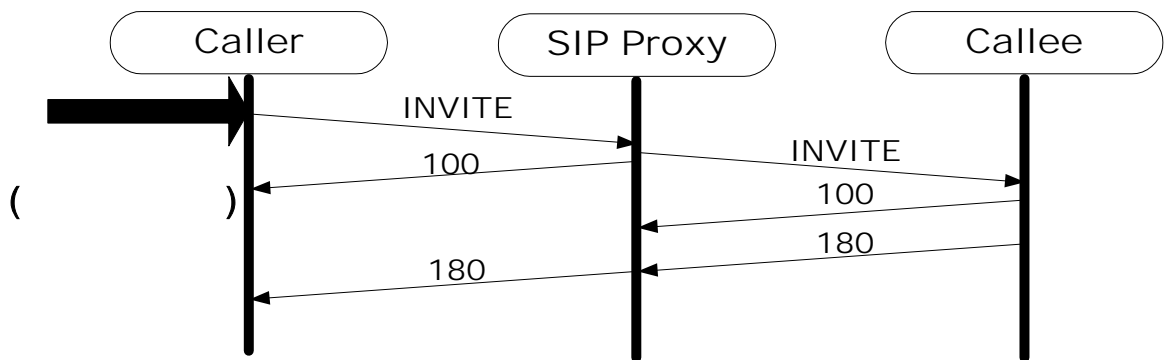
### 7.6.2

Caller SIP	<ul style="list-style-type: none"> <li>● Proxy Callee SIP URL</li> <li>● Proxy ( IP , )</li> <li>● Proxy</li> <li>● Proxy User ID/SIP URL/</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● SIP User ID/SIP URL/</li> <li>● Location Server</li> </ul>

### 7.6.3



Caller	SIP	<ul style="list-style-type: none"> <li>● INVITE , 407</li> <li>● 407 Proxy-Authenticate</li> <li>● Proxy-Authenticate</li> </ul>
Callee	SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Proxy		<ul style="list-style-type: none"> <li>● 407</li> <li>● Proxy-Authenticate</li> </ul>



--	--	--

Caller SIP	<ul style="list-style-type: none"> <li>●</li> <li>● 180 : User Notification</li> <li>● 100 INVITE</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> <li>● : User Notification</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● INVITE 100</li> <li>● INVITE</li> <li>● 100 INVITE</li> <li>● 100 1xx (upstream)</li> </ul>

“7.2.3 ”

Caller

“7.2.3 Caller ”

Callee

“7.2.3 Callee ”

## 7.7 Record-Route

7.7.1

--	--

Caller SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> <li>● 가</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>●</li> <li>● Location Server</li> <li>● Proxying</li> <li>● Record - Route</li> </ul>

7.7.2

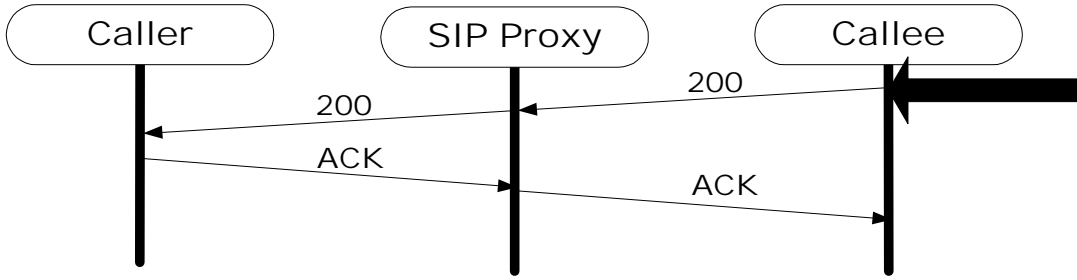
Caller SIP	<ul style="list-style-type: none"> <li>● Proxy ( Callee SIP URL IP , )</li> <li>● Proxy</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>●</li> </ul>

7.7.3

“7.2.3 . ”

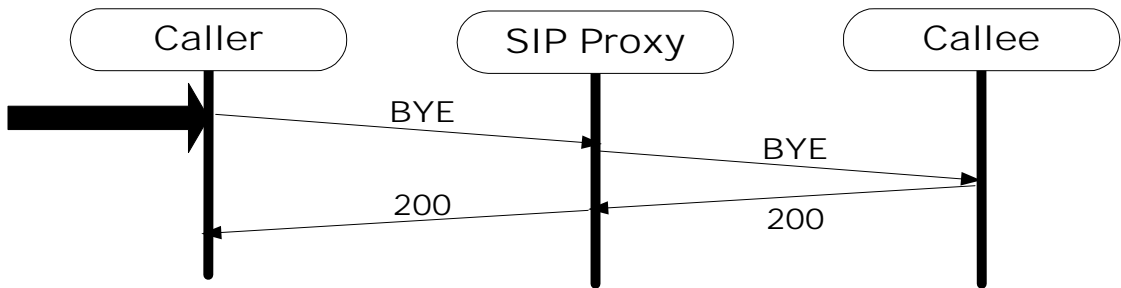
( )





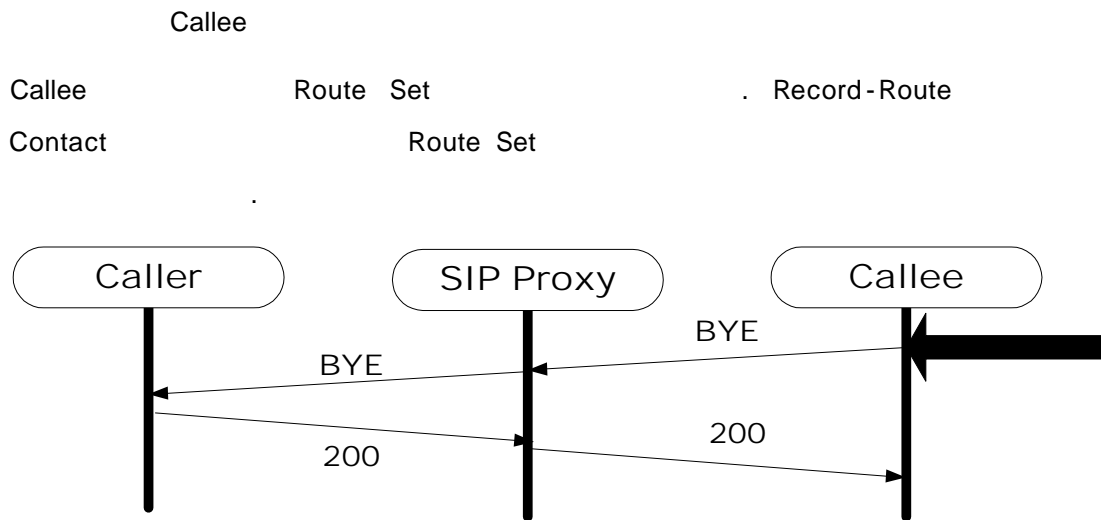
Caller SIP	<ul style="list-style-type: none"> <li>● 2xx</li> <li>● Codec</li> <li>● ACK 가 Proxy</li> </ul>	:
Callee SIP	<ul style="list-style-type: none"> <li>● 2xx</li> <li>● Codec</li> <li>● ACK</li> </ul>	:
Proxy	<ul style="list-style-type: none"> <li>● 200</li> <li>● ACK</li> <li>● ACK Route</li> </ul>	

Caller



Caller SIP	<ul style="list-style-type: none"> <li>● BYE</li> <li>● BYE 가 Proxy</li> </ul>	

Callee SIP	<ul style="list-style-type: none"> <li>● BYE</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● Caller BYE</li> <li>● Callee BYE</li> <li>● BYE Route</li> </ul>



Caller SIP	<ul style="list-style-type: none"> <li>● BYE</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>● BYE</li> <li>● BYE 가 Proxy</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● Callee BYE</li> <li>● Caller BYE</li> <li>● BYE Route</li> </ul>

## 7.8 Forking

“Forking”

Caller SIP URL, SIP Proxy, Callee1

Callee SIP URL, SIP Proxy, Callee2

User Mobility

Transaction



### 7.8.1

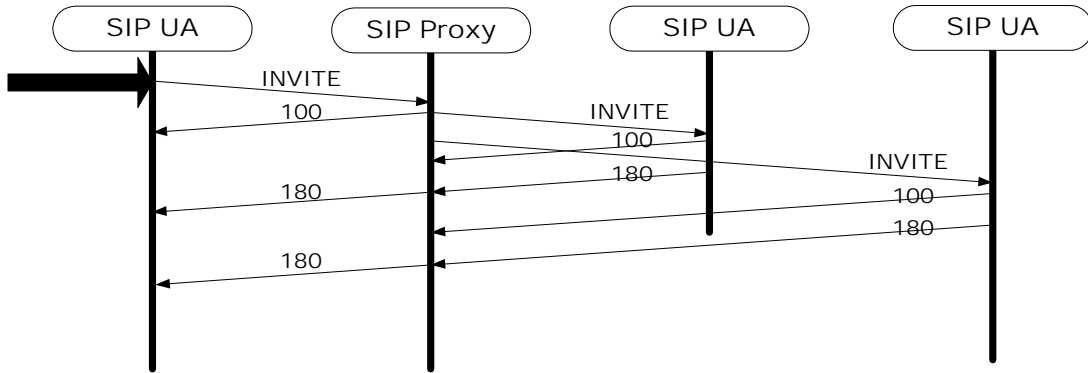
Caller SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> <li>● 가</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● (Stateful or Stateless)</li> <li>● Location Server</li> <li>● Parallel Forking</li> </ul>

### 7.8.2

--	--

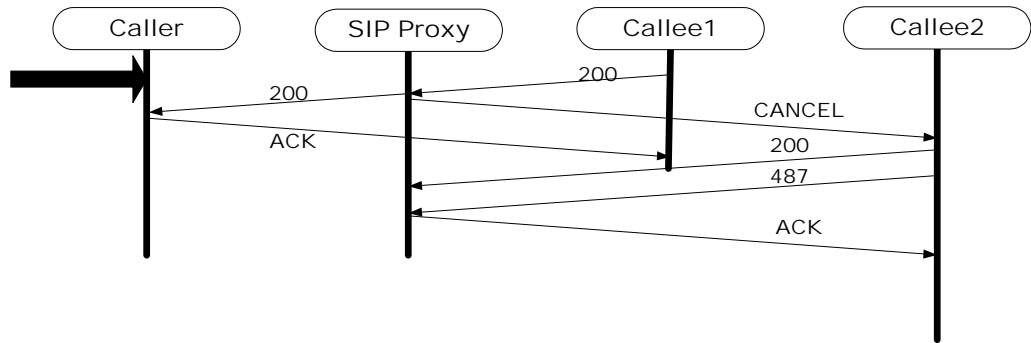
Caller SIP	<ul style="list-style-type: none"> <li>● Proxy (Callee SIP URL, IP)</li> <li>● Proxy</li> </ul>
Callee1 SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Callee2 SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● Callee1 Callee2 Contact 가 SIP URL</li> <li>● Record-Route가</li> <li>●</li> </ul>

7.8.3



Caller SIP	<ul style="list-style-type: none"> <li>●</li> <li>● 180 : User Notification</li> <li>● 100 INVITE</li> </ul>
Callee1 SIP	<ul style="list-style-type: none"> <li>●</li> <li>● : User Notification</li> </ul>

Callee2 SIP	<ul style="list-style-type: none"> <li>●</li> <li>●</li> </ul> : User Notification
Proxy	<ul style="list-style-type: none"> <li>● INVITE 100 Forking Callee</li> <li>● INVITE 100 INVITE (upstream)</li> <li>● 100 1xx</li> <li>● 100</li> </ul>



Caller SIP	<ul style="list-style-type: none"> <li>● 2xx</li> <li>● Codec</li> <li>● ACK 가 Callee</li> </ul>
Callee1 SIP	<ul style="list-style-type: none"> <li>● 2xx</li> <li>● Codec</li> <li>● ACK Caller</li> </ul>

Callee2 SIP	<ul style="list-style-type: none"> <li>● CANCEL CANCEL 200</li> <li>● INVITE 487</li> <li>● INVITE 487 ACK</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● 200</li> <li>● INVITE 200 Callee2 CANCEL</li> <li>● Callee2 CANCEL 200</li> <li>● Callee2 INVITE 487</li> <li>● Callee2 487 ACK</li> </ul>

Caller  
 “7.2.3 Caller ”

Callee  
 “7.2.3 Callee ”

## 7.9 Forking

“Forking ”

Callee SIP URL SIP Proxy , Caller  
 SIP URL , SIP Proxy Callee1  
 Callee2 , Caller Callee



7.9.1

Caller SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> </ul>
Callee SIP	<ul style="list-style-type: none"> <li>●</li> <li>● Route Set</li> <li>● 가</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● (Stateful or Stateless)</li> <li>● Location Server</li> <li>● Parallel Forking</li> </ul>

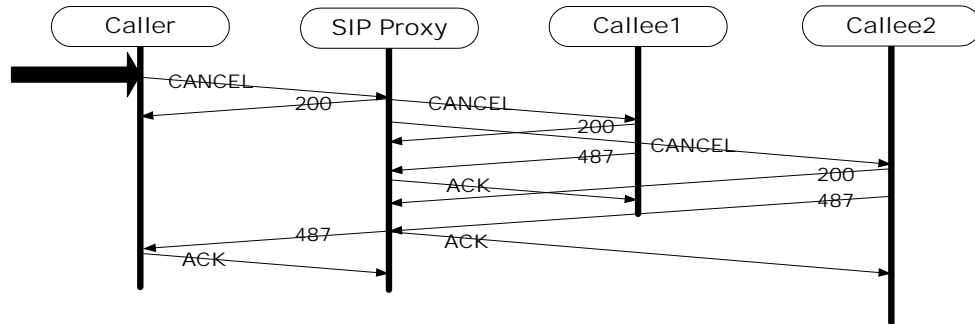
7.9.2

Caller SIP	<ul style="list-style-type: none"> <li>● Proxy (Callee SIP URL IP , )</li> <li>● Proxy</li> </ul>
Callee1 SIP	<ul style="list-style-type: none"> <li>●</li> </ul>
Callee2 SIP	<ul style="list-style-type: none"> <li>●</li> </ul>

Proxy	<ul style="list-style-type: none"> <li>● Callee1 Callee2 Contact 가 SIP URL</li> <li>● Record-Route가</li> <li>●</li> </ul>
-------	---

7.9.3

“7.6.3 ”



Caller SIP	<ul style="list-style-type: none"> <li>● CANCEL</li> <li>● CANCEL 200</li> <li>● INVITE 487</li> <li>● INVITE 487 ACK</li> </ul>		
Callee1 SIP	<ul style="list-style-type: none"> <li>● CANCEL CANCEL 200</li> <li>● INVITE 487</li> <li>● INVITE 487 ACK</li> </ul>		



Callee2 SIP	<ul style="list-style-type: none"> <li>● CANCEL CANCEL 200</li> <li>● INVITE 487</li> <li>● INVITE 487 ACK</li> </ul>
Proxy	<ul style="list-style-type: none"> <li>● CANCEL Caller 200</li> <li>● CANCEL Callee CANCEL</li> <li>● Callee CANCEL 200</li> <li>● Callee INVITE 487</li> <li>● Callee 487 ACK</li> <li>● Caller INVITE 487</li> <li>● INVITE 487 ACK</li> </ul>

## 8. Redirect