CLAIMS

1. Method for guaranteeing ~~the~~ continuity of ~~the~~ communications operated from ~~a~~ several fourth-generation mobile terminals connected to a radio network provided with several base stations with which each of said several fourth-generation mobile terminals is ~~able~~ configured to communicate, wherein each ~~said~~a base station ~~being affiliated~~ is connected to a controller from among several controllers linking said radio network to an interconnection network comprising routers operating at ~~the level of the~~ an IP layer level, wherein ~~said~~at least one controllers are ~~being~~ connected to at least one gateway from among a plurality of gateways, wherein each of said plurality of gateways is connected to at least one of said routers, wherein each of said at least one gateway has at least two different IP addresses, of which a first IP address is known to the fourth-generation mobile terminals of the radio network and of which a second IP address is known to the routers of the interconnection network, wherein said first IP address is the same for all the plurality of gateways of the radio network, and wherein each fourth-generation mobile terminal is associated with at least one base station and with at least one gateway connected to the controller to which said at least one base station is connected, ~~configured to encapsulate in IP packets all the IP packets arising from the radio network before broadcasting them over the interconnection network~~, wherein the method comprises, for each of said plurality of gateways, the establishment of a match list between the IP address of each fourth-generation mobile terminal connected to the radio network and said second IP address of said associated gateway, by performing ~~-~~at least the following steps:
   - when a particular fourth-generation mobile terminal connects to a particular base station ~~affiliated~~ connected to a first controller to which the particular ~~the~~ fourth-generation mobile terminal was not affiliated ~~hitherto~~previously, said first controller transmits to said ~~a~~ gateway it is connected to a level-2 message comprising at least the IP address of ~~the~~ said fourth-generation mobile terminal,
   - said gateway creates ~~, at the level of the IP layer,~~ an IP message comprising the IP address of said particular fourth-generation mobile terminal and the second IP address of said gateway in the interconnection network, and
   - said IP message is broadcasted by said associated gateway to destination gateways associated with the other controllers, wherein each of said destination gateways ~~storing~~ stores a correspondence list between the IP address of the particular fourth-generation mobile terminal and the second IP address of the ~~sending~~ associated gateway, ~~associated with the controller to which the mobile terminal is affiliated~~

wherein the method also comprises routing IP packets in the interconnection network by performing at least the following steps:

- all the IP packets arising from a controller are systematically transmitted to said associated gateway,
- said associated gateway encapsulates each of said IP packets to an IP packet of a higher level using said match list, wherein the IP destination address is the second IP address corresponding to a destination gateway.

2. Method according to Claim 1 wherein the controllers manage the problems of macro-mobility of the mobile terminal, service quality, and authentication of an user of the mobile terminal.

3. Method according to Claim 1 wherein the controllers manage authentication of a user of the mobile terminal.

~~4. Method according to Claim 1, 2 or 3, the gateways being accessible through at least two different IP addresses, a first IP address being known to the nodes of the radio network, a second IP address being known to the nodes of the interconnection network, in which all the IP packets arising from a controller are systematically transmitted to the gateway with which it is associated, said gateway encapsulating said IP packets in other IP packets whose destination IP address is the second address of a destination gateway.~~

45. Method according to any one of Claims 1 to 34, wherein each controller is connected to a gateway specific to this controller.

56. Method according to Claim 45, in which each gateway is connected to the controller at which it is located by way of at least one IP router included in the interconnection network, said router being configured to systematically guide all the IP packets or level-2 messages to said gateway, prior to their encapsulation and broadcasting in the interconnection network.

67. Method according to ~~one of~~ Claims ~~4 to 6~~4 or claim 5, in which, after the encapsulation step, all the packets arising from a first gateway connected to a first controller travel via the interconnection network and are then transmitted to a second gateway connected to a second controller, this second gateway removing

the IP capsule added to the IP packets by the first gateway before transmitting said IP packets to the second controller.

~~8. Method according to Claim 4, in which the first IP address known to the nodes of the radio network is the same for all the gateways.~~

7~~9~~. Method according to any one of Claims 1~~, 2 or~~ to 3, in which, when a router sends an ARP request to the interconnection network, the first router of the interconnection network receiving said request transmits it to a gateway, said gateway transmitting a response to said router, the response comprising the level-2 address of said gateway.

8~~10~~. System for guaranteeing ~~the~~ continuity of ~~the~~ communications operated from several fourth-generation mobile terminals connected to a radio network provided with several base stations with which each of said several fourth-generation mobile terminals is ~~able~~ configured to communicate, wherein each said base station is connected to a controller from among several controllers linking said radio network ~~being linked by controllers~~ to an interconnection network comprising routers operating at ~~the level of the~~an IP layer level, wherein ~~each~~ said controllers are ~~is~~ connected to at least one gateway from among a plurality of gateways, wherein each of said plurality of gateways is connected to at least one of said routers, wherein each of said at least one gateway has at least two different IP addresses, of which a first IP address is known to the fourth-generation mobile terminals of the radio network and of which a second IP address is known to the routers of the interconnection network, wherein said first IP address is the same for all the plurality of gateways of the radio network, and wherein each fourth-generation mobile terminal is associated with at least one base station and with at least one gateway connected to the controller to which said at least one base station is connected, ~~configured to encapsulate in IP packets all the IP packets arising from the radio network before broadcasting them over the interconnection network~~wherein each of said plurality of gateways establishes a match list between the IP address of each fourth-generation mobile terminal connected to the radio network and said second IP address of said associated gateway by :

- when a particular fourth-generation mobile terminal connects to a particular base station connected to a first controller to which the particular fourth-generation mobile terminal was not affiliated previously, said first controller

transmits to said gateway it is connected to a level-2 message comprising at least the IP address of said fourth-generation mobile terminal,

- said gateway creates an IP message comprising the IP address of said particular fourth-generation mobile terminal and the second IP address of said gateway in the interconnection network, and
- said IP message is broadcasted by said associated gateway to destination gateways associated with the other controllers, wherein each of said destination gateways stores a correspondence list between the IP address of the particular fourth-generation mobile terminal and the second IP address of the associated gateway,

wherein the IP packets are routed in the interconnection network by :

- transmitting all the IP packets arising from a controller to said associated gateway,
- said associated gateway encapsulate each of said IP packets to an IP packet of a higher level using said match list, wherein the IP destination address is the second IP address corresponding to a destination gateway.

911. System according to Claim 810, in which at least one gateway is connected via a data bus to the controller with which it is associated.

1012. System according to Claim 810, in which at least one gateway is connected by way of at least one router to the controller with which it is associated.