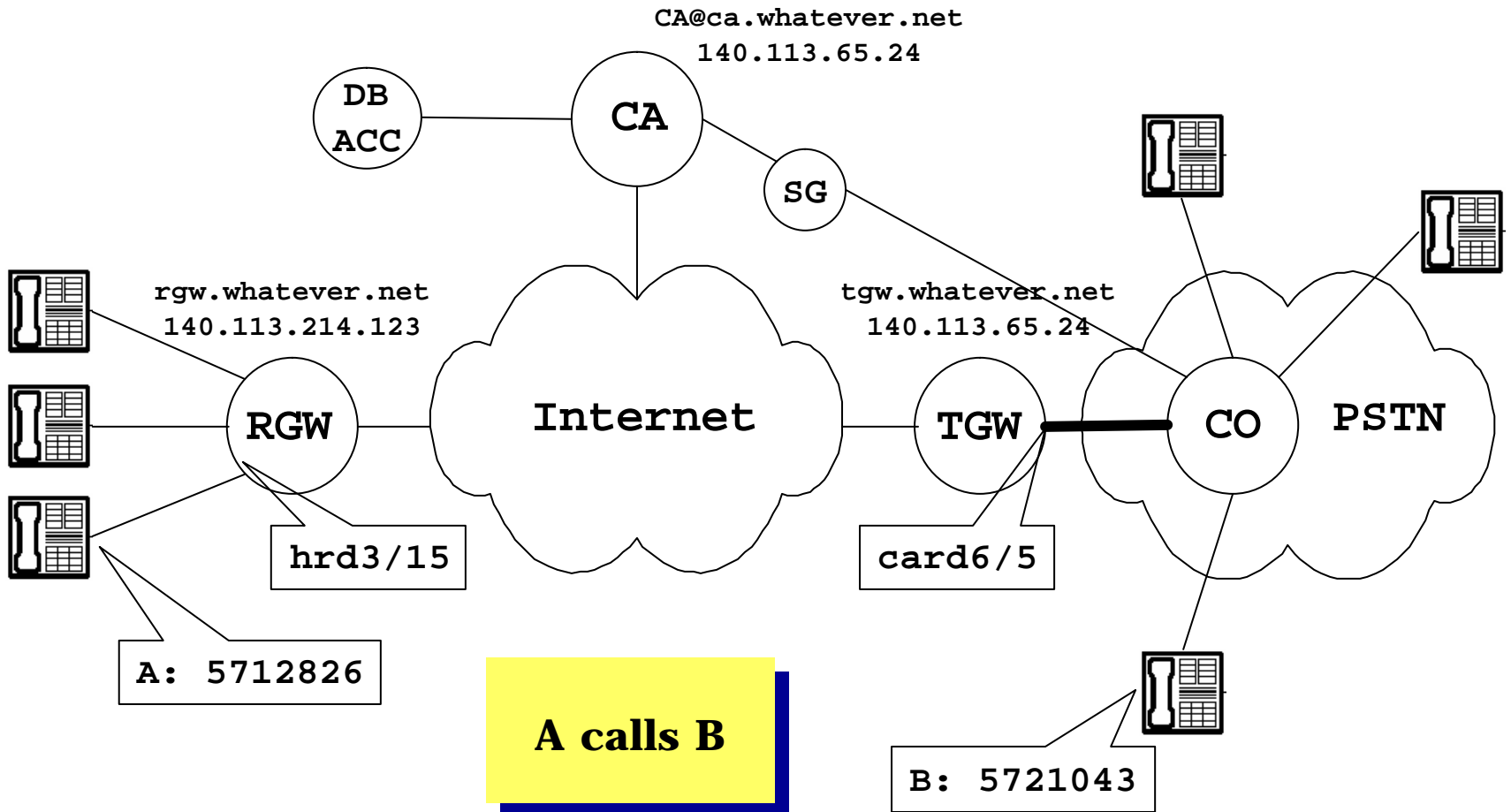
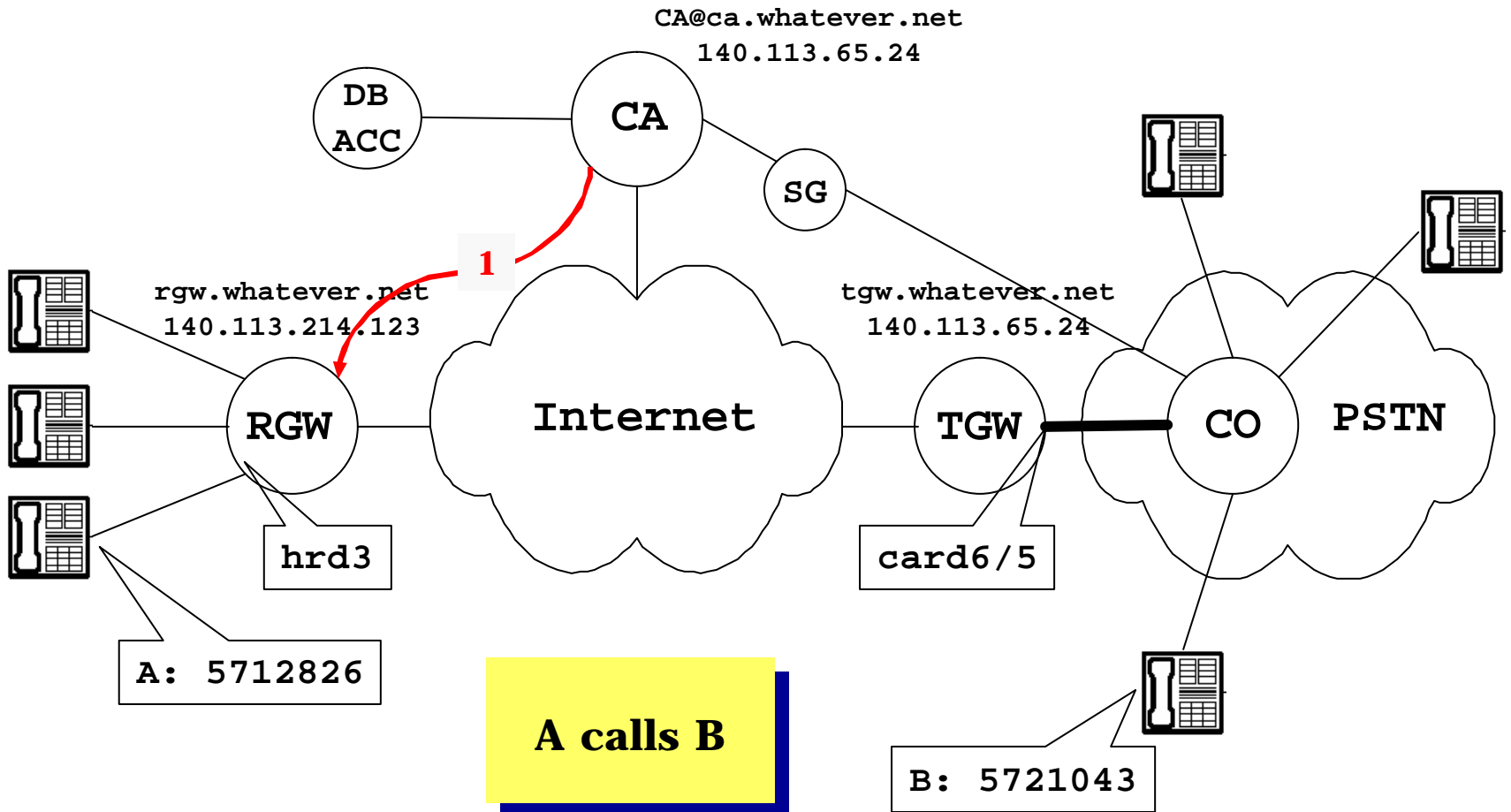


Media Gateway Control and the Softswitch Architecture

Call Flow for RGW to TGW (1/18)



Call Flow for RGW to TGW (2/18)



Call Flow for RGW to TGW (3/18)

■ RQNT(1) : NotificationRequest

- RQNT 1201 *@rgw.whatever.net MGCP 1.0
- N: CA@ca.whatever.net:5678
- X: 0123456789AC
- R: hd(**E**(**R**(hu(**N**)),**S**(dl),D/(**D**)))
- D: (11x|080xxxxxxx|57xxxxx|002x.T)

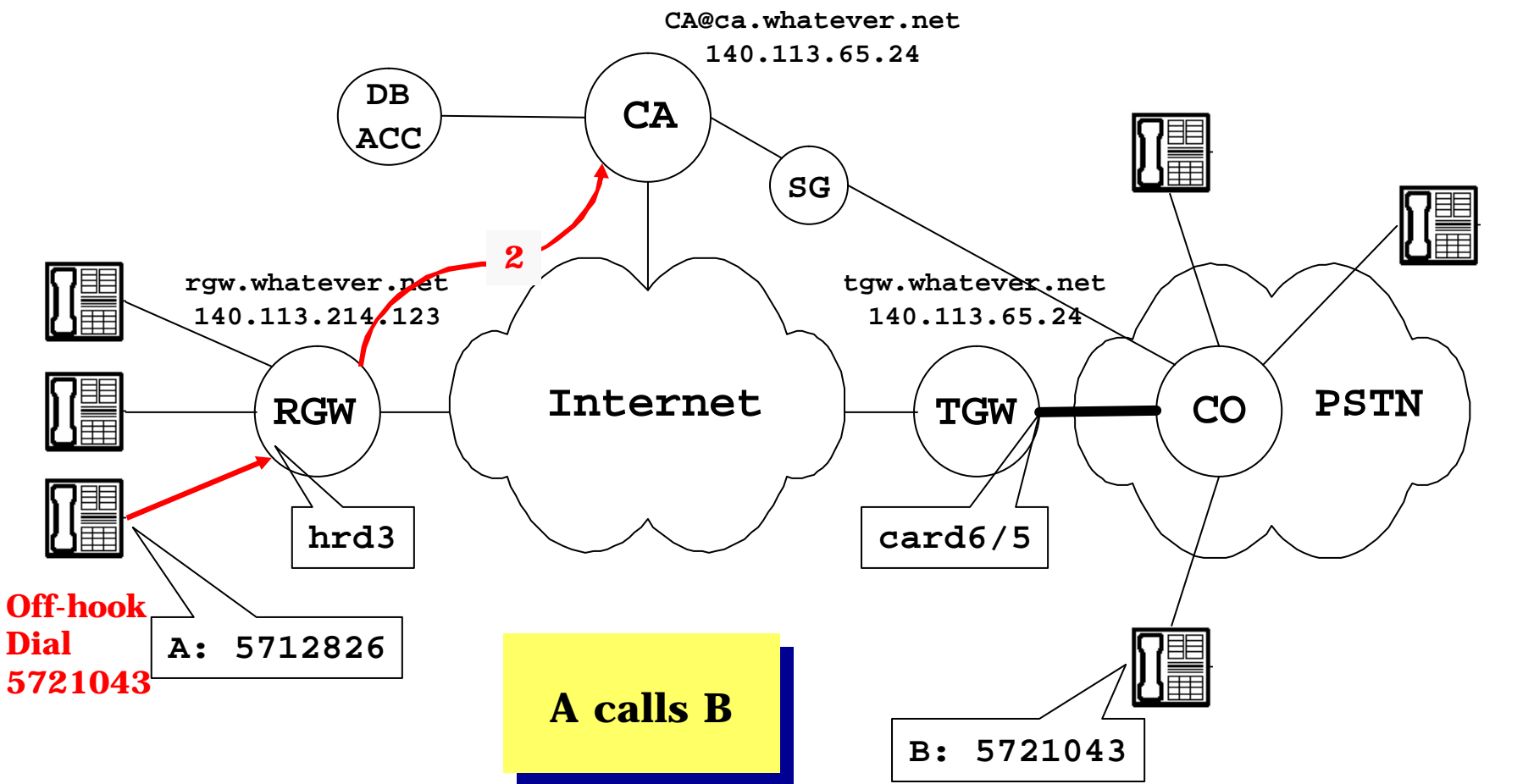
N: NotifyEntity
X: RequestIdentifier
R: RequestEvents
D: DigitMap

■ ACK to RQNT(1)

- 200 1201 OK

E: Embedded (enable) Request
R: Notification Request
S: Signal Request
N: Notify immediately (default)
D: Accumulate according to DigitMap
Clear current dialed string

Call Flow for RGW to TGW (4/18)



Call Flow for RGW to TGW (5/18)

■ NTFY(2) : Notify from RGW

- NTFY 2002 hrd3@rgw.whatever.net MGCP 1.0
- N: CA@ca.whatever.net:5678
- X: 0123456789AC
- O: 5721043

■ ACK to NTFY(2)

- 200 2002 OK

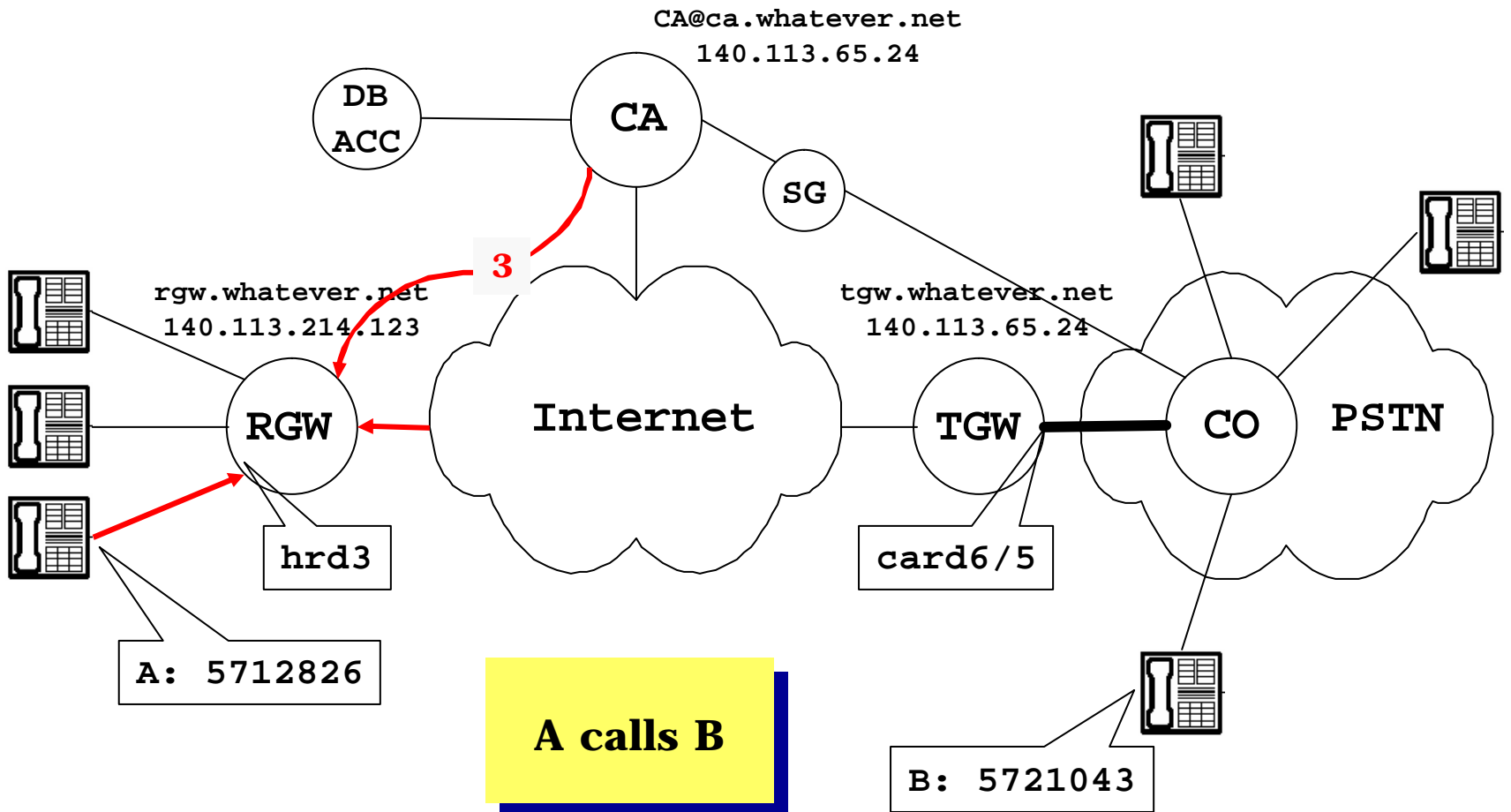
N: NotifyEntity

X: RequestIdentifier

O: ObservedEvent

Reported in the detected order

Call Flow for RGW to TGW (6/18)



Call Flow for RGW to TGW (7/18)

■ CRCX(3) : CreateConnection

- CRCX 1204 hrd3@rgw.whatever.net MGCP 1.0
- C: A3C47F21456789F0
- L: p:10, a: G.711; G.726-32
- M: recvonly
- X: 0123456789AD
- R: hu

■ ACK to CRCX(3)

- 200 1204 OK
- I: FDE234C8
- Session Description

```
C: CallId
L: LocalCXOptions
   p: packetize period(ms)
   a: Compression Algo.
M: Mode
X: RequestIdentifier
R: RequestEvents
I: ConnectionId
```


Call Flow for RGW to TGW (8/18)

■ Session Description - ACK to CRCX(3)

- Convey info about media streams
- Use textual format, case sensitive

```
V=<protocol version>
C=<nw-type> <addr-type> <conn-type>
M=<media> <port> <transport>
(A=<attribute> (:<value>))
```

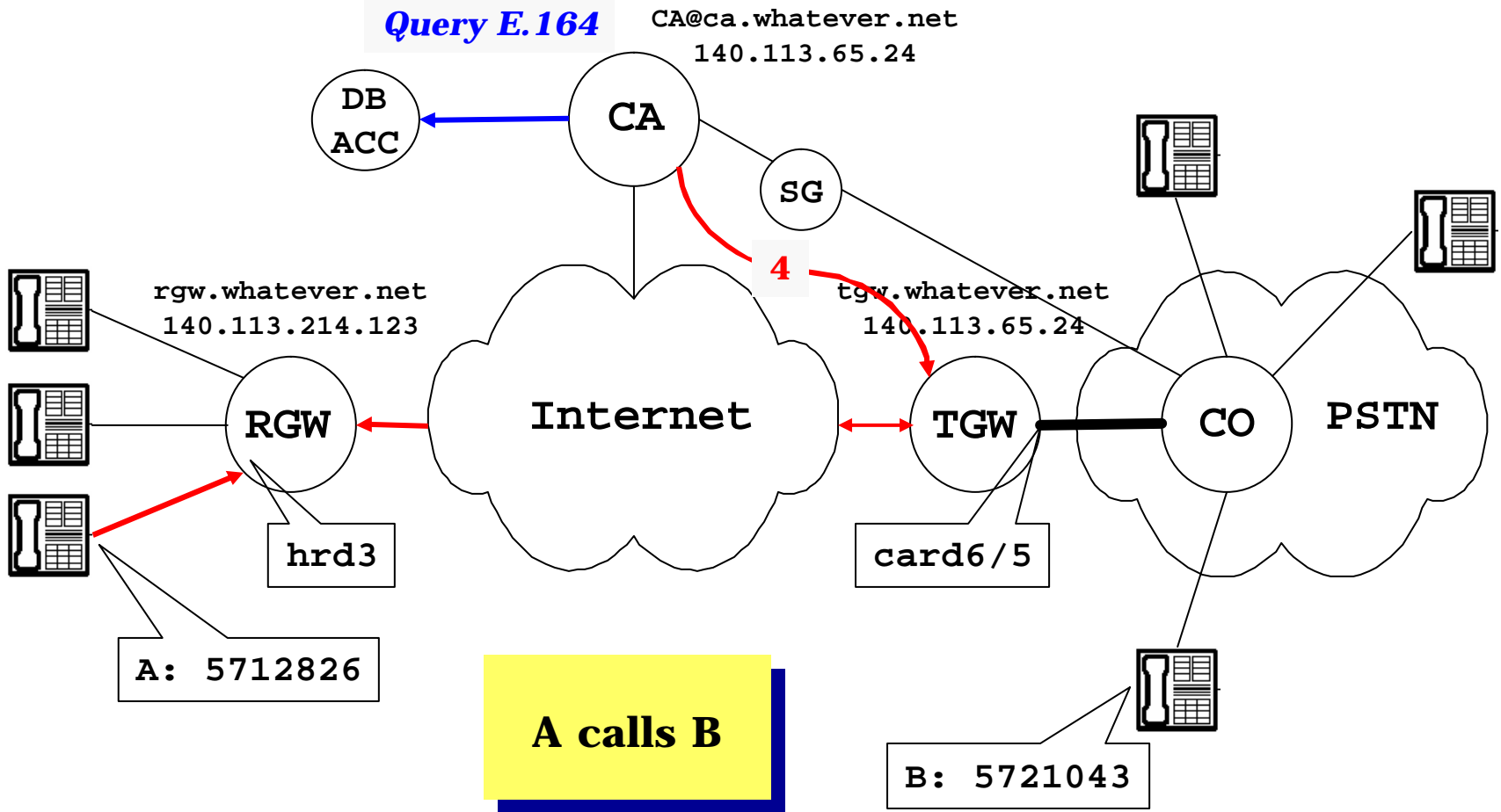
↪ v=0

↪ c=IN IP4 140.96.102.166

↪ m=audio 3456 RTP/AVP 0 96

↪ a=rtpmap:96 G726-32/8000

Call Flow for RGW to TGW (9/18)



Call Flow for RGW to TGW (10/18)

■ CRCX(4) : CreateConnection

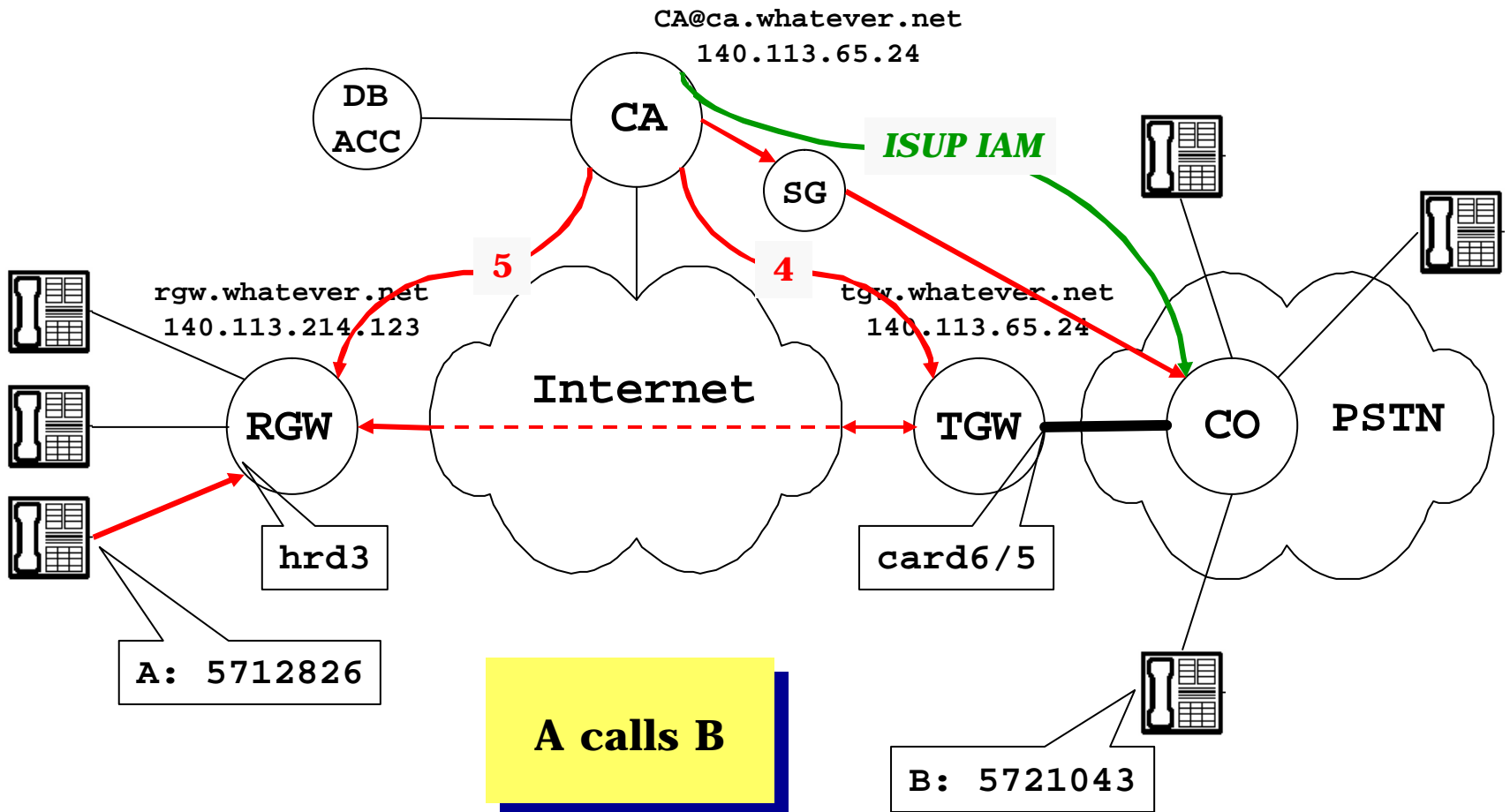
- CRCX 1205 card6/5@tgw.whatever.net MGCP 1.0
- C: A3C47F21456789F0
- L: p:10, a: G.711; G.726-32
- M: sendrecv
- Session Description from ACK(3)

■ ACK to CRCX(4)

- 200 1205 OK
- I: 32F345E2
- Session Description

C: CallId
M: Mode
I: ConnectionId

Call Flow for RGW to TGW (11/18)



Call Flow for RGW to TGW (12/18)

■ MDCX(5) : ModifyConnection

- MDCX 1206 hrd3@rgw.whatever.net MGCP 1.0
- C: A3C47F21456789F0
- I: FDE234C8
- M: recvonly

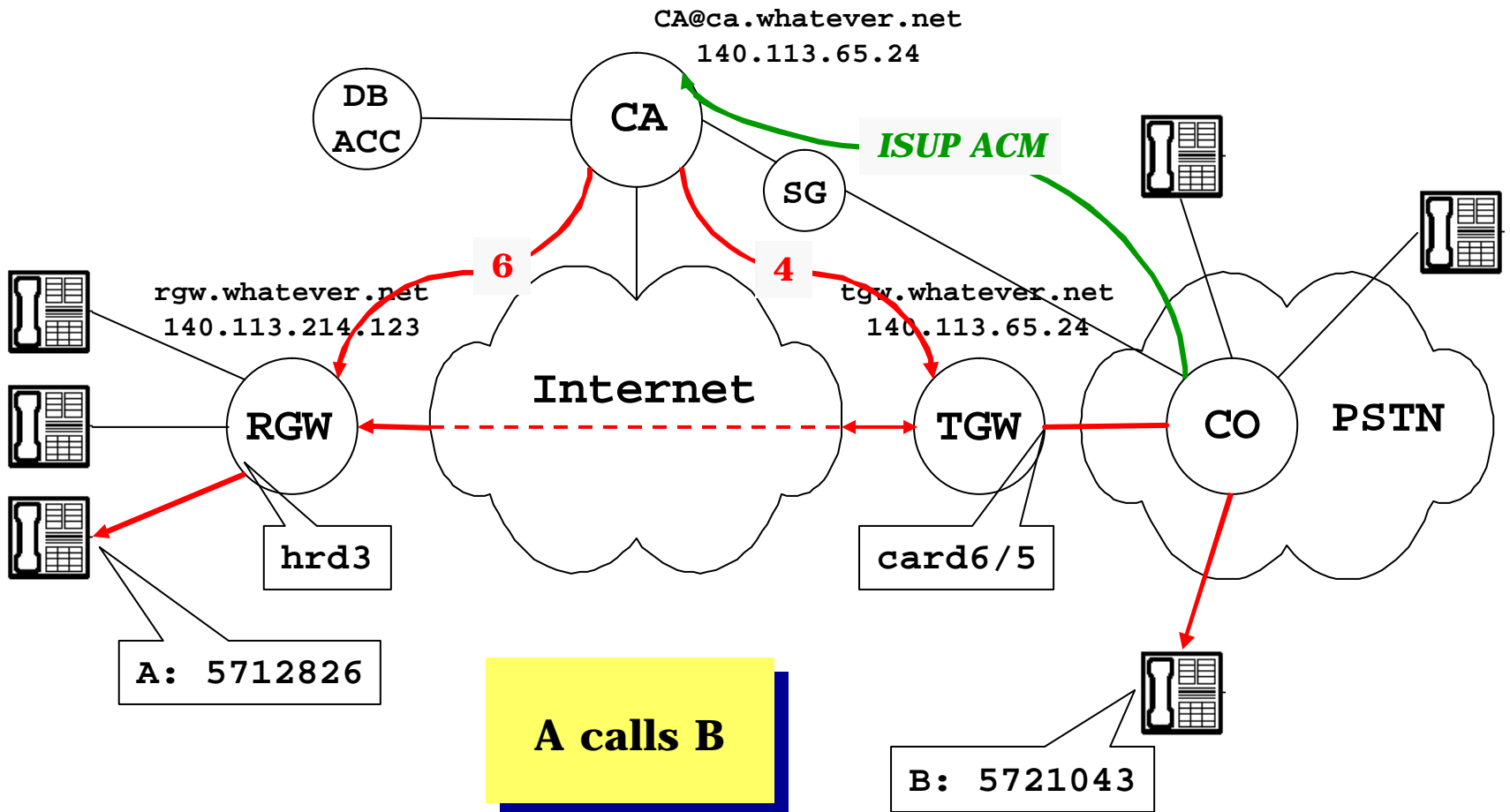
C: CallId
I: ConnectionId
M: Mode

- Session Description from ACK(4)

■ ACK to MDCX(5)

- 200 1206 OK

Call Flow for RGW to TGW (13/18)



Call Flow for RGW to TGW (14/18)

■ RQNT(6) : NotificationRequest

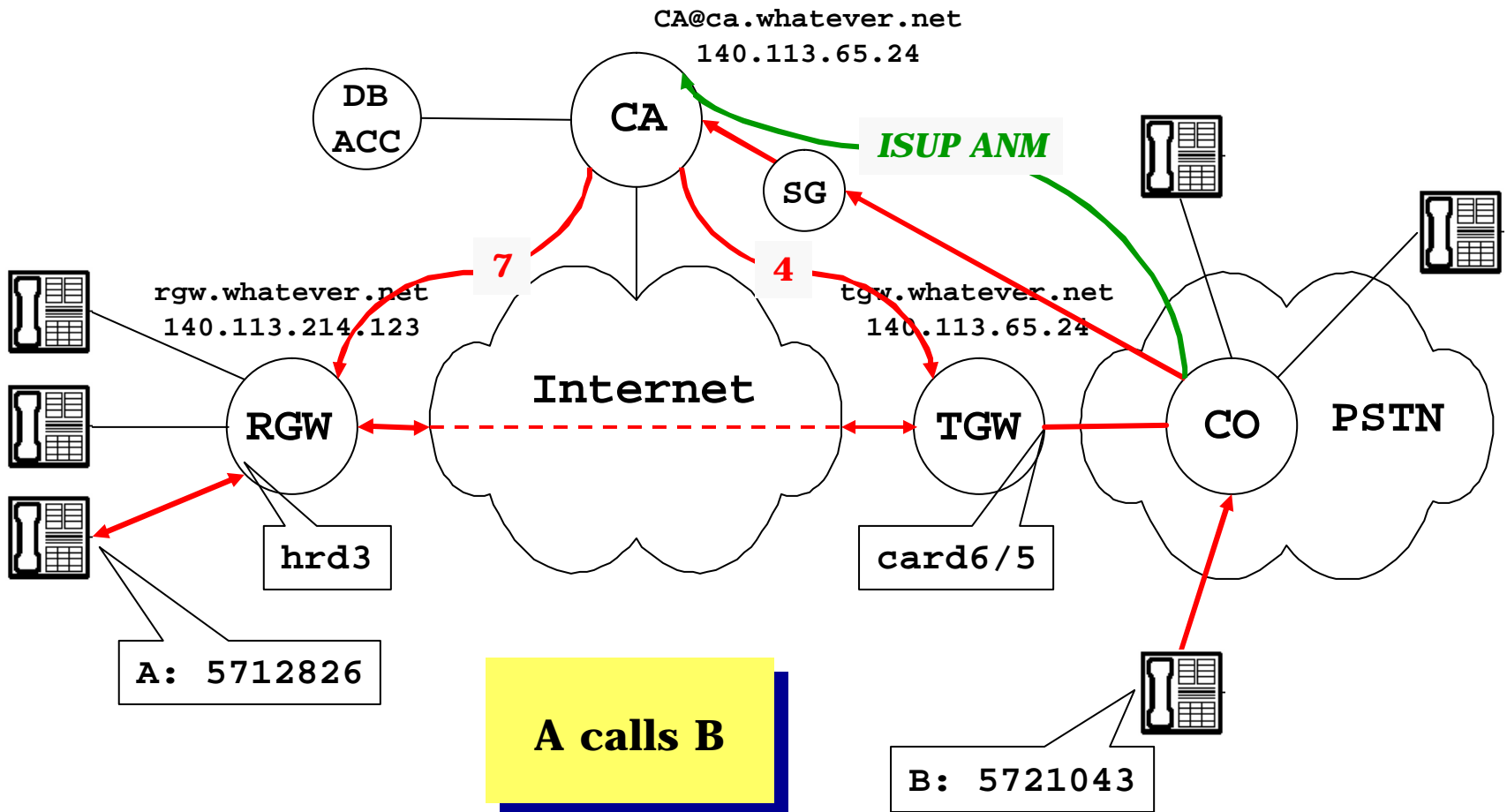
- RQNT 1207 hrd3@rgw.whatever.net MGCP 1.0
- N: CA@ca.whatever.net:5678
- X: 012345789AE
- R: hu
- S: v (alerting)

■ ACK to RQNT(6)

- 200 1207 OK

N: NotifyEntity
X: RequestIdentifier
R: RequestEvents
S: SignalRequests

Call Flow for RGW to TGW (15/18)



Call Flow for RGW to TGW (16/18)

■ MDCX(7) : ModifyConnection

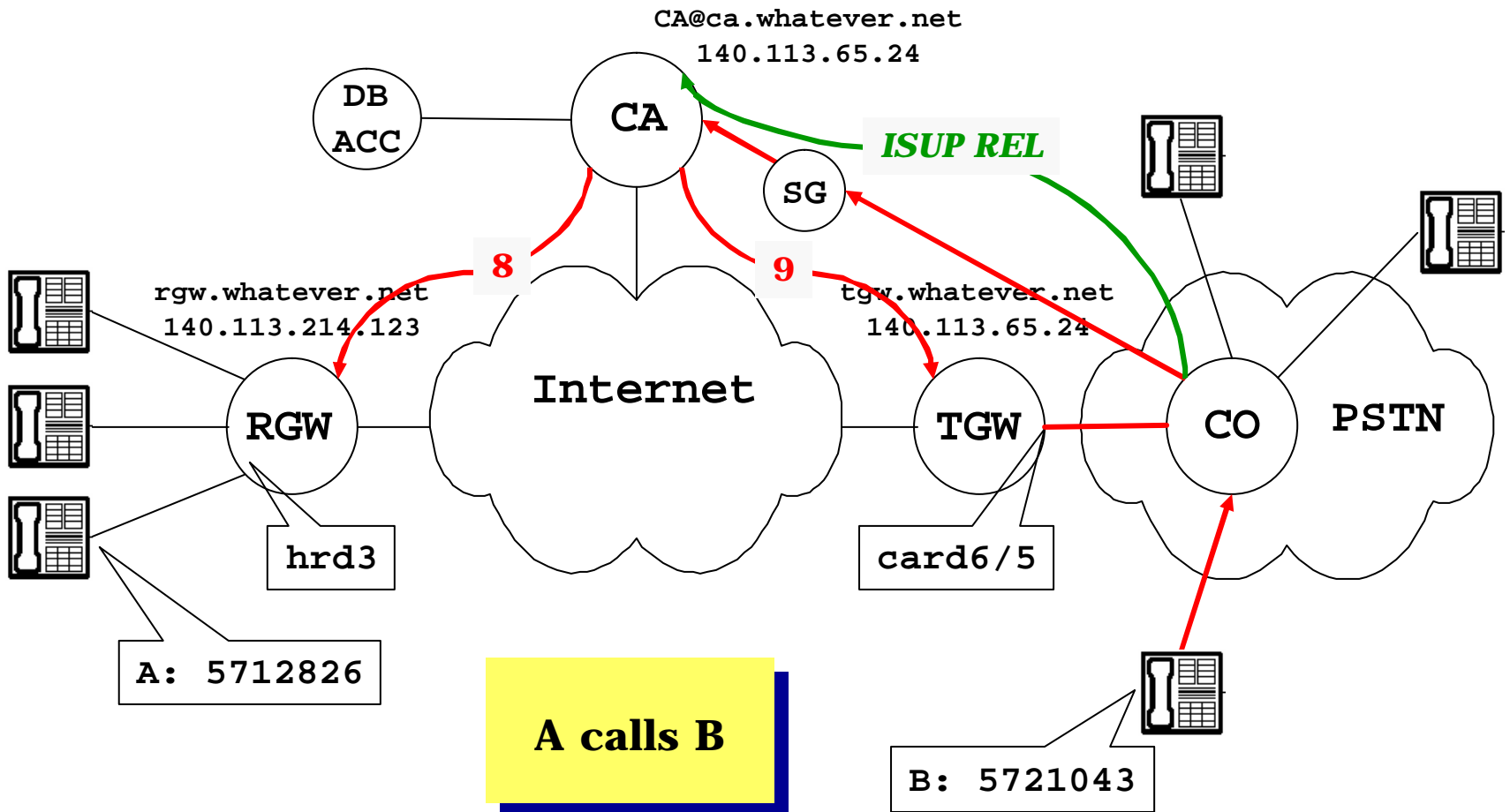
- MDCX 1209 hrd3@rgw.whatever.net MGCP 1.0
- C: A3C47F21456789F0
- I: FDE234C8
- M: sendrecv
- X: 012345789AF
- R: hu
- S: (to stop alerting)

C: CallId
I: ConnectionId
M: Mode
S: SignalRequests

■ ACK to MDCX(7)

- 200 1209 OK

Call Flow for RGW to TGW (17/18)



Call Flow for RGW to TGW (18/18)

■ DLCX(8) : DeleteConnection

- DLCX 1210 hrd3@rgw.whatever.net MGCP 1.0
- C: A3C47F21456789F0
- I: FDE234C8

C: CallId
I: ConnectionId

■ ACK to DLCX(8)

- 200 1210 OK
- P: PS=1245, OS=62345, PR=780, OR=45123, PL=10, JI=27, LA=48

PS: Packets sent
OS: Octets sent
PR: Packets received
OR: Octets received
PL: Packets lost
JI: Average Jitter (ms)
LA: Average Latency (ms)

Usage of Commands (1/6)

■ NotificationRequest()

- EndpointId,
- [NotifiedEntity,]
- [**RequestedEvents**,]
- RequestIdentifier,
- [DigitMap,]
- [SignalRequests,]
- [**QuarantineHandling**,]
- [**DetectEvents**,]
- [encapsulated EndpointConfiguration]

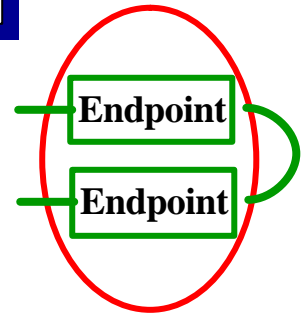
Usage of Commands (2/6)

■ CreateConnection()

- CallId, EndpointId,
- [NotifiedEntity,]
- [LocalConnectionOption,]
- Mode,
- [{RemoteConnectDescptr | **SecondEndpointId** }]
- [EncapsulatedNotificationRequest,]
- [Encapsulated EndpointConfiguration]

Hairpin Connection

PSTN



■ ReturnCode

- ConnectionId, [SpecificEndPointId,]
- [**SecondConnectionId**,] [SecondEndPointId,]
- [LocalConnectionDescriptor]

Usage of Commands (4/6)

■ RestartInProgress()

- EndPointId
- RestartMethod
- [RestartDelay]
- [Reason-code]

■ ReturnCode

- [NotifiedEntity]

RestartMethod

- graceful (delay/null)
- forced (null)
- restart (delay in seconds)
- disconnected (delay in seconds)
indicates EP disconnected &
trying to reconnect it
- cancel-graceful

Usage of Commands (5/6)

■ AuditEndPoint()

- EndpointId
- [RequestedInfo]

If EndpointId is
"all of wildcard",
EndPointIdList is returned

■ ReturnCode

- EndPointIdList |
- {RequestedEvents
- DigitMap
- SignalRequests
- RequestIdentifier ... }

Usage of Commands (6/6)

■ AuditConnection()

- EndpointId
- ConnectionId
- RequestedInfo

"Wildcard" shall not be used

■ ReturnCode

- depend on RequestedInfo
 - ↳ CallId
 - ↳ NotifiedEntity
 - ↳ LocalConnectionOptions
 - ↳ ...

Transmission

■ Transmitted via UDP

- default MGCP port for GW: 2427
- default MGCP port for CA: 2727

■ Reliable Transmission

- keeping recent list of transactions
- retransmission algorithm

■ Piggy-backing

- multiple MGCP messages in one UDP packet

↳ **200 2005 OK**

↳ **DLCX 1244 card23/21@tgw.example.net MGCP 1.0**

↳ **C: ...**