CLAIMS

What is claimed is:

1. A channel switching processing method, comprising:

receiving, by a switching server, a channel switching request sent by a receiving end; and

performing, by the switching server, an exception handling procedure, when determining that current switching resource information does not meet a switching condition according to the channel switching request,and sending channel switching instruction information to the receiving end, wherein the channel switching instruction information is configured to instruct the receiving end to perform a channel switching operation corresponding to the channel switching instruction information.

2. The method according to claim 1, wherein the switching resource information comprises at least one of network bandwidth information, server load information, buffer information of receiving end, and channel buffer information; and

the switching server determines that current switching resource information does not meet the switching condition if at least one of the following conditions is met:

the switching server determines that available bandwidth is smaller than apreset bandwidth threshold value according to the network bandwidth information;

the switching server determines that a server load is larger than a preset load threshold value according to the server load information;

the switching server determines that a data stream makes a receiving end buffer larger than a preset buffer maximum threshold according to the buffer information of receiving end;

the switching server determines that the data stream makes the receiving end buffer smaller than a preset buffer minimum threshold according to the buffer information of receiving end; and

the switching server determines that the data stream makes a receiving end playback time-shift larger than a preset threshold value according to the channel buffer information,

wherein the data stream is obtained by completely copying an original multicast stream, or is obtained by tailoring the original multicast stream.

3. The method according to claim 2, wherein before the switching server determines thatwhether the current switching resource information meets the switching condition, the method comprises:

transmitting, by the switching server, the data stream to the receiving end according to the channel switching request.

4. The method according to claim 2 or 3, wherein the performing the exception handling

procedure and sending the channel switching instruction information to the receiving end comprises:

tailoring, by the switching server, a data stream that is not transmitted, and sending the tailored data stream and first channel switching instruction information to the receiving end,

wherein the first channel switching instruction information comprises first description information and/or first processing information;

the first description information comprises at least one of a destination address of the tailored data stream, tailoring information of the tailored data stream, and server exception information; and

the first processing information is configured to instruct the receiving end to ignore lost content in the received data stream, and/or cancel data error correction, and/or update playback delay, and/or enable adaptive playback.

5. The method according to claim 2, wherein the performing the exception handling procedure and sending the channel switching instruction information to the receiving end comprises:

calculating, by the switching server, a delay time length according to the switching resource information; and

sending, by the switching server, second channel switching instruction information to the receiving end, wherein the second channel switching instruction information comprises second description information and/or second processing information;

the second description information comprises at least one of the data stream destination address, the delay time length, and the server exception information; and

the second processing information is configured to instruct the receiving end to start a timer to wait for the delay time length, and then to receive the data stream and/or update a receiving end state.

6. The method according to claim 5, wherein after the performing the exception handling procedure and sending the channel switching instruction information to the receiving end, the method further comprises:

transmitting, by the switching server, the data stream to the receiving end after waiting for the delay time length;

or,

tailoring, by the switching server, the data stream after waiting for the delay time length, and sending the tailored data stream to the receiving end.

7. The method according to claim 2, wherein the performing the exception handling procedure and sending the channel switching instruction information to the receiving end comprises:

obtaining, by the switching server, a moment that a next random access point appears

according to a data stream; and

determining, by the switching server, whether a time length between a moment that the channel switching request is received to the moment that the next random access point appears meets a preset condition, and if the time length meets the preset condition, sending, by the switching server, third channel switching instruction information to the receiving end, wherein the third channel switching instruction information comprises third description information and/or third processing information;

the third description information comprises at least one of a target multicast group address, a moment that a next random access point appears, server exception information, and description information for indicating the receiving end to immediately join a target multicast group according to the target multicast group address; and

the third processing information is configured to instruct the receiving end to immediately join the target multicast group according to the target multicast group address, or join the target multicast group according to the target multicast group address before the moment that the next random access point appears.

8. The method according to claim 7, wherein the determining, by the switching server, whether the time length between the moment that the channel switching request is received to the moment that the next random access point appears meets the preset condition comprises:

if the time length between the moment that the channel switching request is received to the moment that the next random access point appears is larger than a first preset value, and/or smaller than a second preset value, it is determined that the preset condition is met.

9. The method according to claim 2, wherein

when the switching server determines that the data stream makes the receiving end buffer larger than the preset buffer maximum threshold according to the buffer information of receiving end, the performing the exception handling procedure and sending the channel switching instruction information to the receiving end comprises:

transmitting, by the switching server, the data stream to the receiving end, and sending fourth channel switching instruction information to the receiving end, wherein the fourth channel switching instruction information comprises fourth description information and/or fourth processing information;

the fourth description information comprises at least one of a fast playback instruction, a target multicast group address, data stream tailoring information, and server exception information; and

the fourth processing information is configured to instruct the receiving end to perform fast playback according to the fast playback instruction, and/or join the target multicast group according

to the target multicast group address, and/or ignore lost content in the data stream, and/or cancel data error correction, and/or update playback delay;

or,

when the switching server determines that the data stream makes the receiving end buffer smaller than the preset buffer minimum threshold according to the buffer information of receiving end, the performing the exception handling procedure and sending the channel switching instruction information to the receiving end comprises:

transmitting, by the switching server, the data stream to the receiving end, and sending fourth channel switching instruction information to the receiving end, wherein the fourth channel switching instruction information comprises fourth description information and/or fourth processing information;

the fourth description information comprises at least one of a slow playback instruction, a target multicast group address, and data stream tailoring information; and

the fourth processing information is configured to instruct the receiving end to perform slow playback according to the slow playback instruction, and/or join the target multicast group according to the target multicast group address, and/or ignore lost content in the data stream, and/or cancel data error correction, and/or update playback delay.

10. The method according to claim 2 or 3, wherein the performing the exception handling procedure and sending the channel switching instruction information to the receiving end comprises:

stopping, by the switching server, a channel switching procedure; and

sending, by the switching server, fifth channel switching instruction information to the receiving end, wherein the fifth channel switching instruction information comprises fifth description information and/or fifth processing information;

the fifth description information comprises at least one of a target multicast group address, a moment that a next random access point appears, a suspension time length, and server exception information; and

the fifth processing information is configured to instruct the receiving end to immediately join a target multicast group according to the target multicast group address, or join the target multicast group according to the target multicast group address before the moment that the next random access point appears, and/or ignore a gap between the data stream and a multicast stream provided by the target multicast group, and/or initiate a new channel switching request to the switching server again after the suspension time length.

11. The method according to claim 4, wherein the tailoring the data stream comprises:

reducing, transcoding, and/or deleting the data stream.

12. The method according to claim 11, wherein the data obtained by tailoring the data stream comprises key information and/or a reference frame in the data stream; and

the key information is required for the receiving end to process data, and comprises channel program dedicated information, video sequence parameter set information, video image parameter set information, audio decoding parameter information, and/or program specific information in a transport stream.

13. A channel switching processing method, comprising:

sending, by a receiving end, a channel switching request to a switching server;

receiving, by the receiving end, channel switching instruction information sent by the switching server when the switching server determines that current switching resource information does not meet a switching condition according to the channel switching request; and

performing a channel switching operation corresponding to the channel switching instruction information according to the channel switching instruction information.

14. A channel switching processing method, comprising:

receiving, by a switching server, a channel switching request sent by a receiving end;

obtaining, by the switching server, a moment that a next random access point appears from a data stream according to the channel switching request, wherein the data stream is obtained by copying an original multicast stream; and

determining, by the switching server, whether a time length between a moment that the channel switching request is received to the moment that the next random access point appears meets a preset condition, and sending channel switching instruction information to the receiving end, wherein the channel switching instruction information comprises description information and processing information;

the description information comprises at least one of a target multicast group address and the moment that the next random access point appears; and

the processing information is configured to instruct the receiving end to immediately join a target multicast group according to the target multicast group address, or join the target multicast group according to the target multicast group address before the moment that the next random access point appears.

15. A channel switching processing system, comprising:

a switching server and a receiving end; wherein

the switching server is configured to receive a channel switching request sent by the receiving end, and when determining that current switching resource information does not meet a switching

condition according to the channel switching request, perform an exception handling procedure and send channel switching instruction information to the receiving end; and

the receiving end is configured to send the channel switching request to the switching server, receive the channel switching instruction information sent by the switching server, and perform a channel switching operation corresponding to the channel switching instruction information according to the channel switching instruction information.

16. A switching server, comprising:

a receiving unit, configured to receive a channel switching request sent by a receiving end;

a resource analyzing unit, configured to determine whether current switching resource information meets a switching condition according to the channel switching request; and

an exception handling unit, configured to, when the resource analyzing unit determines that current switching resource information does not meet the switching condition, perform an exception handling procedure, and send channel switching instruction information to the receiving end, wherein the channel switching instruction information is configured to instruct the receiving end to perform a channel switching operation corresponding to the channel switching instruction information.

17. The switching server according to claim 16, wherein the switching server further comprises:

a data storage unit, configured to store a data stream obtained by copying an original multicast stream.

18. The switching server according to claim 17, wherein the exception handling unit comprises at least one of the following units:

a data tailoring unit, configured to tailor the data stream stored in the data storage unit to obtain a tailored data stream, and send the tailored data stream to the receiving end;

a data sending unit, configured to send the data stream stored in the data storage unit to the receiving end;

a delay time length calculating unit, configured to calculate a delay time length according to the switching resource information;

a switching control unit, configured to obtain a moment that a next random access point appears according to the data stream stored in the data storage unit, and determine whether a time length between a moment that the channel switching request is received to the moment that the next random access point appears meets a preset condition, and if the time length meets the preset condition, trigger the receiving end to directly join a target multicast group; and

a switching termination unit, configured to stop a channel switching procedure.

19. A receiving end, comprising:

a request sending unit, configured to send a channel switching request to a switching server;

an instruction receiving unit, configured to receive channel switching instruction information sent by the switching server when the switching server determines that current switching resource information does not meet a switching condition according to the channel switching request; and

a processing unit, configured to perform a channel switching operation corresponding to the channel switching instruction information according to the channel switching instruction information.

20. A channel switching processing method, comprising:

receiving, by a switching server, a channel switching request from a receiving end; and

sending, by the switching server, channel switching instruction information to the receiving end in response to the channel switching request, and sending tailored data from a data stream to the receiving end, wherein the channel switching instruction information comprises description information of the tailored data sent by the switching server and/or processing information for sending the tailored data from the data stream, so as to enable the receiving end to identify the tailored data, and to perform an operation corresponding to the channel switching instruction information according to the channel switching instruction information.

21. The method according to claim 20, wherein before the sending the tailored data from the data stream to the receiving end, the method further comprises:

tailoring the data stream, wherein the tailoring comprises reducing, transcoding, and/or deleting the data stream to obtain the tailored data.

22. The method according to claim 21, wherein the data obtained by tailoring the data stream comprises: key information or a reference frame in the data stream.

23. The method according to any one of claims 20 to 22, wherein

the key information comprises channel program dedicated information, video sequence parameter set information, video image parameter set information, audio decoding parameter information, and/or program specific information in a transport stream.

24. The method according to any one of claims 20 to 22, wherein

the channel switching instruction information comprises description information and/or processing information;

the description information comprises information for identifying the sent data stream as the tailored data, and/or a feature of the sent tailored data; and

the processing information comprises information for indicating the receiving end to ignore lost data of the tailored data stream, cancel data error correction, update playback delay, enable

adaptive playback, and/or join a multicast group.

25. A channel switching processing method, comprising:

sending, by a receiving end, a channel switching request to a switching server;

receiving, by the receiving end, channel switching instruction information sent by the switching server in response to the channel switching request and tailored data from a data stream sent by the switching server; and

identifying, by the receiving end, the tailored data, and performing an operation corresponding to the channel switching instruction information according to the channel switching instruction information.

26. The method according to claim 25, wherein the tailored data comprises:

key information or a reference frame obtained by reducing the data stream, recoded data obtained by transcoding the data stream, and/or necessary data obtained by deleting the data stream.

27. The method according to claim 26, wherein

the key information comprises channel program dedicated information, video sequence parameter set information, video image parameter set information, audio decoding parameter information, and/or program specific informationin a transport stream.

28. The method according to claim 25, wherein

the channel switching instruction information comprises description information and/or processing information;

the description information comprises information for identifying the sent data stream as the tailored data, and/or a feature of the sent tailored data; and

the processing information comprises information for indicating the receiving end to ignore lost data of the tailored data stream, cancel data error correction, update playback delay, enable adaptive playback, and/or join a multicast group.

29. The method according to claim 28, wherein the performing the operation corresponding to the channel switching instruction information comprises:

ignoring the lost data of the tailored data stream, cancelling the data error correction, updating the playback delay, enabling the adaptive play, and/or joining the multicast group according to the channel switching instruction information.

CLAIMS

What is claimed is:

1. A channel switching processing method, comprising:

receiving by a switching server, a channel switching request sent by a receiving end; and

performing by the switching server, an exception handling procedure, when determining that current switching resource information does not meet a switching condition according to the channel switching request, and sending channel switching instruction information to the receiving end, wherein the channel switching instruction information instructs the receiving end to perform a channel switching operation corresponding to the channel switching instruction information;

wherein the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end, comprising:

tailoring, by the switching server, a data stream that is not transmitted, and sending the tailored data stream and first channel switching instruction information to the receiving end,

wherein the first channel switching instruction information comprises: first description information and first processing information;

the first description information comprises at least one of: a destination address of the tailored data stream, tailoring information of the tailored data stream, and server exception information; and

the first processing information instructs the receiving end to perform: ignore lost content in the received data stream, cancel data error correction, update playback delay, and enable adaptive playback.

2. The method according to claim 1, wherein the switching resource information comprises at least one of: network bandwidth information, server load information, buffer information of the receiving end, and channel buffer information; and

the switching server determines that current switching resource information does not meet the switching condition if at least one of the following conditions is met:

the switching server determines that available bandwidth is smaller than a preset bandwidth threshold value according to the network bandwidth information;

the switching server determines that a server load is larger than a preset load threshold value according to the server load information;

the switching server determines that a data stream makes a receiving end buffer larger than a preset buffer maximum threshold according to the buffer information of receiving end;

the switching server determines that the data stream makes the receiving end buffer smaller than a preset buffer minimum threshold according to the buffer information of receiving end; and

the switching server determines that the data stream makes a receiving end playback time-shift larger than a preset threshold value according to the channel buffer information,

wherein the data stream is obtained by completely copying an original multicast stream, or is obtained by tailoring the original multicast stream.

3. The method according to claim 2, wherein before the switching server determines whether the current switching resource information meets the switching condition, the method comprising:

transmitting by the switching server, the data stream to the receiving end according to the channel switching request.

4. The method according to claim 2, wherein the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end comprising:

calculating by the switching server, a delay time length according to the switching resource information; and

sending by the switching server, second channel switching instruction information to the receiving end, wherein the second channel switching instruction information comprises one or both of second description information and second processing information;

the second description information comprises at least one of: the data stream destination address, the delay time length, and the server exception information; and

the second processing information instructs the receiving end to start a timer to wait for the delay time length, and then to perform one or both of: receive the data stream and update a receiving end state.

5. The method according to claim 2, wherein the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end comprising:

obtaining by the switching server, a moment that a next random access point appears according to a data stream; and

determining by the switching server, whether a time length between a moment that the channel switching request is received to the moment that the next random access point appears meets a preset condition, and if the time length meets the preset condition:

sending by the switching server, third channel switching instruction information to the receiving end, wherein the third channel switching instruction information comprises one or both of: third description information and third processing information,

wherein the third description information comprises at least one of: a target multicast group address, a moment that a next random access point appears, server exception information, and description information for indicating the receiving end to immediately join a target multicast group according to the target multicast group address; and

the third processing information instructs the receiving end to immediately join the target multicast group according to the target multicast group address, or join the target multicast group according to the target multicast group address before the moment that the next random access point appears.

6. The method according to claim 2, wherein

when the switching server determining that the data stream causes the receiving end buffer larger than the preset buffer maximum threshold according to the buffer information of receiving end, the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end comprising:

transmitting by the switching server, the data stream to the receiving end, and sending fourth channel switching instruction information to the receiving end, wherein the fourth channel switching instruction information comprises one or both of: fourth description information and fourth processing information;

wherein the fourth description information comprises at least one of: a fast playback instruction, a target multicast group address, data stream tailoring information, and server exception information; and

the fourth processing information instructs the receiving end to perform one or more of: fast playback according to the fast playback instruction, join the target multicast group according to the target multicast group address, ignore lost content in the data stream, cancel data error correction, and update playback delay;

or,

when the switching server determines that the data stream causes the receiving end buffer smaller than the preset buffer minimum threshold according to the buffer information of receiving end, the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end comprising:

transmitting by the switching server, the data stream to the receiving end, and sending fourth channel switching instruction information to the receiving end, wherein the fourth channel switching instruction information comprises one or both of: fourth description information and fourth processing information;

wherein the fourth description information comprises at least one of: a slow playback instruction, a target multicast group address, and data stream tailoring information; and

the fourth processing information instructs the receiving end to perform one or more of: slow playback according to the slow playback instruction, join the target multicast group according to the target multicast group address, ignore lost content in the data stream, cancel data error correction, and update playback delay.

7. The method according to claim 2, wherein the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end comprising:

stopping by the switching server, a channel switching procedure; and

sending by the switching server, fifth channel switching instruction information to the receiving end, wherein the fifth channel switching instruction information comprises one or both of: fifth description information and fifth processing information;

wherein the fifth description information comprises at least one of: a target multicast group address, a moment that a next random access point appears, a suspension time length, and server exception information; and

the fifth processing information instructs the receiving end to perform one or more of: immediately join a target multicast group according to the target multicast group address, join the target multicast group according to the target multicast group address before the moment that the next random access point appears, ignore a gap between the data stream and a multicast stream provided by the target multicast group, and initiate a new channel switching request to the switching server again after the suspension time length.

8. The method according to claim 4, wherein after the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end, the method further comprising:

transmitting by the switching server, the data stream to the receiving end after waiting for the delay time length;

or,

tailoring by the switching server, the data stream after waiting for the delay time length, and sending the tailored data stream to the receiving end.

9. The method according to claim 5, wherein the determining by the switching server, whether the time length from the moment that the channel switching request is received to the moment that the next random access point appears meets the preset condition, comprising determining one or both of:

if the time length from the moment that the channel switching request is received to the moment that the next random access point appears is larger than a first preset value, and smaller than a second preset value, it is then determined that the preset condition is met.

10. The method according to claim 1, wherein the tailoring of the data stream comprising one or more of:

reducing, transcoding, and deleting the data stream.

11. The method according to claim 10, wherein the data obtained by tailoring the data stream comprises one or both of: key information and a reference frame in the data stream; and

the key information is required for the receiving end to process data, and comprises one or more of: channel program dedicated information, video sequence parameter set information,

video image parameter set information, audio decoding parameter information, and program specific information in a transport stream.

12. A channel switching processing method, comprising:

sending by a receiving end, a channel switching request to a switching server;

receiving by the receiving end, channel switching instruction information sent by the switching server when the switching server determines that current switching resource information does not meet a switching condition according to the channel switching request, wherein an exception handling procedure has been performed by the switching server; and

performing by the receiving end, a channel switching operation corresponding to the channel switching instruction information according to the received channel switching instruction information;

wherein the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end, comprising:

tailoring, by the switching server, a data stream that is not transmitted, and sending the tailored data stream and first channel switching instruction information to the receiving end,

wherein the first channel switching instruction information comprises: first description information and first processing information;

the first description information comprises at least one of: a destination address of the tailored data stream, tailoring information of the tailored data stream, and server exception information; and

the first processing information instructs the receiving end to perform: ignore lost content in the received data stream, cancel data error correction, update playback delay, and enable adaptive playback.

13. A channel switching processing system, comprising:

a switching server and a receiving end; wherein

the switching server receives a channel switching request sent by the receiving end, and when determining that current switching resource information does not meet a switching condition according to the channel switching request, performs an exception handling procedure and sends channel switching instruction information to the receiving end; and

the receiving end sends the channel switching request to the switching server, receives the channel switching instruction information sent by the switching server, and performs a channel switching operation corresponding to the channel switching instruction information according to the channel switching instruction information;

wherein the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end, comprising:

tailoring, by the switching server, a data stream that is not transmitted, and sending the tailored data stream and first channel switching instruction information to the receiving end,

wherein the first channel switching instruction information comprises: first description information and first processing information;

the first description information comprises at least one of: a destination address of the tailored data stream, tailoring information of the tailored data stream, and server exception information; and

the first processing information instructs the receiving end to perform: ignore lost content in the received data stream, cancel data error correction, update playback delay, and enable adaptive playback.

14. A switching server, comprising:

a receiving unit, which receives a channel switching request sent by a receiving end;

a resource analyzing unit, which determines whether current switching resource information meets a switching condition according to the channel switching request; and

an exception handling unit, when the resource analyzing unit determines that current switching resource information does not meet the switching condition, performs an exception handling procedure, and sends channel switching instruction information to the receiving end, wherein the channel switching instruction information instructs the receiving end to perform a channel switching operation corresponding to the channel switching instruction information;

wherein the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end, comprising:

tailoring, by the switching server, a data stream that is not transmitted, and sending the tailored data stream and first channel switching instruction information to the receiving end,

wherein the first channel switching instruction information comprises: first description information and first processing information;

the first description information comprises at least one of: a destination address of the tailored data stream, tailoring information of the tailored data stream, and server exception information; and

the first processing information instructs the receiving end to perform: ignore lost content in the received data stream, cancel data error correction, update playback delay, and enable adaptive playback.

15. The switching server according to claim 14, wherein the switching server further comprises:

a data storage unit, which stores a data stream obtained by copying an original multicast stream.

16. The switching server according to claim 15, wherein the exception handling unit comprises at least one of the following units:

a data tailoring unit, which tailors the data stream stored in the data storage unit to obtain a tailored data stream, and sends the tailored data stream to the receiving end;

a data sending unit, which sends the data stream stored in the data storage unit to the receiving end;

a delay time length calculating unit, which calculates a delay time length according to the switching resource information;

a switching control unit, which obtains a moment that a next random access point appears according to the data stream stored in the data storage unit, and determines whether a time length between a moment that the channel switching request is received to the moment that the next random access point appears meets a preset condition, and if the time length meets the preset condition, trigger the receiving end to directly join a target multicast group; and

a switching termination unit, which stops a channel switching procedure.

17. A receiving end, comprising:

a request sending unit, which sends a channel switching request to a switching server;

an instruction receiving unit, which receives channel switching instruction information sent by the switching server when the switching server determines that current switching resource information does not meet a switching condition according to the channel switching request, wherein an exception handling procedure has been performed by the switching server; and

a processing unit, which performs a channel switching operation corresponding to the received channel switching instruction information according to the channel switching instruction information;

wherein the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end, comprising:

tailoring, by the switching server, a data stream that is not transmitted, and sending the tailored data stream and first channel switching instruction information to the receiving end,

wherein the first channel switching instruction information comprises: first description information and first processing information;

the first description information comprises at least one of: a destination address of the tailored data stream, tailoring information of the tailored data stream, and server exception information; and

the first processing information instructs the receiving end to perform: ignore lost content in the received data stream, cancel data error correction, update playback delay, and enable adaptive playback.

18. A channel switching processing method, comprising:

Sending by a receiving end, a channel switching request to a switching server;

Receiving by the receiving end, channel switching instruction information sent by the switching server in response to the channel switching request and tailored data from a data stream sent by the switching server, wherein an exception handling procedure has been performed by the switching server; and

Identifying by the receiving end, the tailored data, and performing an operation corresponding to the channel switching instruction information according to the channel switching instruction information;

wherein the performing of the exception handling procedure and the sending of the channel switching instruction information to the receiving end, comprising:

tailoring, by the switching server, a data stream that is not transmitted, and sending the tailored data stream and first channel switching instruction information to the receiving end,

wherein the first channel switching instruction information comprises: first description information and first processing information;

the first description information comprises at least one of: a destination address of the tailored data stream, tailoring information of the tailored data stream, and server exception information; and

the first processing information instructs the receiving end to perform: ignore lost content in the received data stream, cancel data error correction, update playback delay, and enable adaptive playback.

19. The method according to claim 18, wherein the tailored data comprises one or more of:

key information or a reference frame obtained by reducing the data stream, recoded data obtained by transcoding the data stream, and necessary data obtained by deleting the data stream.

20. The method according to claim 18, wherein the channel switching instruction information comprises description information and processing information;

the description information comprises one or both of: information for identifying the sent data stream as the tailored data, and a feature of the sent tailored data; and

the first processing information comprises: information for indicating the receiving end to ignore lost data of the tailored data stream, cancel data error correction, update playback delay, enable adaptive playback, and join a multicast group.

21. The method according to claim 19, wherein the key information comprises one or more of:

channel program dedicated information, video sequence parameter set information, video image parameter set information, audio decoding parameter information, and program specific information in a transport stream.

22. The method according to claim 20, wherein the performing the operation corresponding to the channel switching instruction information comprises:

ignoring the lost data of the tailored data stream, cancelling the data error correction, updating the playback delay, enabling the adaptive play, and joining the multicast group according to the channel switching instruction information.