CLAIMS

1 – System for managing unicast/multicast conversion for group multimedia communications in a communication network (1) comprising one or more sites (11, 12, 13) and comprising at least two users (U_1, U_2), the users communicating according to a unicast mode within a site, one or more edge routers (R_i), a central network (10) organized to distribute the data streams between the different sites, characterized in that it comprises at least the following elements:

- ✓ At a site (11, 12, 13) and an edge router (R_i),
  - A presence management module (22) for managing presence of the users (Ui) present on the site,
  - A group management module (23) adapted to manage the membership of a user in a communication group Gi,
  - A controller (21) transmitting "uplink" incoming stream and "downlink" outgoing stream conversion rules, to be applied to data of a stream entering or leaving a site and intended for one or more users belonging to a same communication group Gi, said controller (21) being configured to modify the destination address for each user at a given instant belonging to a communication group and duplicate into one or several unicast streams according to the number of users present on a same site and convert into multicast streams the unicast stream transmitted by the user to transit over the core of the network to one or more users belonging to the same communication group and present on sites different from the given site,
  - A module (20) adapted to apply the transmitted "uplink, downlink" conversion rules to multimedia data transmitted by a first user (U_1) before broadcasting the data modified according to the rules to one or more users (Ui) belonging to the same communication group Gi as the first user (U_1) transmitting the stream,
- ✓ At the central network node (10),

Means for multicast transmission (15) of the multimedia data streams from one site to another site.

2 – System according to Claim 1, characterized in that:

- ✓ the controller (21) consists:
  - Of an "API" management interface (210), for the communication with the presence manager (22) and the group manager (23),
  - Of a configuration module (211) executing the rules generation algorithm,
  - Of a communication module (212) adapted to communicate with the processing module (20) and transmit to it the stream modification rules, and in that
- ✓ the processing module (20) consists:
  - Of a module for communication (202) with the controller,
  - Of a module for managing modification rules (201) describing all the actions to be performed on the streams,
  - Of a module (200) for filtering and actions on the streams.

3 – System according to one of the preceding claims, characterized in that the rules generated are chosen from the following list: deletion of the data stream, sending of a data stream on an output port, etc.

4 – System according to one of the preceding claims, characterized in that the processing module (20) comprises a table of rules with degrees of priority.

5 – System according to one of the preceding claims, characterized in that the streams are made up of IP packets.

6 – System according to one of the preceding claims, characterized in that it implements the OpenFlow protocol.

7 – Method for managing unicast/multicast conversion for the group multimedia communications in a communication network (1) comprising one or more sites, comprising at least two users (U_1, U_2) communicating according to a unicast mode within a site, a central network (10) organized to distribute multimedia data streams between the different sites (11, 12, 13), the users (Ui) belonging at a given instant to a communication group Gi, the sites communicating by means of routers (Ri), characterized in that it comprises at least the following steps:

- Generating a set of rules for conversion of an outgoing or "uplink" stream from a site and an incoming or "downlink" stream at a given site j,
- Applying an "uplink" conversion rule to a unicast stream transmitted by a user present on a site j in order to modify the address of a user belonging at a given instant to a communication group and to duplicate the stream into one or more unicast streams based on the number of users present on this same site and converting into multicast streams the unicast stream transmitted by the user to transit over the core of the network to one or more users belonging to the same communication group and present on different sites from the given site,
- Applying a "downlink" conversion rule to a multicast stream incoming to the site, in order to duplicate into a number of unicast streams the multicast stream incoming to one or more users present on the site.

8 – Method according to Claim 7, characterized in that, to generate the "downlink" conversion rule and the "uplink" conversion rule for a given communication group Gi, the following steps are executed:

For each communication group Gi

a. Creating the "downlink" rule for the group: dl(Gi)

b. Adding to the filter the identifier of the group Gi (multicast address) with the "downlink" rule dl(Gi)

c. Adding to the rule dl(Gi) an action to duplicate the packet for each user of the subset present on the site P(Uj, Gi)

d. Adding to the rule dl(Gi) an action to modify the destination IP address for each user P(Uj, Gi)

e. Adding to the rule dl(Gi) an action to send to the output port for each user P(Uj, Gi)

f. Adding to the rule dl(Gi) the deletion of the initial packet

g. Creating the "uplink" rule for the group: ul(Gi)

h. Adding to the filter the local identifier of the group Gi (unicast address of the terminal or of a dummy gateway, port number) with the rule ul(Gi)

If there are more than one member of the group Gi on the same site:

i. Adding to the rule ul(Gi) an action to duplicate for each user P(Uj, Gi)

j. Adding to the rule ul(Pi) an action to modify the destination IP address for each user P(Uj, Gi)

k. Adding to the rule ul(Gi) an action to send to the output port for each user P(Uj, Gi)

End if

If there are subscribers to the group Gi on other sites:

l. Adding a duplication application to the multicast group ul(Gi)

m. Adding to the rule ul(Gi) an action to modify the destination (multicast) IP address for the group Gi

n. Adding to the rule ul(Gi) an action to send to the output port of the multicast group

End if

o. Adding to the rule ul(Gi) the deletion of the initial packet.

9 – Method according to one of Claims 7 and 8, characterized in that it comprises a step in which the "uplink" rule is used only on the site where a

user has the token making it possible to take a turn to talk in a communication network “press to talk” PTT.

10 – Method according to one of Claims 8 and 9, characterized in that the multimedia data streams are IP packets.

11 – Method according to one of Claims 8 to 10, characterized in that the OpenFlow protocol is used.