CLAIMS

1.- A communication method in a wireless telecommunications network (1) comprising wireless telecommunications nodes (100), said method comprising, during the transmission of a data block from a source node (50) to a destination node (52), the following steps (51) implemented by a node, said node comprising a routing table in a memory (102) of the node and being the source node or a relay node receiving and transmitting at least some segments of said block:

- the node, having stored a set of segments of said data block, selects, based on at least one content of its routing table corresponding to said destination node and/or depending on states of the wireless telecommunications connections between said node and its adjacent nodes, a first adjacent node from among the nodes adjacent to the node; determines an appropriate segment size for a transfer to the first adjacent node; reformats at least one segment from the set of segment(s) based on the determined segment size; and sends at least said reformatted segment to said first determined adjacent node;

said method being characterized in that the node detects a modification of said routing table and/or a modification of the state of the wireless telecommunications links between said node and its adjacent nodes, and following that detection, selects a second adjacent node, stops the transmission to the first adjacent node of said set of segments stored before said detection, determines an appropriate segment size for a transfer to the second determined adjacent node, reformats at least one segment from the set of segment(s) not yet transmitted to the first adjacent node based on the determined segment size for the transfer to the second adjacent node and transmits said at least one reformatted segment from said set of segments to said second adjacent node.

from the first adjacent node acknowledging receipt by said first node of some of said transmitted segments and wherein:

- said node does not send the second adjacent node said segments whereof receipt has been acknowledged by the first adjacent node; and/or
- when the node has not received a message from said first adjacent node acknowledging proper receipt of the segment transmitted to the first adjacent node, the node transmits said reformatted segment to the second adjacent node following said detection based on the determined segment size for transfer to the second adjacent node.

3.- The communication method according to any one of the preceding claims, wherein an appropriate segment size for transfer to an adjacent node is determined based on at least

one parameter from among an error rate on the wireless communications link between the node and the adjacent node, a transmission delay on that link, and the maintenance of available resources for another neighbor on said link.

4.- The communication method according to any one of the preceding claims, comprising the following steps for each node implemented to transmit a block from the source node to the destination node:
each node, following receipt of segments from said data block, stores said received segments in correspondence with their unique reference in the memory (102) of the node;
when a node relays at least some of the segments received from the block to an adjacent node and no segment from said block has been exchanged yet between said node and adjacent node, said node transmits said segments of the block and the unique reference associated with the block; and wherein following the receipt by said node (100) of said unique reference of the block transmitted by an adjacent node with which the node has not yet implemented any exchange of segments of the block, the node indicates the segments of the block already stored in the memory (102) of the node to the adjacent node.

5.- The communication method according to claim 4, wherein the node (100) maintains, in its memory (102), in correspondence with the unique reference of the block:
- the list of adjacent nodes to which it has relayed segments from the block and stores, in correspondence with each of said adjacent nodes, the segments of the block that it has sent them; and/or
- the list of adjacent nodes that have relayed segments from the block to it and stores, in correspondence with each of said adjacent nodes, the segments of the block that it has received from said adjacent node.

6.- The communication method according to claim 5, wherein the node (100) further indicates, in its memory (102), in correspondence with said segments of the block relayed to each adjacent node of the list, whether acknowledgments of receipt of said segments from the block by said adjacent node have been received by said node.

7.- The communication method according to any one of the preceding claims, wherein the segments of the data block remain stored in the memory (102) of the node (100) as long as a message acknowledging proper receipt of said segments by a node situated N hops away on the route toward the destination node has not been received by said node, N being fixed and greater than or equal to 2.

8.- The communication method according to any one of the preceding claims, wherein after receiving segments of a data block sent to several recipient nodes, the node (100) uses the broadcast capabilities of a link with its neighbors so as not to [replicate] the segments to be transmitted.

9.- The communication method according to any one of the preceding claims, wherein when segments of the block have already been exchanged between said node and an adjacent node, additional segments of the block are exchanged between them without transmitting the unique reference associated with said block and by transmitting, with said additional segments of the block, a reference of the block, local to the hop between said nodes and adjacent node, the correspondence between the unique reference and the local reference being stored in the memory of the node.

10.- The communication method according to any one of claims 4 to 9, wherein at least some of the segments of a block received by said node comprise a header indicating the address of the adjacent node, but do not comprise a header indicating a destination node address,
said node, following the receipt of segments from said block, identifying the destination node used to select an adjacent node to which to transfer said segments each node, by extracting the address from its memory of a destination node previously stored in correspondence with the unique reference of the block.

11.- A computer program to be installed in a node (100) of a wireless telecommunications mesh network (1), said program comprising instructions to carry out the steps of a method according to claim 1 when the program is executed by processing means of the node.

12.- A data transceiver set (100), suitable for constituting a node of a wireless telecommunications mesh network (1), comprising wireless transceiver means, a memory comprising a routing table,
said set being suitable for storing a set of segments of a data block to be transmitted to a destination node (52) and for selecting, based on at least one content of its routing table in correspondence with said destination node and/or based on states of the wireless telecommunications links between the set and its adjacent nodes, a first adjacent node from among the adjacent nodes of the set, in order to determine the segment size appropriate for a transfer to the first selected adjacent node, reformat at least one segment from the set of segment(s) based on the determined segment size, and transmit at least said reformatted segment to said determined first adjacent node via said wireless transceiver means;

said set being characterized in it is adapted for detecting a modification of said routing table and/or a modification of the state of the wireless telecommunications links between said set and its adjacent nodes, and following that detection, selecting a second adjacent node, stopping the transmission to the first adjacent node of said set of segments stored before said detection, to determine an appropriate segment size for a transfer to the second determined adjacent node, reformatting at least one segment from the set of segment(s) not yet transmitted to the first adjacent node based on the determined segment size for the transfer to the second adjacent node and transmitting said at least one reformatted segment from said set of segments to said second adjacent node via said wireless transceiver means.

13.- The data transceiver set (100) according to claim 12, adapted to receive messages from the first adjacent node acknowledging receipt by said first node of some of said transmitted segments and suitable for:
- not sending the second adjacent node said segments whereof receipt has been acknowledged by the first adjacent node; and/or
- when it has not received a message from said first adjacent node acknowledging proper receipt of the segment transmitted to the first adjacent node, transmitting said reformatted segment to the second adjacent node following said detection based on the determined segment size for transfer to the second adjacent node.

14.- The data transceiver set (100) according to any one of claims 12 to 13, adapted for determining an appropriate segment size for transfer to an adjacent node based on at least one parameter from among an error rate on the wireless communications link between said set and the adjacent node, a transmission delay on that link, and the maintenance of available resources for another neighbor on said link.

15.- The data transceiver set (100) according to any one of claims 12 to 14, adapted, following receipt of segments from said data block, for storing said received segments in correspondence with their unique reference in the memory (102) of the node;
and so that during relaying of at least some of the segments received from the block to an adjacent node, in the case where no segment from said block has been exchanged yet between said set and the adjacent node, transmitting said segments of the block and the unique reference associated with the block; said set further be able, following the receipt by said node (100) of said unique reference of the block transmitted by an adjacent node with which said set has not yet implemented any exchange of segments of the block, to signal the segments of the block already stored in the memory (102) of the node to the adjacent node.

16.- The data transceiver set (100) according to claim 15, adapted to maintain, in its memory (102), in correspondence with the unique reference of the block:
- the list of adjacent nodes to which it has relayed segments from the block and to store, in correspondence with each of said adjacent nodes, the segments of the block that it has sent them; and/or
- the list of adjacent nodes that have relayed segments from the block to it and to store, in correspondence with each of said adjacent nodes, the segments of the block that it has received from said adjacent node.

17.- The data transceiver set (100) according to any one of claims 12 to 16, adapted to store the segments of the data block in the memory (102) of the node (100) as long as a message acknowledging proper receipt of said segments by a node situated N hops away on the route toward the destination node has not been received by said set, N being fixed and greater than or equal to 2.

CLAIMS

1.- A communication method in a wireless telecommunications network (1) comprising wireless telecommunications nodes (100), said method comprising, during the transmission of a data block from a source node (50) to a destination node (52), the following steps (51) implemented by a node, said node comprising a routing table in a memory (102) of the node and being the source node or a relay node receiving and transmitting at least some segments of said block:

- the node, having stored a set of segments of said data block, selects, based on at least one content of its routing table corresponding to said destination node and/or depending on states of the wireless telecommunications connections between said node and its adjacent nodes, a first adjacent node from among the nodes adjacent to the node; determines an appropriate segment size for a transfer to the first adjacent node; reformats at least one segment from the set of segment(s) based on the determined segment size; and sends at least said reformatted segment to said first determined adjacent node;

said method being characterized in that the node detects a modification of said routing table and/or a modification of the state of the wireless telecommunications links between said node and its adjacent nodes, and following that detection, selects a second adjacent node, stops the transmission to the first adjacent node of said set of segments stored before said detection, determines an appropriate segment size for a transfer to the second determined adjacent node, reformats at least one segment from the set of segment(s) not yet transmitted to the first adjacent node based on the determined segment size for the transfer to the second adjacent node and transmits only said at least one reformatted segment from said set of segments to said second adjacent node.

2.- The communication method according to claim 1, wherein the node receives messages from the first adjacent node acknowledging receipt by said first node of some of said transmitted segments and wherein:

- said node does not send the second adjacent node said segments whereof receipt has been acknowledged by the first adjacent node; and/or

- when the node has not received a message from said first adjacent node acknowledging proper receipt of the segment transmitted to the first adjacent node, the node transmits said reformatted segment to the second adjacent node following said detection based on the determined segment size for transfer to the second adjacent node.

3.- The communication method according to any one of the preceding claims, wherein an appropriate segment size for transfer to an adjacent node is determined based on at least

one parameter from among an error rate on the wireless communications link between the node and the adjacent node, a transmission delay on that link, and the maintenance of available resources for another neighbor on said link.

4.- The communication method according to any one of the preceding claims, comprising the following steps for each node implemented to transmit a block from the source node to the destination node:
each node, following receipt of segments from said data block, stores said received segments in correspondence with their unique reference in the memory (102) of the node;
when a node relays at least some of the segments received from the block to an adjacent node and no segment from said block has been exchanged yet between said node and adjacent node, said node transmits said segments of the block and the unique reference associated with the block; and wherein following the receipt by said node (100) of said unique reference of the block transmitted by an adjacent node with which the node has not yet implemented any exchange of segments of the block, the node indicates the segments of the block already stored in the memory (102) of the node to the adjacent node.

5.- The communication method according to claim 4, wherein the node (100) maintains, in its memory (102), in correspondence with the unique reference of the block:
- the list of adjacent nodes to which it has relayed segments from the block and stores, in correspondence with each of said adjacent nodes, the segments of the block that it has sent them; and/or
- the list of adjacent nodes that have relayed segments from the block to it and stores, in correspondence with each of said adjacent nodes, the segments of the block that it has received from said adjacent node.

6.- The communication method according claim 5, wherein the node (100) further indicates, in its memory (102), in correspondence with said segments of the block relayed to each adjacent node of the list, whether acknowledgments of receipt of said segments from the block by said adjacent node have been received by said node.

7.- The communication method according to any one of the preceding claims, wherein the segments of the data block remain stored in the memory (102) of the node (100) as long as a message acknowledging proper receipt of said segments by a node situated N hops away on the route toward the destination node has not been received by said node, N being fixed and greater than or equal to 2.

8.- The communication method according to any one of the preceding claims, wherein after receiving segments of a data block sent to several recipient nodes, the node (100) uses the broadcast capabilities of a link with its neighbors so as not to [replicate] the segments to be transmitted.

9.- The communication method according to any one of the preceding claims, wherein when segments of the block have already been exchanged between said node and an adjacent node, additional segments of the block are exchanged between them without transmitting the unique reference associated with said block and by transmitting, with said additional segments of the block, a reference of the block, local to the hop between said nodes and adjacent node, the correspondence between the unique reference and the local reference being stored in the memory of the node.

10.- The communication method according to any one of claims 4 to 9, wherein at least some of the segments of a block received by said node comprise a header indicating the address of the adjacent node, but do not comprise a header indicating a destination node address,
said node, following the receipt of segments from said block, identifying the destination node used to select an adjacent node to which to transfer said segments each node, by extracting the address from its memory of a destination node previously stored in correspondence with the unique reference of the block.

11.- A computer program to be installed in a node (100) of a wireless telecommunications mesh network (1), said program comprising instructions to carry out the steps of a method according to claim 1 when the program is executed by processing means of the node.

12.- A data transceiver set (100), suitable for constituting a node of a wireless telecommunications mesh network (1), comprising wireless transceiver means, a memory comprising a routing table,
said set being suitable for storing a set of segments of a data block to be transmitted to a destination node (52) and for selecting, based on at least one content of its routing table in correspondence with said destination node and/or based on states of the wireless telecommunications links between the set and its adjacent nodes, a first adjacent node from among the adjacent nodes of the set, in order to determine the segment size appropriate for a transfer to the first selected adjacent node, reformat at least one segment from the set of segment(s) based on the determined segment size, and transmit at least said reformatted segment to said determined first adjacent node via said wireless transceiver means;

said set being characterized in it is adapted for detecting a modification of said routing table and/or a modification of the state of the wireless telecommunications links between said set and its adjacent nodes, and following that detection, selecting a second adjacent node, stopping the transmission to the first adjacent node of said set of segments stored before said detection, to determine an appropriate segment size for a transfer to the second determined adjacent node, reformatting at least one segment from the set of segment(s) not yet transmitted to the first adjacent node based on the determined segment size for the transfer to the second adjacent node and transmitting only said at least one reformatted segment from said set of segments to said second adjacent node via said wireless transceiver means.

13.- The data transceiver set (100) according to claim 12, adapted to receive messages from the first adjacent node acknowledging receipt by said first node of some of said transmitted segments and suitable for:

- not sending the second adjacent node said segments whereof receipt has been acknowledged by the first adjacent node; and/or
- when it has not received a message from said first adjacent node acknowledging proper receipt of the segment transmitted to the first adjacent node, transmitting said reformatted segment to the second adjacent node following said detection based on the determined segment size for transfer to the second adjacent node.

14.- The data transceiver set (100) according to any one of claims 12 to 13, adapted for determining an appropriate segment size for transfer to an adjacent node based on at least one parameter from among an error rate on the wireless communications link between said set and the adjacent node, a transmission delay on that link, and the maintenance of available resources for another neighbor on said link.

15.- The data transceiver set (100) according to any one of claims 12 to 14, adapted, following receipt of segments from said data block, for storing said received segments in correspondence with their unique reference in the memory (102) of the node;
and so that during relaying of at least some of the segments received from the block to an adjacent node, in the case where no segment from said block has been exchanged yet between said set and the adjacent node, transmitting said segments of the block and the unique reference associated with the block; said set further be able, following the receipt by said node (100) of said unique reference of the block transmitted by an adjacent node with which said set has not yet implemented any exchange of segments of the block, to signal the segments of the block already stored in the memory (102) of the node to the adjacent node.

16.- The data transceiver set (100) according to claim 15, adapted to maintain, in its memory (102), in correspondence with the unique reference of the block:
- the list of adjacent nodes to which it has relayed segments from the block and to store, in correspondence with each of said adjacent nodes, the segments of the block that it has sent them; and/or
- the list of adjacent nodes that have relayed segments from the block to it and to store, in correspondence with each of said adjacent nodes, the segments of the block that it has received from said adjacent node.

17.- The data transceiver set (100) according to any one of claims 12 to 16, adapted to store the segments of the data block in the memory (102) of the node (100) as long as a message acknowledging proper receipt of said segments by a node situated N hops away on the route toward the destination node has not been received by said set, N being fixed and greater than or equal to 2.