

Reference Material on TISPAN Standard Essential Patents

Method for Changing Streaming Ads from User Profiles

August 06, 2008

Service Platform Research Lab

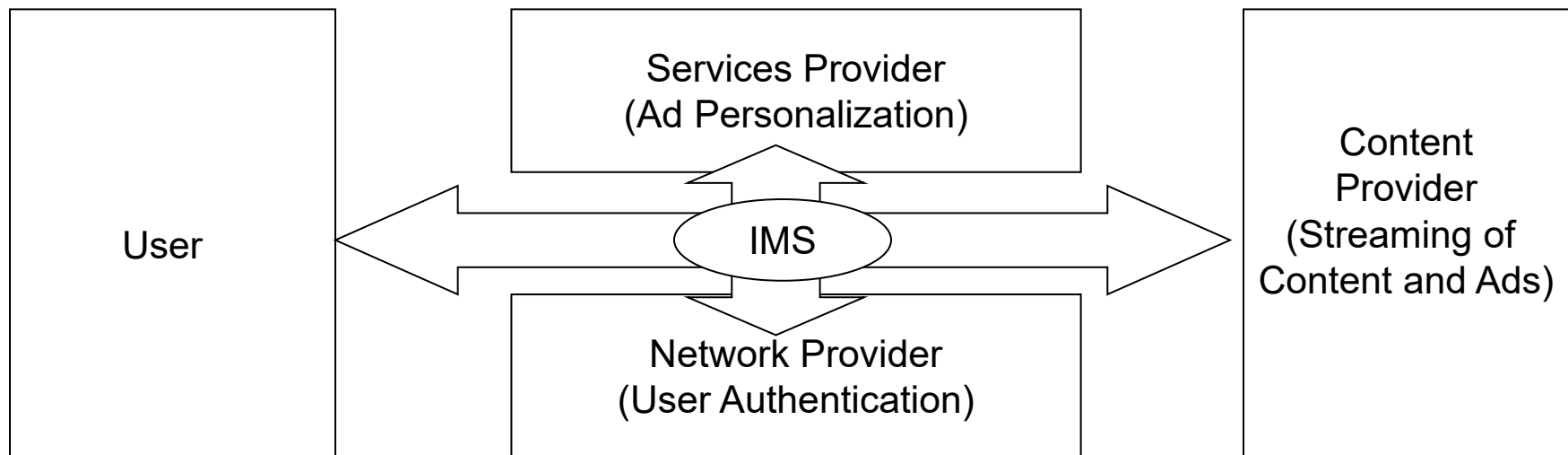
Communication Service TG

IPTV Standard Essential Patent Team

(Author) Kunihiro Taniguchi

SUMMARY OF THE INVENTION

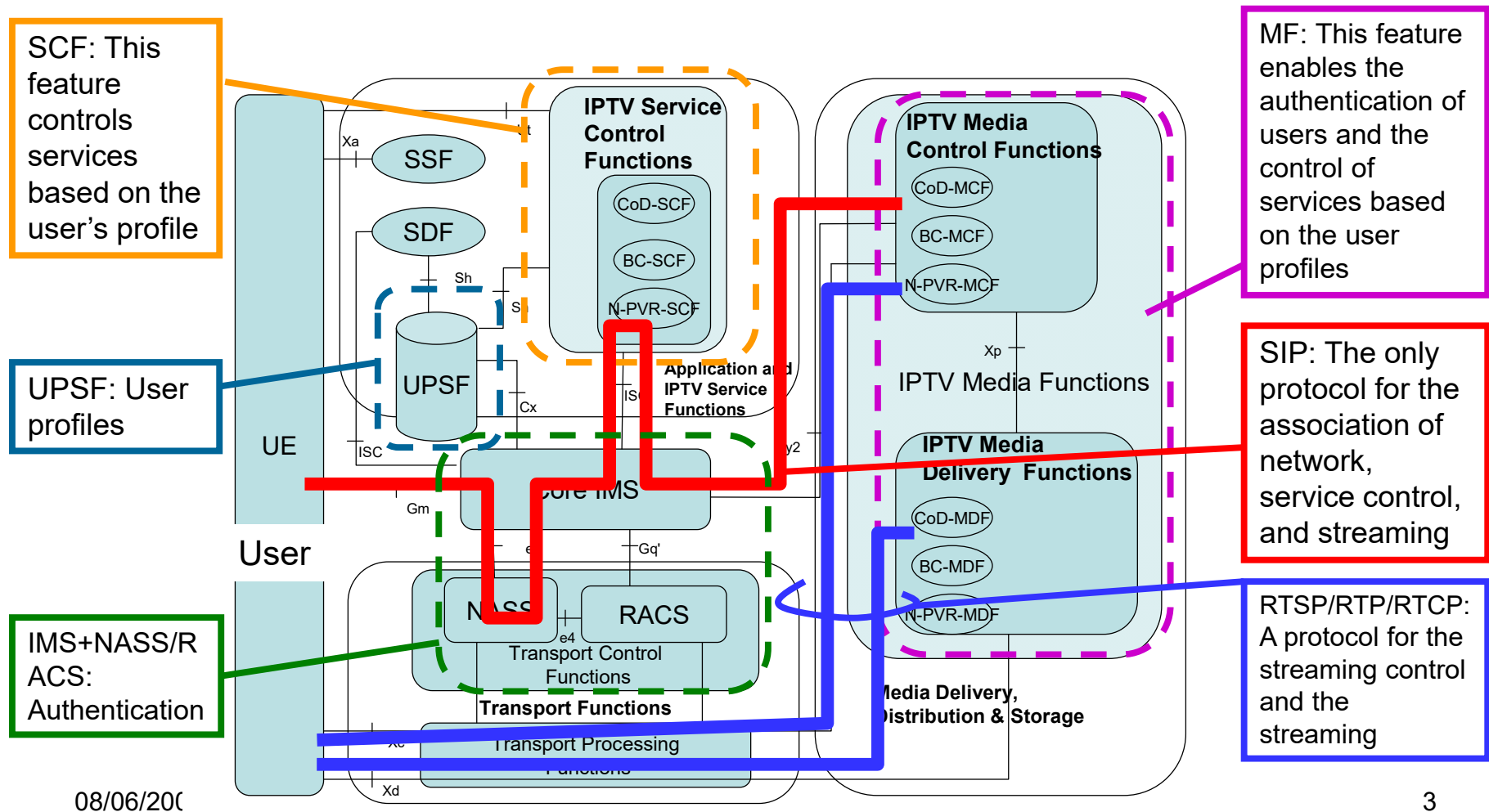
- It provides an architecture, method, and protocol used to personalize streaming ads for each user.
- In conventional IMS-based IPTV, service providers (ad distributors), content distributors, and network providers are independent, making it difficult to partner with each other to achieve personalization.
- The present invention provides a means for creating and transferring playlists to resolve this problem.



DESCRIPTION OF PRIOR ART

PRIOR ART

- The service-control signal lines (user authentication, selection of appropriate ads) and streaming control/streaming channels are independent. Consequently, the streaming ads cannot be controlled from user profiles.



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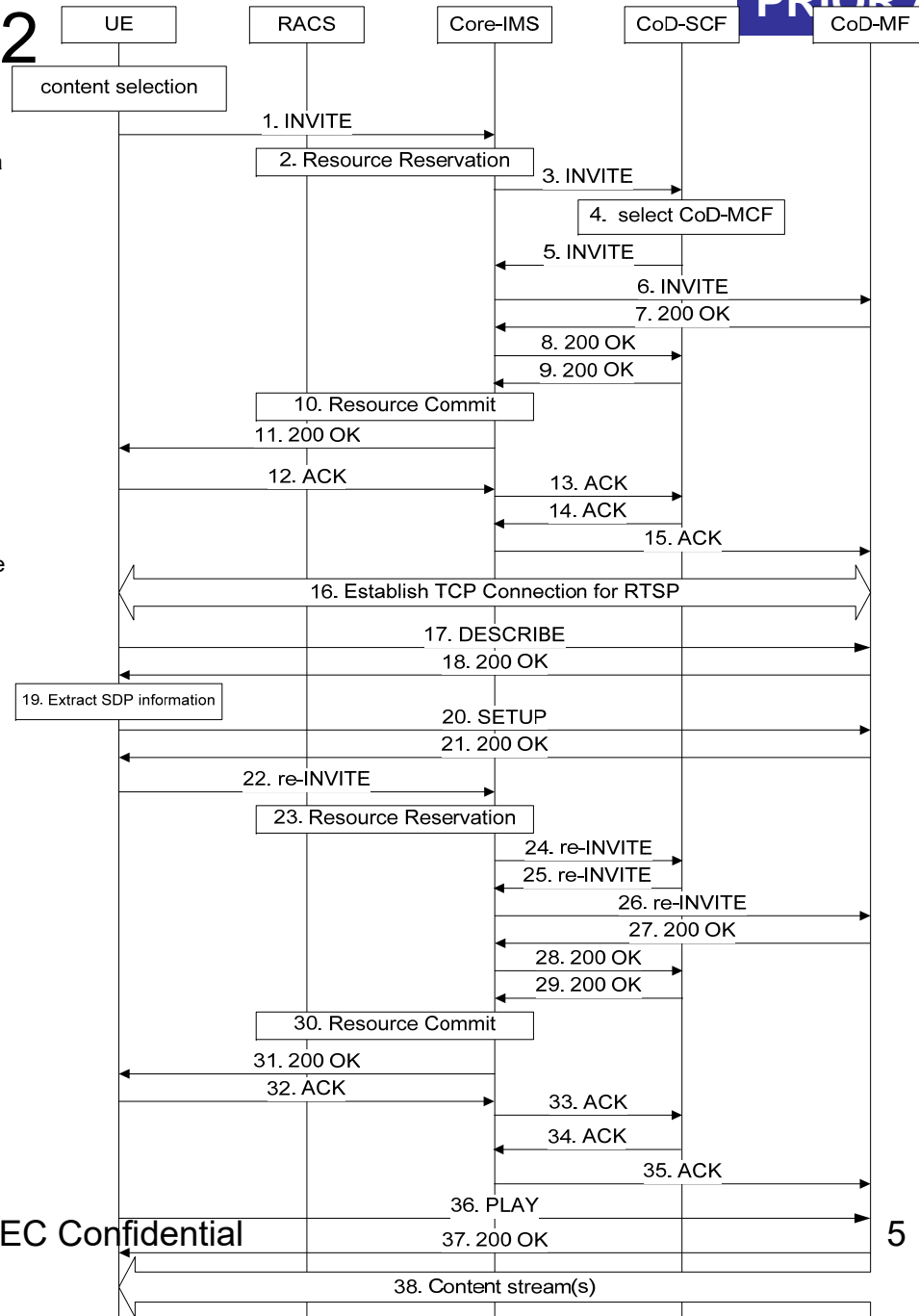
DESCRIPTION OF PRIOR ART

- The patent publication, JP,2001-175761,A titled “Method for Providing Information, Ads, Services According to Customer Profile, Purchase History, and Interest in Information, as well as Customer Data Management Method,” describes that customer profile information (equivalent to the user demographic information) and ads-access history are registered in a database (equivalent to the UPSF). It further states, concerning the streaming of information, that information to be streamed is determined based on basic profiles, such as age and gender, and the ads-access history.
- Another patent publication, JP,2002-171507,A titled "Content Streaming Methods and Content Streaming Systems," describes a method used to adapt ads to users, with reference to a diagram that illustrates a system comprising user profiles, data mining, an ad-content template server, a TV program information server, an ad server, and a content server.
- When this technology is applied to IMS-based IPTV, the prior art can achieve the authentication step with IMS/NASS/RACS up to the step for selecting ad content based on the user's profile. However, the prior art has no means of notifying the streaming server of the ad content thus selected. This is because the control of the service and the control of the content to be streamed are designed as independent systems.

PRIOR ART Method 2-2

PRIOR ART

- 1) Initial INVITE request to Core-IMS. The INVITE offers an SDP of a media description for RTSP connection.
- 2) Core-IMS requires for RACS to reserve resources of RTSP connection according to the Initial INVITE.
- 3) Core-IMS forwards the Initial INVITE to the CoD-SCF.
- 4) When the CoD-SCF receives the Initial INVITE request from the UE, the CoD-SCF may perform service authorisation. The CoD-SCF selects a CoD-MF.
- 5 to 6) The initial INVITE request is sent to the CoD-MF selected by the CoD-SCF.
- 7 to 9) 200 OK for Initial INVITE is sent from CoD-MF to the Core-IMS.
- 10) Core-IMS requires for RACS to commit the reservation.
- 11) 200 OK response is sent back to the UE.
- 12 to 15) The UE sends ACK to CoD-MF.
- 16) A TCP connection for RTSP is established.
- 17) Since a SIP dialog is established and a TCP connection for RTSP is established, the UE invokes an RTSP DESCRIBE request to the CoD-MF through the established TCP connection.
- 18) The CoD-MF sends 200 OK with SDP. The SDP contains the media descriptions of RTP stream to be used.
- 19) The UE extracts the media descriptions from the SDP of 200 OK.
- 20) The UE sends RTSP SETUP requests to the CoD-MF through the established TCP connection.
- 21) 200 OK for SETUP is sent back to the UE.
- 22) The UE sends a re-INVITE request to Core-IMS. The SDP of re-INVITE contains as follows:
The session description and media description for RTSP are same as that of Initial INVITE.
The media descriptions for RTP content stream(s) are same as the media descriptions of 200 OK (DESCRIBE) except for address, port number, and direction attribute. The address and port number are replaced by that of UE's, and "a=recvonly" direction attribute is inserted.
- 23) Core-IMS requires for RACS to reserve additional resources of RTP streams according to the re-INVITE.
- 24 to 26) re-INVITE is sent to CoD-MF.
- 27 to 29) 200 OK for re-INVITE is sent back to UE.
- 30) Core-IMS requires for RACS to commit the reservation.
- 31) 200 OK for re-INVITE is sent back to the UE.
- 32 to 35) The UE sends ACK to CoD-MF.
- 36) RTSP PLAY request is sent to the CoD-MF.
- 37) 200 OK for PLAY is sent back to the UE.
- 38) The CoD-MF starts sending RTP content streams to the UE



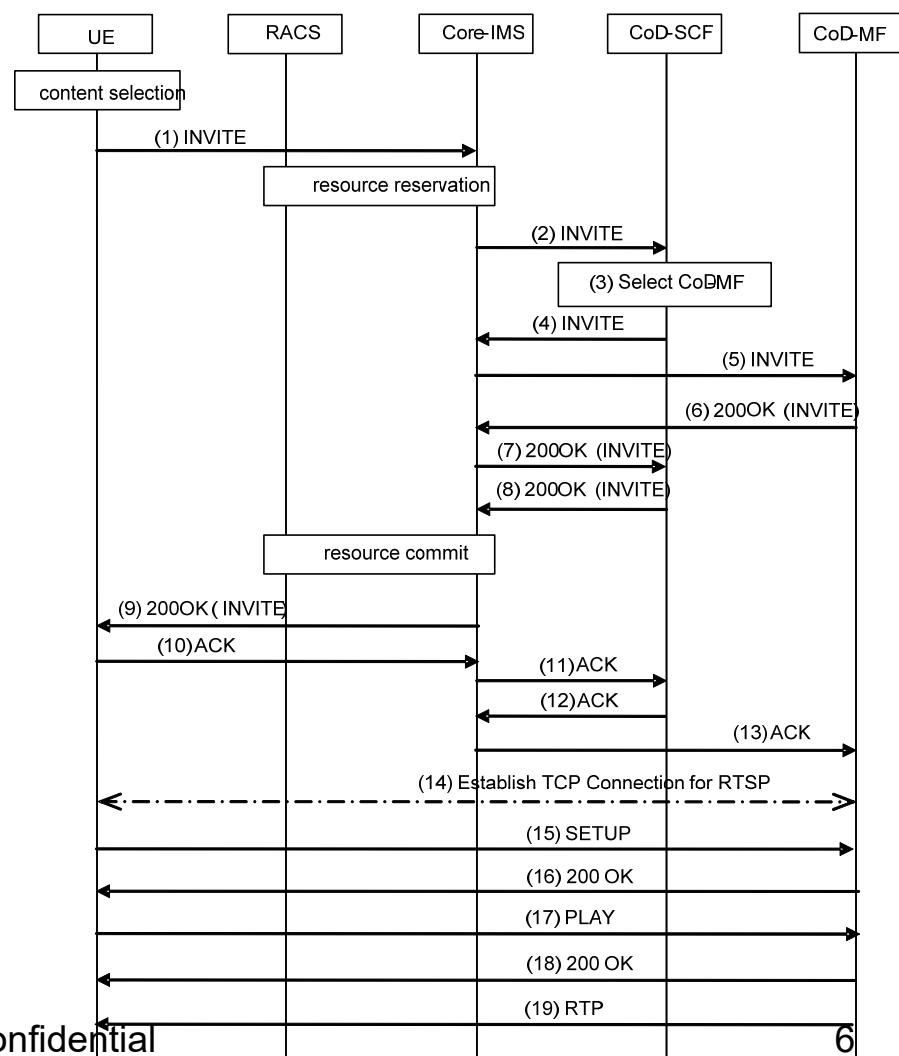
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PRIOR ART Method 2-1

- 1 to 2) The UE sends the initial SIP INVITE request to the SCF.
- 3) The SCF can deny service requests packages depending on operator policy e.g. based on UE location (provided by the NASS), UE capabilities or the User Profile. The SCF selects the appropriate MF.
- 4 to 5) The SCF sends an initial SIP INVITE request to the selected MF.
- 6 to 9) SIP 200 OK of initial SIP INVITE is sent back to the UE as for final session agreement.
- 10 to 13) SIP ACK is sent back to the MF.
- 14) TCP connection for the RTSP content control channel is established between the UE and the MF. The UE detects that the RTSP-related SDP data negotiated during the preceding steps. If the RTSP session ID parameter is missing in this SDP, as described in section 5.1.4.2.1, the UE knows that no RTSP session exists at the MF. Therefore the UE will use RTSP SETUP to trigger RTSP session initiation.
- 15) The UE sends an RTSP SETUP request to the MF.
- 16) RTSP 200 OK for RTSP SETUP is sent back to the UE. The RTSP network parameters exchanged during steps 15 and 16 shall equal the RTSP network parameters as agreed in steps 1-13. If the MF or the UE detects deviating parameters, they react with appropriate error messages and terminate SIP and RTSP sessions.
- 17) RTSP PLAY request is sent to the MF.
- 18) RTSP 200 OK for RTSP PLAY is sent back to the UE.
- 19) The RTP stream is sent to the client IP address as indicated by SIP SDP and RTSP SETUP.



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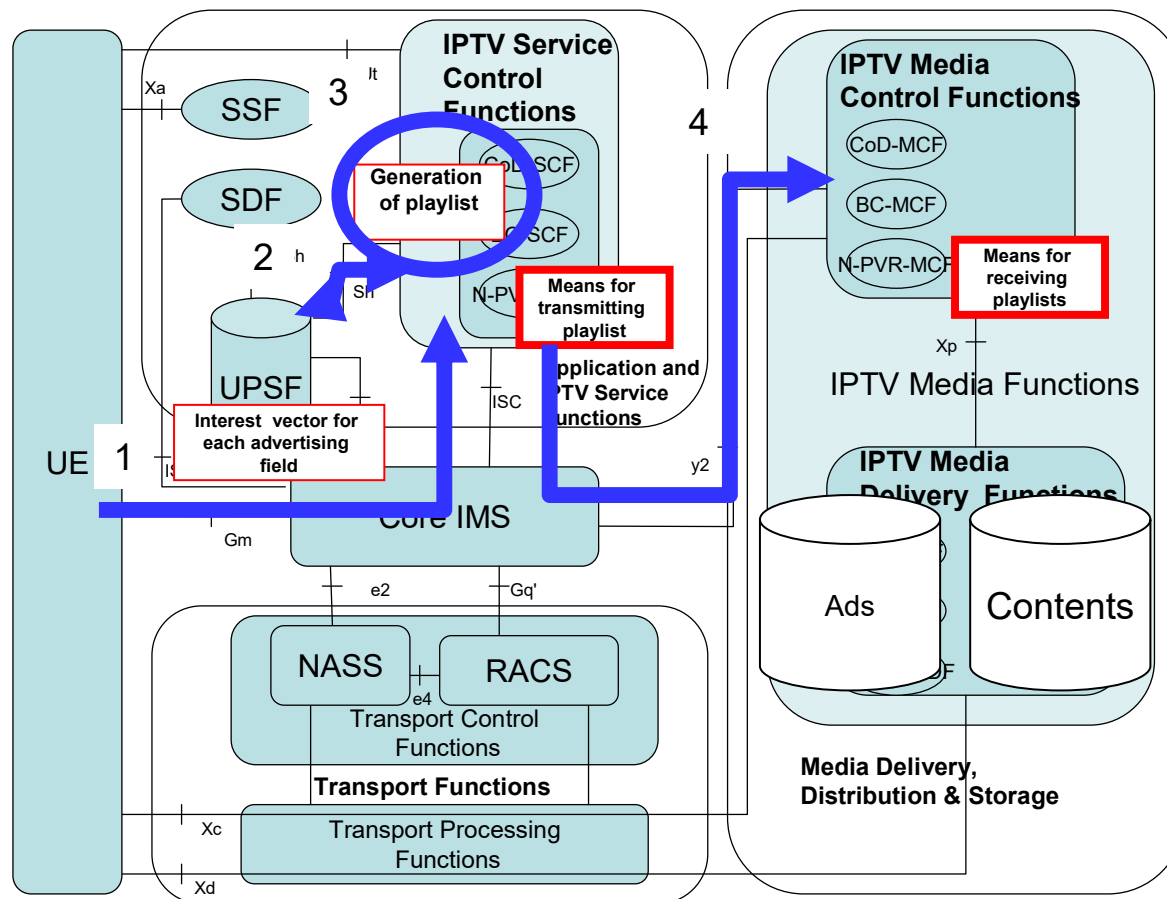
MEANS FOR RESOLVING THE PROBLEM

- A) A playlist consists of ad insertion templates, interest vectors for each ad category of the user, and the advertiser's intent information.
- B) SCF creates a playlist and provides the notification to MF.
 - 1. The playlist is superimposed on an INVITE message
 - 2. The notification of the playlist is provided as an independent message.
 - 3. The notification is provided via a direct connection.
- C) SCF creates an ad guidance information and provides the notification to MF, whereupon the MF creates a playlist
 - 1. The playlist is superimposed on an INVITE message
 - 2. The notification of the playlist is provided as an independent message.
 - 3. The notification is provided via a direct connection.
- D) Trick-play inhibitory function
 - 1. It inhibits ad trick-play requests based on the playlist in MF.
 - 2. Trick-play inhibition/control information is embedded in video streams.

EFFECT OF THE PRESENT INVENTION

- No claim of novelty or inventive step is found in “[a] playlist consists of ad insertion templates, interest vectors for each ad category of the user, and the advertiser’s intent information.”
- By creating a playlist in SCF and providing MF with the notification, it becomes possible to provide VoD services including the arbitrary insertion of ads created.
- By creating ad guidance information in SCF, followed by the provision of the notification to MF, and then creating a playlist in MF, it becomes possible to provide VoD services including the insertion of ads adapted to the users.
- The trick-play inhibitory function makes it possible to inhibit the skipping of ads during playback.

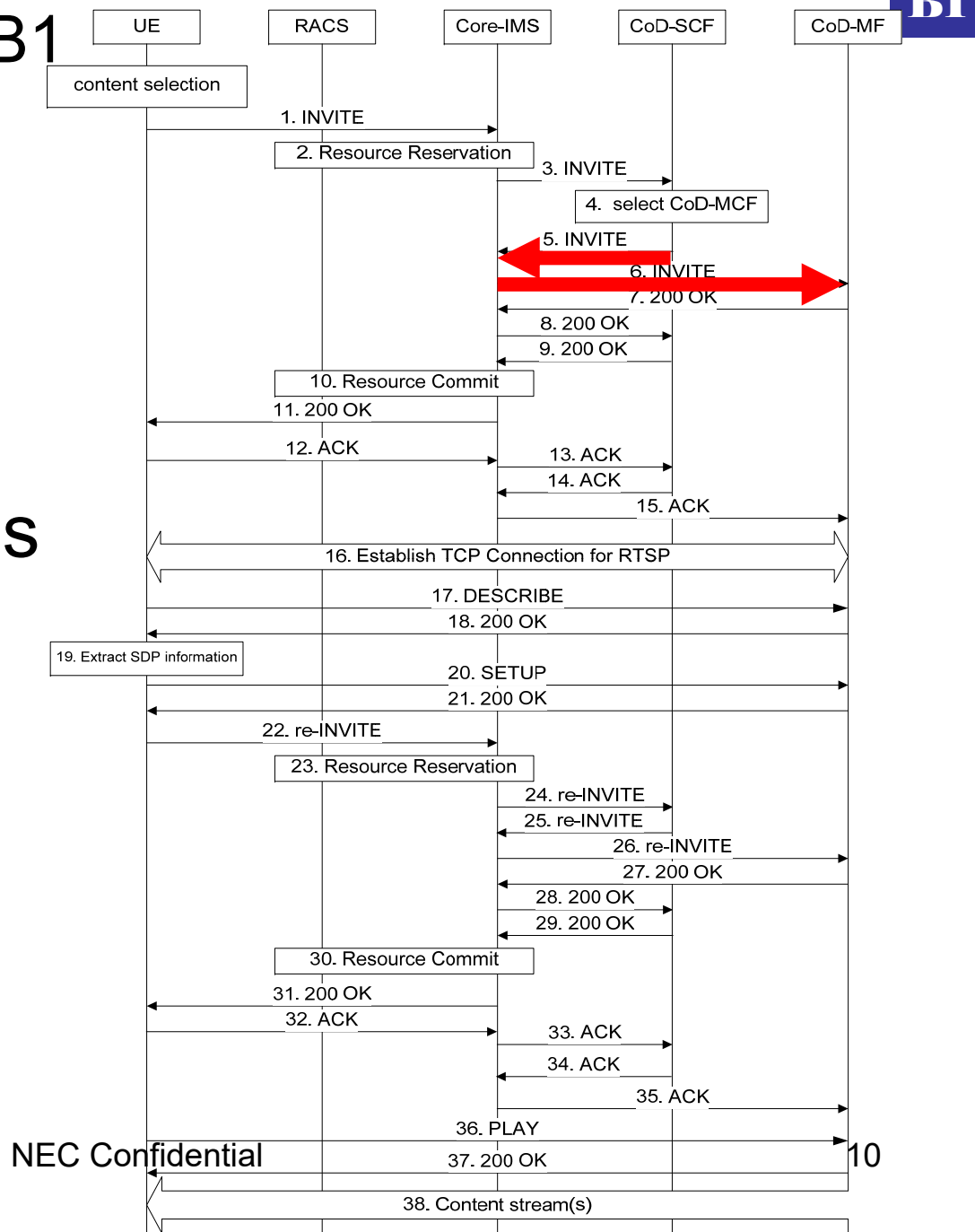
Architecture according to B



- SCF receives authenticated user information from IMS.
- Interest vectors are obtained from UPSF.
- A playlist is created.
- The playlist is transmitted to MF

WORKING EXAMPLE B1 (Method 2-2)

- The playlist is superimposed on the INVITE messages in steps 5 and 6



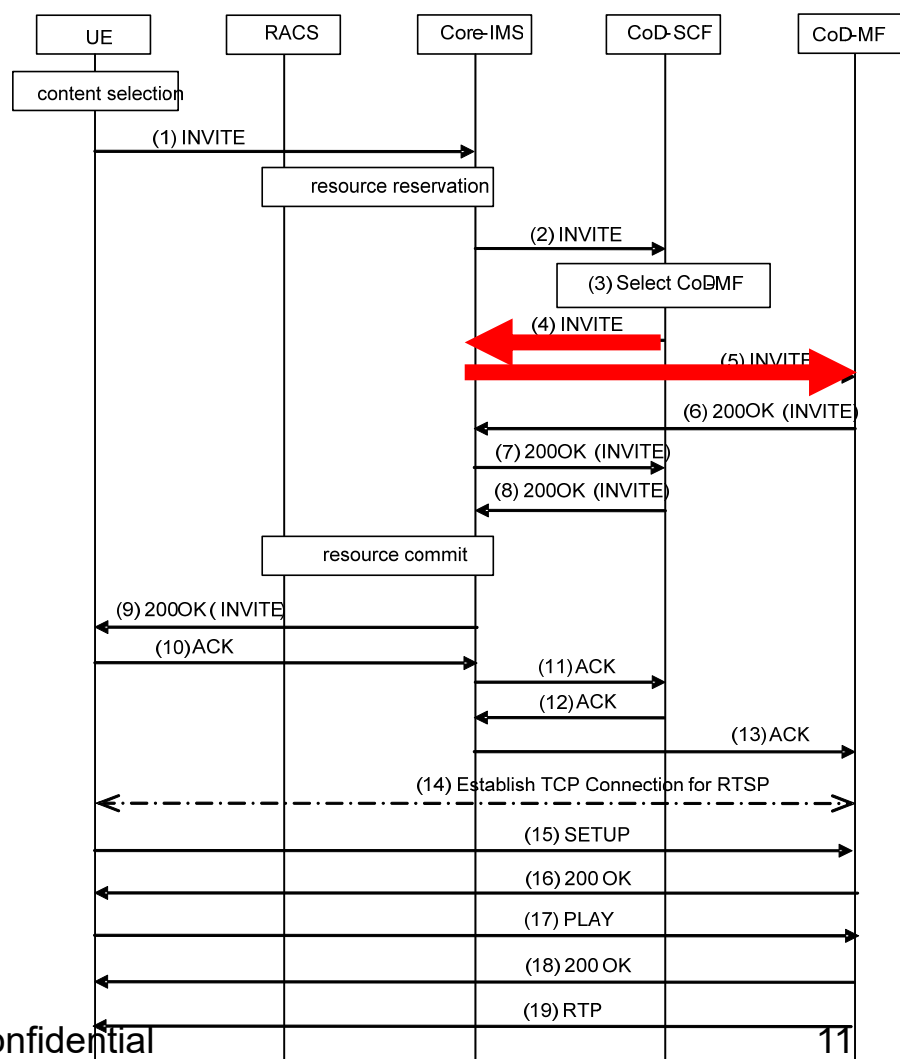
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WORKING EXAMPLE B1

Method 2-1

- The playlist is superimposed on the INVITE messages in steps 5 and 6



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Methods for Superimposition of Playlist on INVITE messages according to Working Example B1

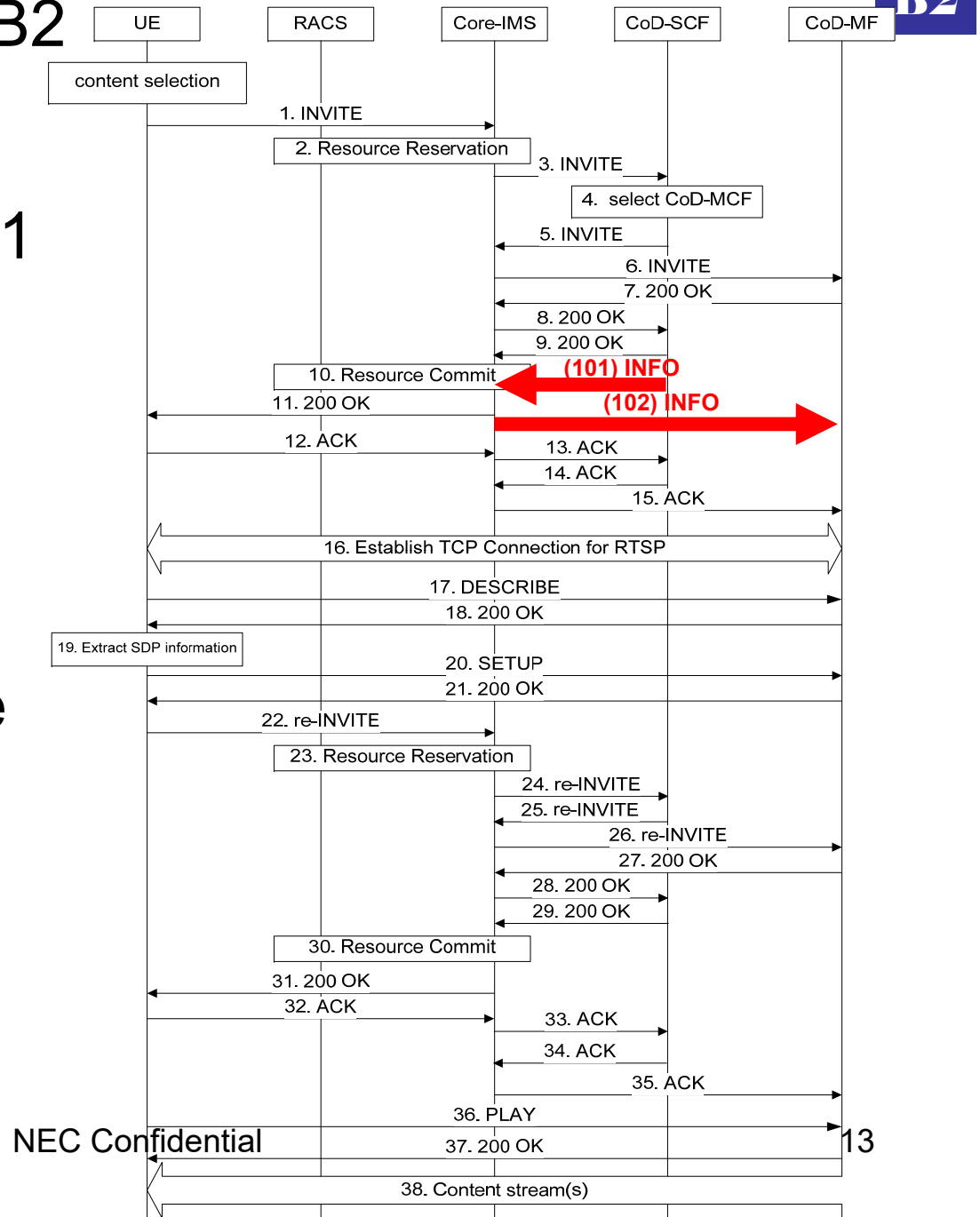
- In principle, there are four methods:
 - Superimposition on the tag of the INVITE
 - Proposed change of SIP → semantically inconsistent
 - Superimposition on the SDP of the INVITE
 - An application must be submitted to IANA.
 - Conversion of INVITE payload to multi-part
 - This method is the most consistent in terms of the semantics of the protocol. However, it is not consistent with the existing IMS
 - Specify the reference URI from the INVITE
 - Not pretty, but feasible

```
INVITE sip:bob@biloxi.com SIP/2.0
Via: SIP/2.0/UDP pc33.atlanta.com;branch=z9hG4bKnashds8
Max-Forwards: 70
To: Bob <sip:bob@biloxi.com>
From: Alice <sip:alice@atlanta.com>;tag=1928301774
Call-ID: a84b4c76e66710
CSeq: 314159 INVITE
Contact: <sip:alice@pc33.atlanta.com>
Content-Type: application/sdp
Content-Length: 142
```

```
v=0
o=jdoe 2890844526 2890842807 IN IP4 10.47.16.5
s=SDP Seminar
i=A Seminar on the session description protocol
u=http://www.example.com/seminars/playlist.xml
e=j.doe@example.com (Jane Doe)
c=IN IP4 224.2.17.12/127
t=2873397496 2873404696
a=recvonly
m=audio 49170 RTP/AVP 0
m=video 51372 RTP/AVP 99
a=rtpmap:99 h263-1998/90000
```

WORKING EXAMPLE B2 (Method 2-2)

- Addition of steps 101 and 102 to step 5 and the subsequent steps up to the step before step 36
- INFO or MESSAGE as the SIP message type (method)

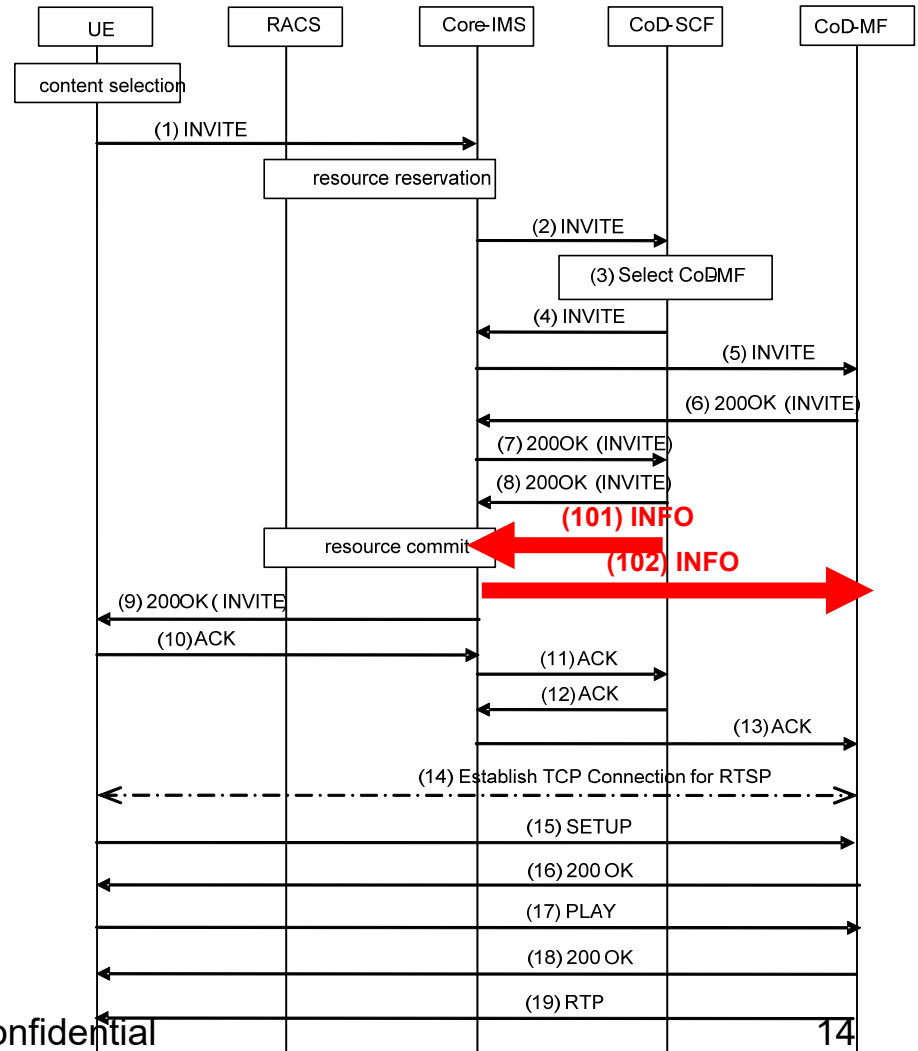


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WORKING EXAMPLE B2

Method 2-1

- Addition of steps 101 and 102 to step 4 and the subsequent steps up to the step before step 18
- INFO or MESSAGE as the SIP message type (method)



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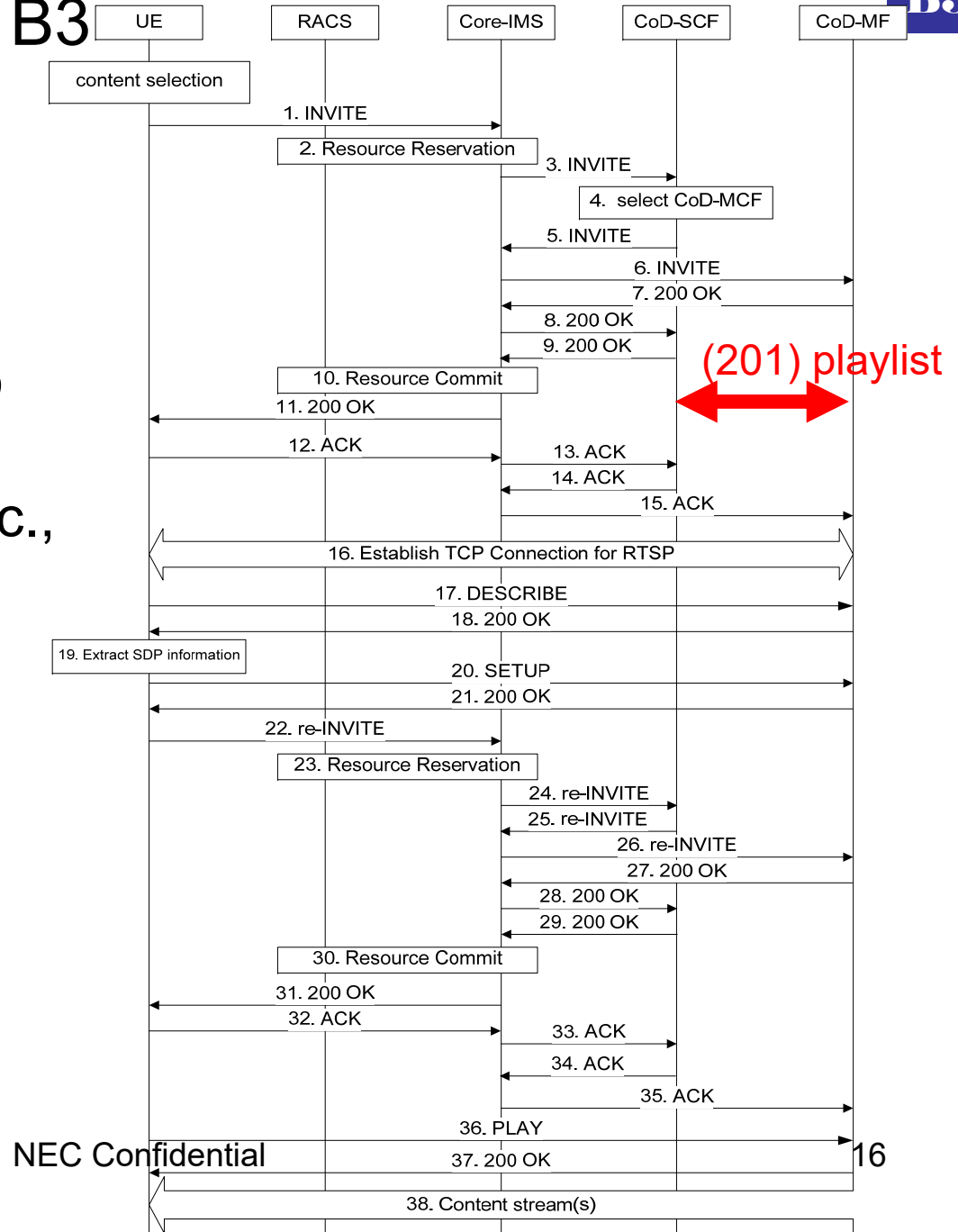
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Payload of INFO

- Basically, it is an enumeration of contents
 - Advertisement 1
 - Content 1
 - Advertisement 2
 - Content 2
 - Advertisement 3
- Although time information, alternative, etc., come to my mind, this should be kept open (i.e., leave room for patenting the data model here on a later date).

WORKING EXAMPLE B3 (Method 2-2)

- Addition of step 201 to step 6 and the subsequent steps up to the step before step 36
- HTTP, SOAP, XCAP, etc., are assumed for protocols
- There are two forms: Query from MF and command from SCF



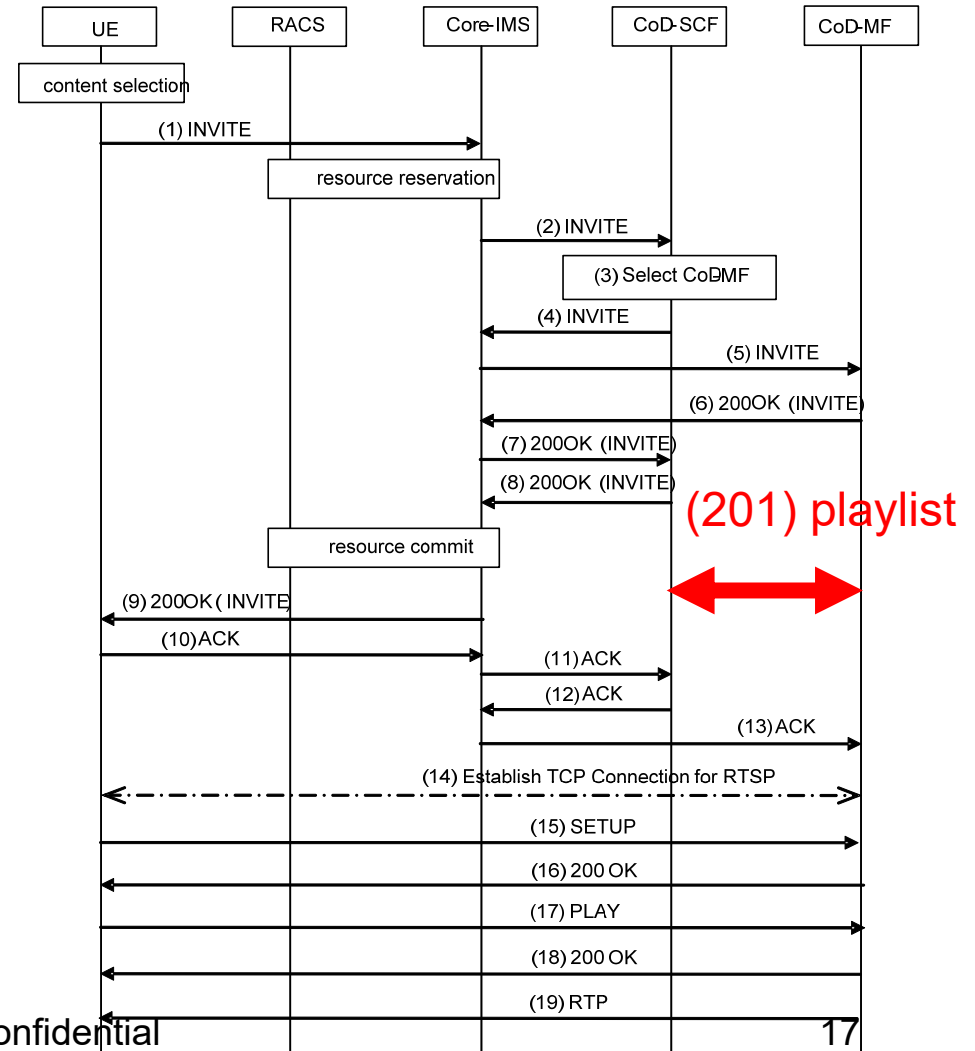
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WORKING EXAMPLE B3

Method 2-1

- Addition of step 201 to step 5 and the subsequent steps up to the step before step 18
- HTTP, SOAP, XCAP, etc., are assumed for protocols
- There are two forms: Query from MF and command from SCF

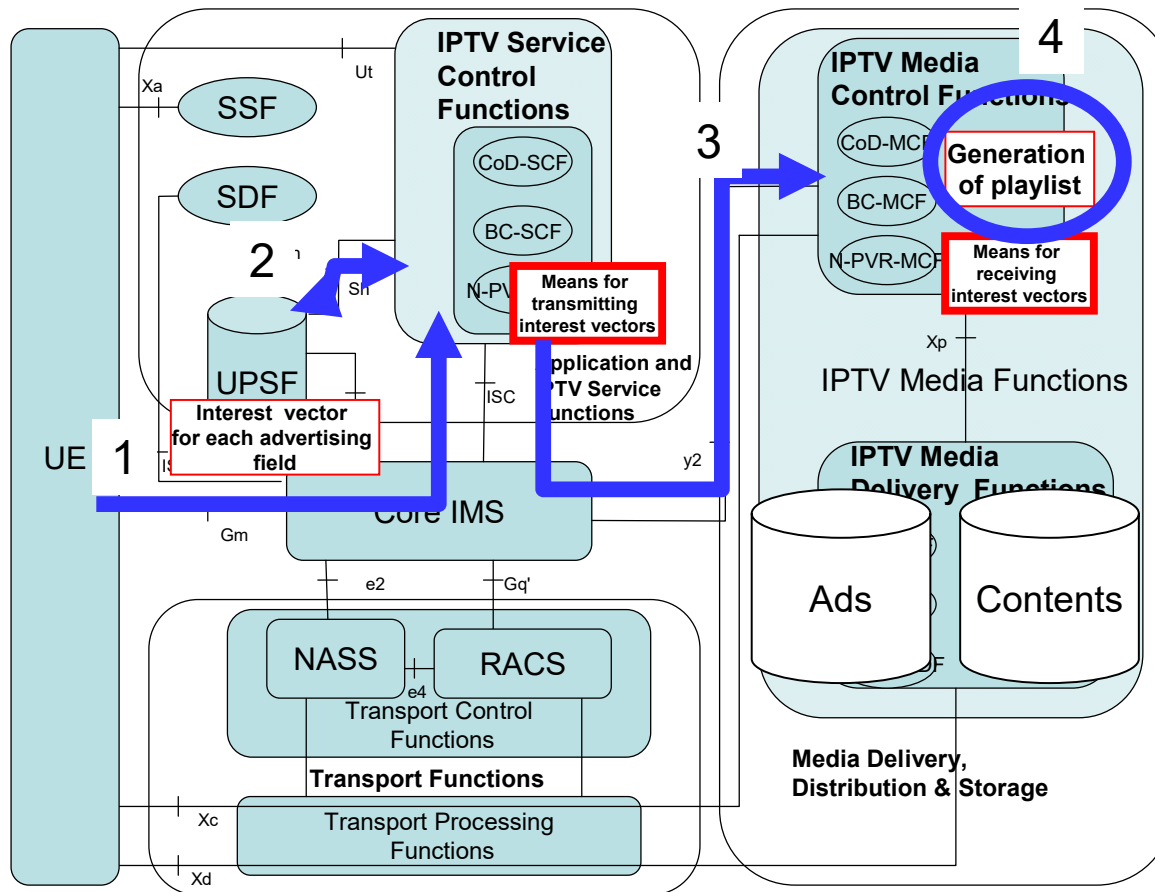


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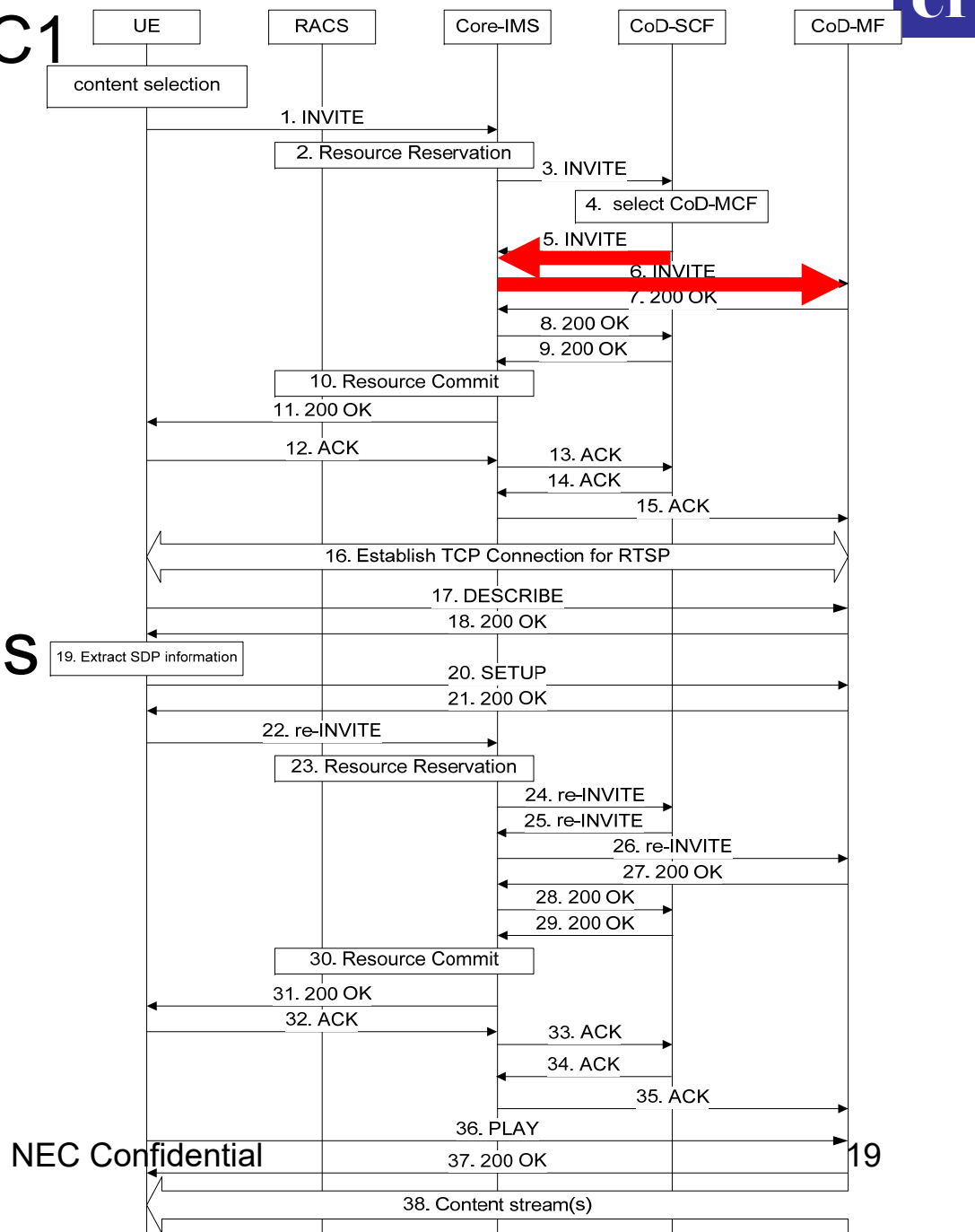
Architecture according to C



- SCF receives authenticated user information from IMS.
- Interest vectors are obtained from UPSF.
- A playlist is created.
- The playlist is transmitted to MF.

WORKING EXAMPLE C1 (Method 2-2)

- The ad guidance information is superimposed on the INVITE messages in steps 5 and 6

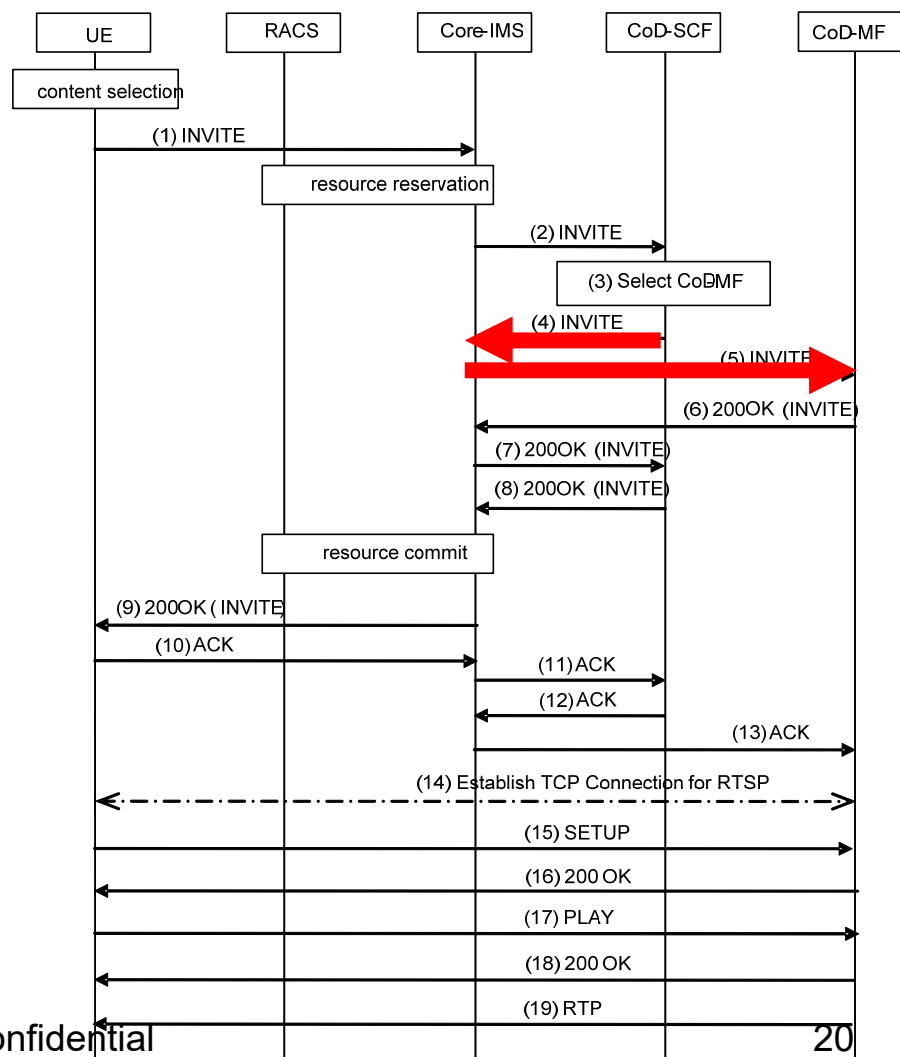


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WORKING EXAMPLE C1

Method 2-1

- The ad guidance information is superimposed on the INVITE messages in steps 5 and 6



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Methods for Superimposition of Ad Guidance Information on INVITE Message according to Working Example C1

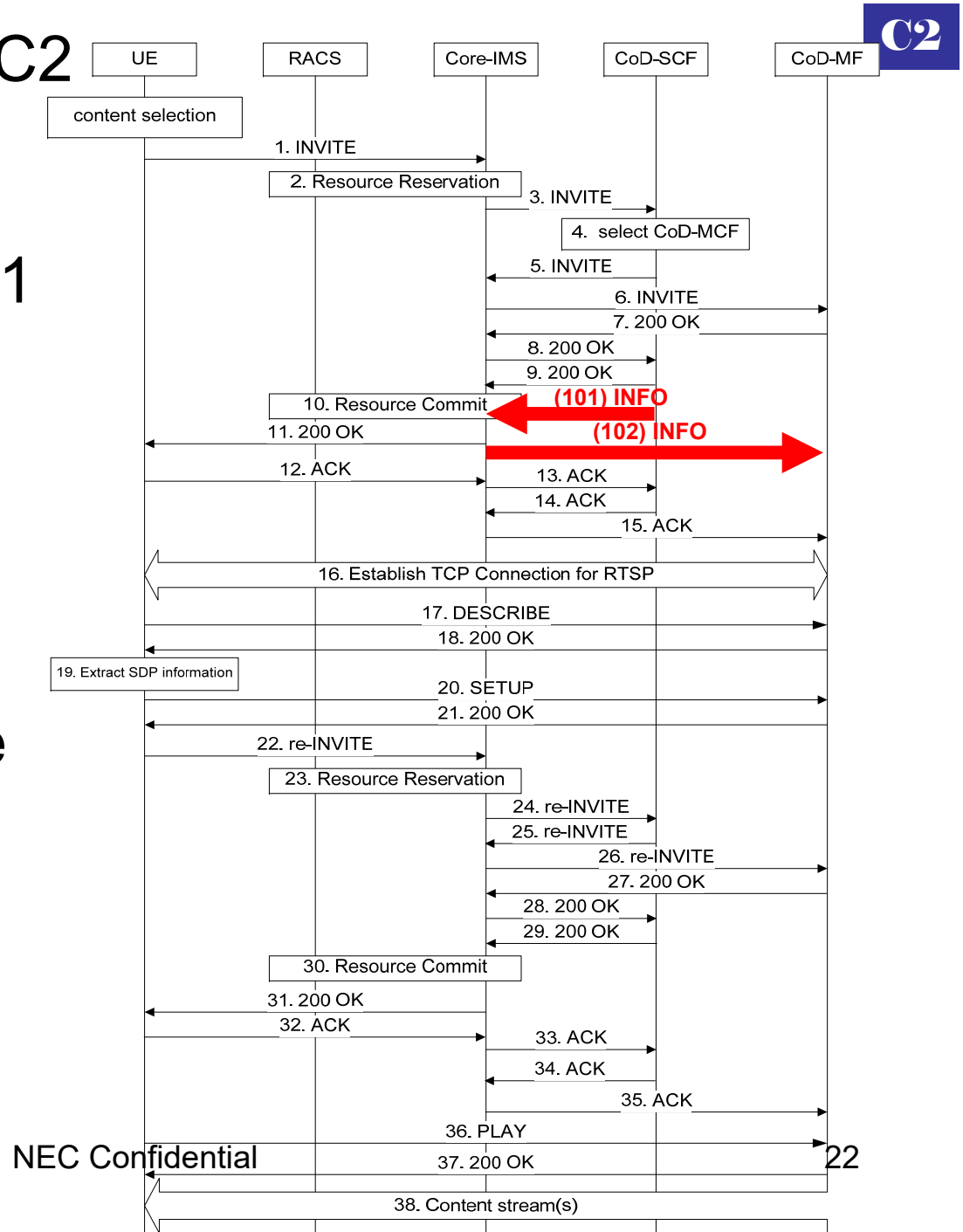
- In principle, there are four methods:
 - Superimposition on the tag of the INVITE
 - Proposed change of SIP → semantically inconsistent
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 - Conversion of INVITE payload to multi-part
 - This method is the most consistent in terms of the semantics of the protocol
However, it is not consistent with the existing IMS
 - Specify the reference URI from the INVITE
 - Not pretty, but feasible

```
INVITE sip:bob@biloxi.com SIP/2.0
Via: SIP/2.0/UDP pc33.atlanta.com;branch=z9hG4bKnashds8
Max-Forwards: 70
To: Bob <sip:bob@biloxi.com>
From: Alice <sip:alice@atlanta.com>;tag=1928301774
Call-ID: a84b4c76e66710
CSeq: 314159 INVITE
Contact: <sip:alice@pc33.atlanta.com>
Content-Type: application/sdp
Content-Length: 142
```

```
v=0
o=jdoe 2890844526 2890842807 IN IP4 10.47.16.5
s=SDP Seminar
i=A Seminar on the session description protocol
u=http://www.example.com/seminars/playlist.xml
e=j.doe@example.com (Jane Doe)
c=IN IP4 224.2.17.12/127
t=2873397496 2873404696
a=recvonly
m=audio 49170 RTP/AVP 0
m=video 51372 RTP/AVP 99
a=rtmap:99 h263-1998/90000
```

WORKING EXAMPLE C2 (Method 2-2)

- Addition of steps 101 and 102 to step 5 and the subsequent steps up to the step before step 36
- INFO or MESSAGE as the SIP message type (method)



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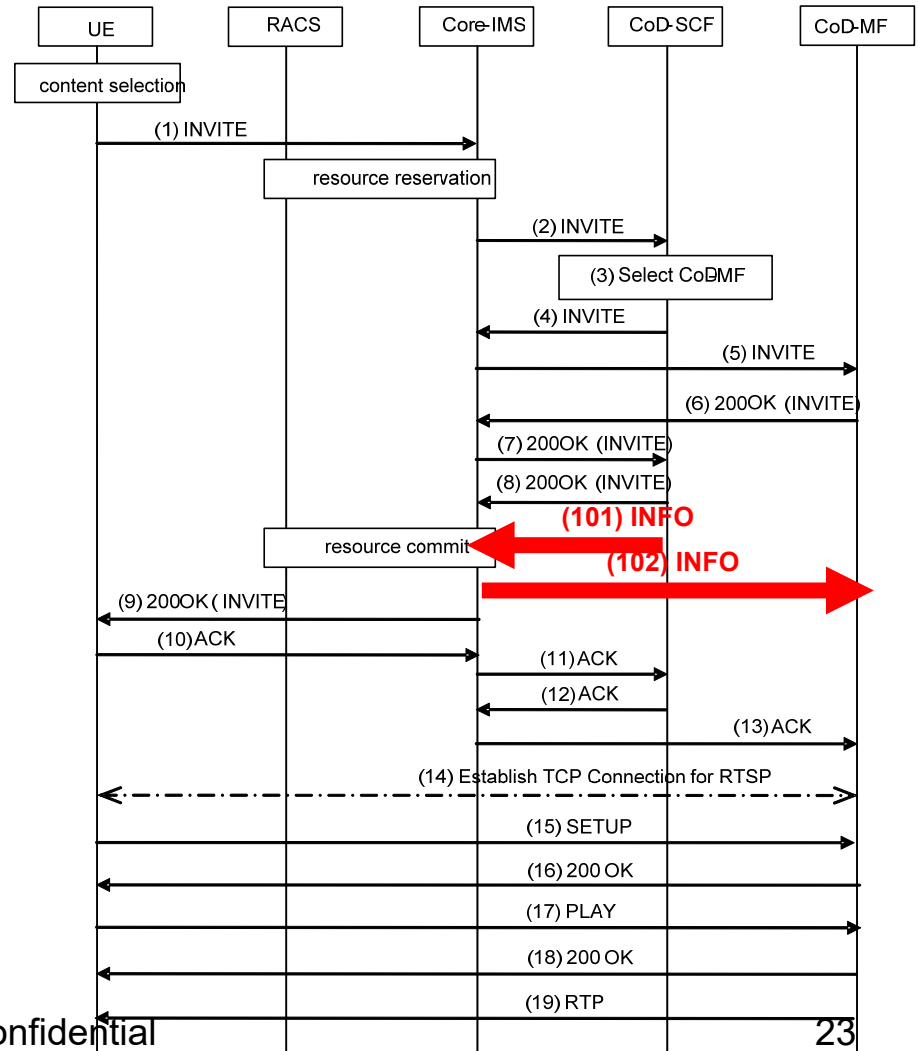
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WORKING EXAMPLE C2

Method 2-1

- Addition of steps 101 and 102 to step 4 and the subsequent steps up to the step before step 18
- INFO or MESSAGE as the SIP message type (method)



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Payload of INFO

(Ad Guidance Information)

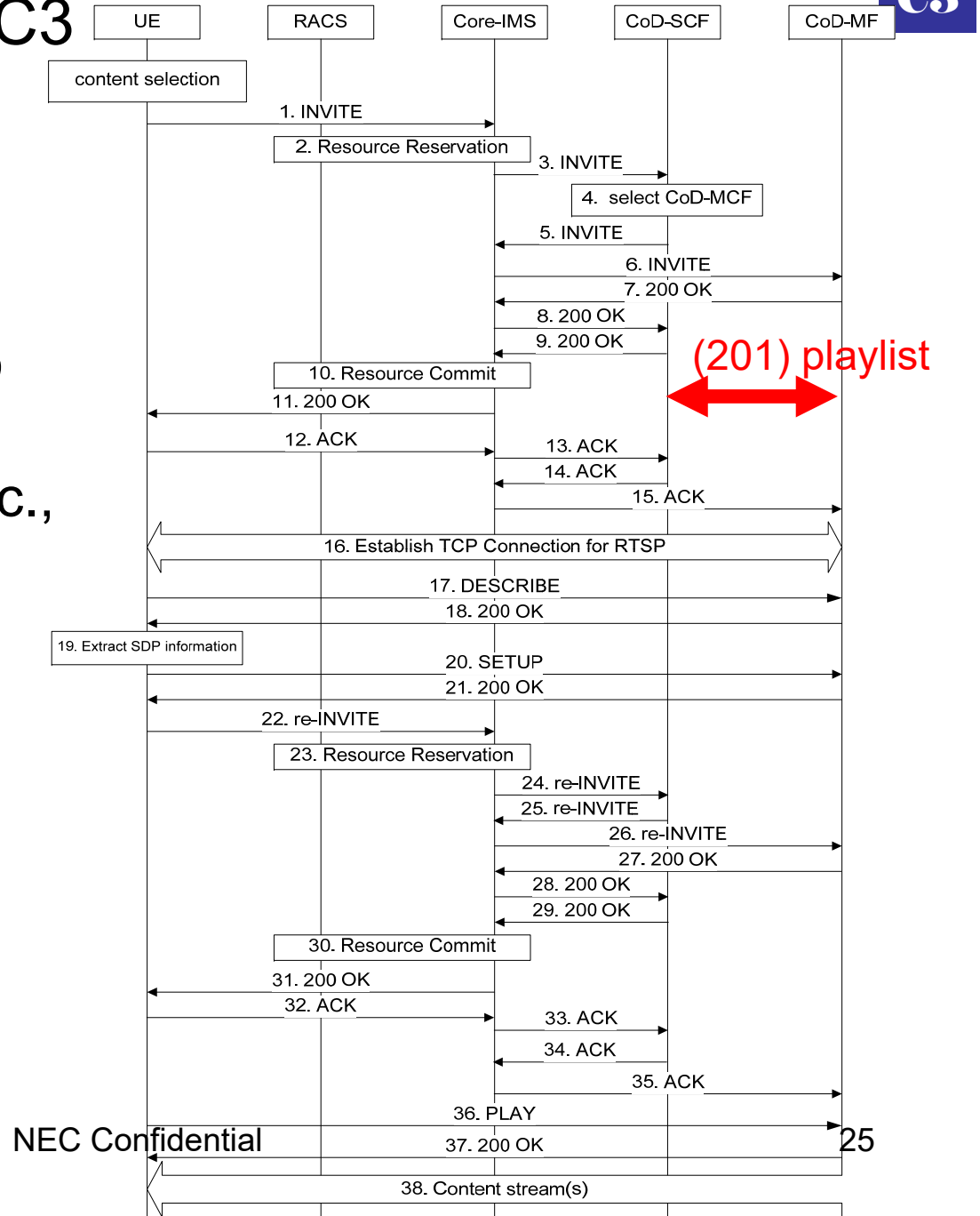
- Basically, it is a combination of the advertising field and the ad-streaming priority factor.

E.g.)

- Car:1
- Real Estate:2
- Travel:4
- Insurance:5
- Mobile phone:3
- Coffee:3
- Gadget:4

WORKING EXAMPLE C3 (Method 2-2)

- Addition of step 201 to step 6 and the subsequent steps up to the step before step 36
- HTTP, SOAP, XCAP, etc., are assumed for protocols
- There are two forms: Query from MF and command from SCF



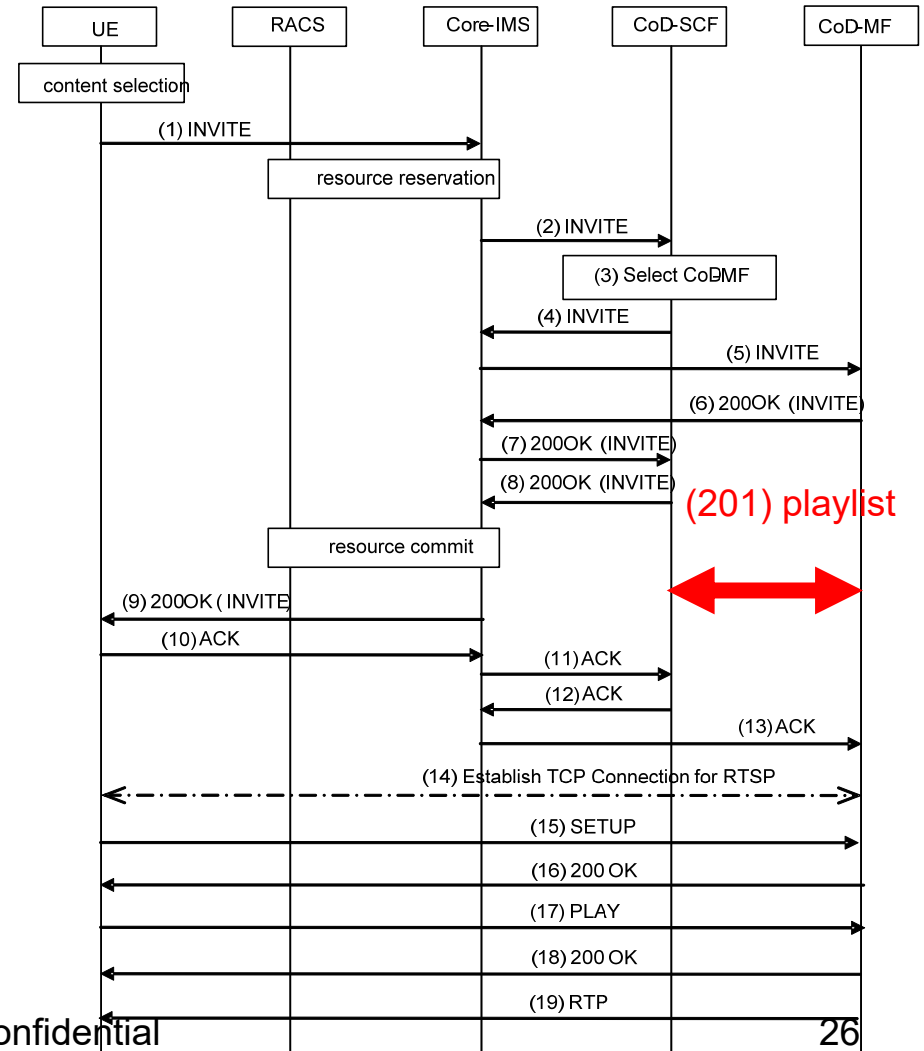
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WORKING EXAMPLE C3

Method 2-1

- Addition of step 201 to step 5 and the subsequent steps up to the step before step 18
- HTTP, SOAP, XCAP, etc., are assumed for protocols
- There are two forms: Query from MF and command from SCF

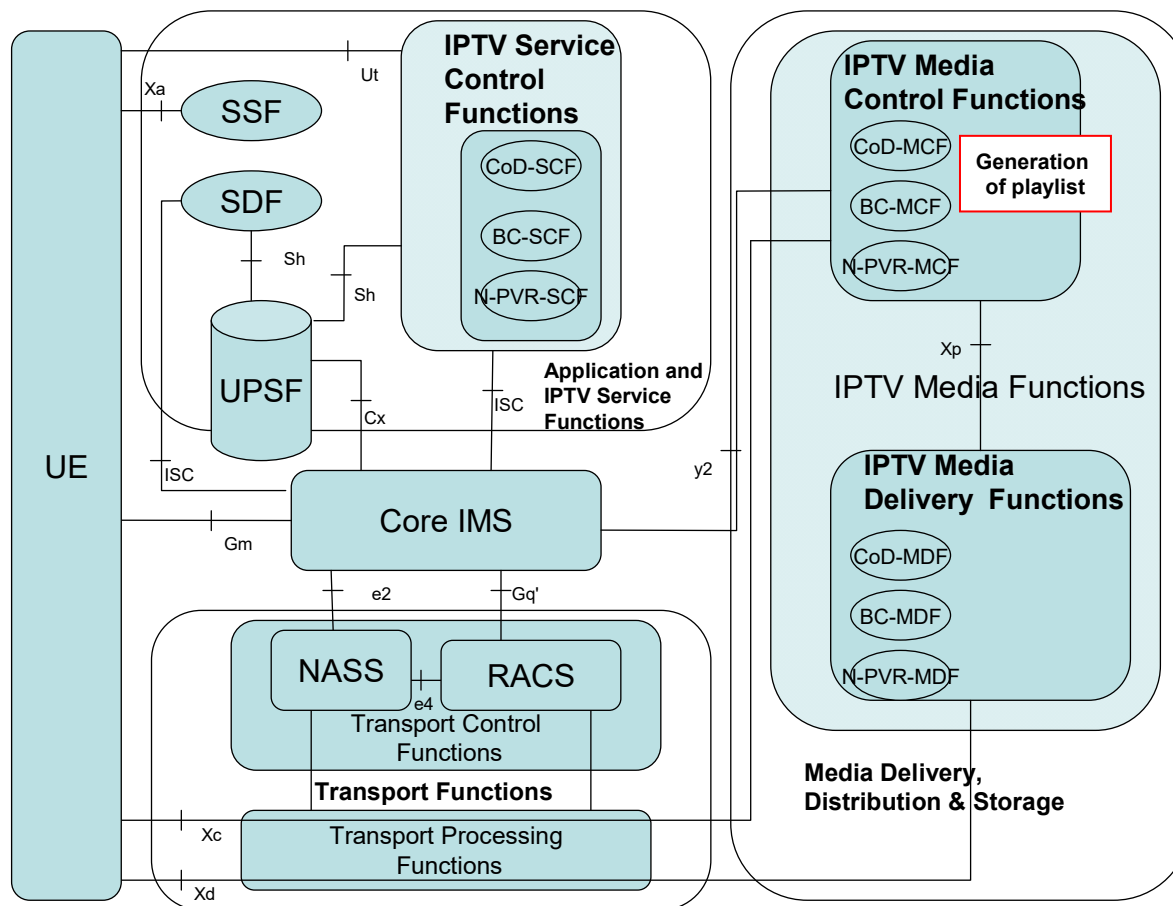


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Architecture according to D1



- MF creates a timetable based on the playlist obtained
- The timetable and offset are compared to determine whether or not play tricks are feasible.

Timetable Construction Steps according to D1

A timetable is built by an accumulation of the ad durations of the contents.
Trick play is prohibited during ads.

Contents	Time (seconds)
Ad 1	60
Section 1	360
Ad 2	60



Timetable	Start	End	Trick play
Ad 1	0	60	Not allowed
Section 1	60	420	Allowed
Ad 2	420	480	Not allowed



D2: Control information is embedded in the stream

- Trick-play prohibitory information is embedded in the control packet of the transport stream.

Miscellaneous

- While an example of selecting contents based on the interest (preference) vectors in user profiles is presented to describe the selection of ads, the selection may be made through a calculation based on the correlation vectors of contents.

I, Yukie Hirose, hereby declare as follows:

1. I, Yukie Hirose, hereby certify that I am a professional translator fluent in both Japanese and English and I am competent to translate from Japanese into English.
2. I am a translator at Nelles Translations, which is located at 3 Grant Square, #336, Hinsdale, IL 60521.
3. I possess advanced knowledge of the Japanese and English languages.
4. The attached translation is, to the best of my knowledge and belief, a true and accurate English translation of Japanese text in Exhibit 2012 Presentation dated August 6, 2008 of IPR2023-01240 and IPR-2023-01241.
5. I declare under penalty of perjury that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code.

Dated: 4.30.2024

A handwritten signature in black ink, appearing to read 'Yukie Hirose', is written over a solid black horizontal line.

Ms. Yukie Hirose