Claims

We claim:

1. A method of transmitting packets containing digital data through a cloud, the cloud comprising a network of media nodes, the media nodes being hosted on servers, each of the media nodes receiving packets from other media nodes in the network and transmitting packets to other media nodes in the network, each of the packets comprising a series of data segments, the method comprising:

scrambling a packet by changing an order of the data segments in the packet in a first media node;

transmitting the packet to a second media node; and

unscrambling the packet in the second media node as to recreate the order of the data segments in the packet prior to the scrambling in the first media node.

2. The method of Claim 1 wherein scrambling the packet in the first media node comprises adding at least one junk data segment to the packet.

3. The method of Claim 1 wherein unscrambling the packet in the second media node comprises removing at least one junk data segment from the packet.

4. The method of Claim 1 wherein the packet passes through at least one additional media node between the first and second media nodes.

5. The method of Claim 1 further comprising, after unscrambling the packet in the second media node, scrambling the packet in the second media node and transmitting the packet to a third media node.

6. The method of Claim 5 wherein the packet passes through at least one additional media node between the first and second media nodes.

7. The method of Claim 5 wherein scrambling the packet in the first media node is performed in accordance with a first scrambling algorithm and scrambling the packet in the second media node is performed in accordance with a second scrambling algorithm, the second scrambling algorithm being different from the first scrambling algorithm.

8. The method of Claim 5 wherein the packet passes through at least one additional media node between the first and second media nodes.

9. The method of Claim 7 comprising selecting the first scrambling algorithm from a first table of scrambling algorithms.

10. The method of Claim 9 comprising generating a numeric seed, the seed comprising a disguised representation of a state.

11. The method of Claim 10 comprising using the seed to unscramble the packet in the second media node.

12. The method of Claim 11 wherein the first table of scrambling algorithms is comprised in a first DMZ server, the first DMZ server being associated with the first media node, the first DMZ server selecting the first scrambling algorithm from the first table of scrambling algorithms and instructing the first media node to scramble the packet in accordance with the first scrambling algorithm, the first media node not having access to the first table of scrambling algorithms.

13. The method of Claim 12 further comprising:

delivering the seed to a second DMZ server, the second DMZ server being associated with the second media node, the second DMZ server comprising a second table of scrambling algorithms identical to the first table of scrambling algorithms, the second media node not having access to the second table of scrambling algorithms,

wherein the second DMZ server uses the seed to select the first scrambling algorithm from the second table of scrambling algorithms and instructs the second media node to unscramble the packet in accordance with the first scrambling algorithm.

14. The method of Claim 13 wherein the seed comprises a numerical value, the numerical value being representative of a state.

15. The method of Claim 14 wherein the state is a time at which a packet is scrambled.

16. The method of Claim 15 wherein the second DMZ server selects the second scrambling algorithm from the second table of scrambling algorithms based on the current time and instructs the second media node to scramble the packet in accordance with the second scrambling algorithm.

17. The method of Claim 13 wherein the second DMZ server selects the second scrambling algorithm from the second table of scrambling algorithms based on the current state and instructs the second media node to scramble the packet in accordance with the second scrambling algorithm.

18. The method of Claim 13 comprising changing the first and second tables of scrambling algorithms periodically, the first table of scrambling algorithms remaining identical to the second table of scrambling algorithms after each change.

19. The method of Claim 13 wherein the first, second and third media nodes are located in a first zone of the network, the network comprising a second zone, the second zone comprising a fourth media node and a third DMZ server associated with the fourth media node, the third DMZ server comprising a third table of scrambling algorithms different from the first and second tables of scrambling algorithms, the fourth media node not having access to the third table of scrambling algorithms.

20. The method of Claim 19 wherein a bridge media node common to the first and second zones unscrambles packets originating in the first zone in accordance with a scrambling algorithm selected from a fourth table of scrambling algorithms identical to the first and second tables of scrambling algorithms and scrambles packets destined for the second zone in accordance with a fifth table of scrambling algorithms identical to the third table of scrambling algorithms.

21. The method of Claim 13 wherein delivering the seed to a second DMZ server comprises transmitting the seed as a part of the packet.

22. The method of Claim 13 wherein delivering the seed to a second DMZ server comprises:

transmitting the seed to a signaling server; and

transmitting the seed from the signaling server to the second DMZ server.

23. The method of Claim 9 comprising selecting the first scrambling algorithm from the first table of scrambling algorithms based on a state.

24. The method of Claim 23 comprising:

transmitting the state to the second media node;

generating a hidden number representative of the state; and

using the hidden number to select the scrambling algorithm used in unscrambling the packet.

25. The method of Claim 24 wherein the state is a time at which a packet is scrambled.

26. The method of Claim 1 wherein said network comprises a plurality of gateway media nodes, said gateway media nodes being media nodes connected to a client device via a last mile connection, and wherein at least one of said first and second media nodes is not a gateway media node.

27. The method of Claim 26 wherein neither of the first and second media nodes is a gateway media node.

28. The method of Claim 1 further comprising;

encrypting the packet in the first media node;

transmitting the scrambled, encrypted packet to the second media node; and

decrypting the packet in the second media node.

29. The method of Claim 28 comprising:

encrypting the packet after scrambling the packet in the first media node; and

decrypting the packet before unscrambling the packet in the second media node.

30. The method of Claim 28 wherein the packet passes through at least one additional media node between the first and second media nodes.

31. The method of Claim 28 further comprising, after unscrambling and decrypting the packet in the second media node:

scrambling the packet in the second media node;

encrypting the packet in the second media node; and

transmitting the packet to a third media node.

32. The method of Claim 31 wherein the packet passes through at least one additional media node between the first and second media nodes.

33. The method of Claim 31 comprising:

scrambling the packet in the first media node in accordance with a first scrambling algorithm;

scrambling the packet in the second media node in accordance with a second scrambling algorithm, the second scrambling algorithm being different from the first scrambling algorithm;

encrypting the packet in the first media node in accordance with a first encryption method;

encrypting the packet in the second media node in accordance with a second encryption method, the second encryption method being different from the first encryption method.

34. The method of Claim 33 wherein the packet passes through at least one additional media node between the first and second media nodes.

35. The method of Claim 33 comprising:

selecting the first scrambling algorithm from a first table of scrambling algorithms; and

selecting the first encryption method from a first table of encryption methods.

36. The method of Claim 35 comprising:

generating a numeric seed, the seed comprising a disguised representation of a first state;

generating an encryption key, the key comprising a representation of a second state.

37. The method of Claim 36 wherein the second state is the same as the first state.

38. The method of Claim 36 comprising:

using the seed to unscramble the packet in the second media node; and

using the key to decrypt the packet in the second media node.

39. The method of Claim 35 wherein:

the first table of scrambling algorithms is comprised in a first DMZ server, the first DMZ server being associated with the first media node,, the first media node not having access to the first table of scrambling algorithms, the first DMZ server selecting the first scrambling algorithm from the first table of scrambling algorithms and instructing the first media node to scramble the packet in accordance with the first scrambling algorithm; and

the first table of encryption methods is comprised in the first DMZ server, the first DMZ server selecting the first encryption method from the first table of encryption methods and instructing the first media node to encrypt the packet in accordance with the first encryption method, the first media node not having access to the first table of encryption methods.

40. The method of Claim 39 further comprising delivering the seed to a second DMZ server, the second DMZ server being associated with the second media node, the second DMZ server comprising a second table of scrambling algorithms identical to the first table of scrambling algorithms, the second media node not having access to the second table of scrambling algorithms, wherein the second DMZ server uses the seed to select the first scrambling algorithm from the second table of scrambling algorithms and instructs the second media node to unscramble the packet in accordance with the first scrambling algorithm.

41. The method of Claim 40 further comprising delivering the key to the second DMZ server, the second DMZ server comprising a second table of encryption methods identical to the first table of encryption methods, the second media node not having access to the second table of encryption methods, wherein the second DMZ server uses the key to select the first encryption method from the second table of encryption methods and instructs the second media node to decrypt the packet in accordance with the first encryption method.

42. The method of Claim 14 wherein the first state is a time at which a packet is scrambled and the second state is a time at which a packet is encrypted.

43. The method of Claim 42 wherein the second DMZ server selects the second scrambling algorithm from the second table of scrambling algorithms based on the current time and instructs the second media node to scramble the packet in accordance with the second scrambling algorithm.

44. The method of Claim 43 wherein the second DMZ server selects the second encryption method from the second table of encryption methods based on the current time and instructs the second media node to encrypt the packet in accordance with the second encryption method.

45. The method of Claim 41 wherein the second DMZ server selects the second scrambling algorithm from the second table of scrambling algorithms based on the current state and instructs the second media node to scramble the packet in accordance with the second scrambling algorithm.

46. The method of Claim 45 wherein the second DMZ server selects the second encryption method from the second table of encryption methods based on the current state and instructs the second media node to encrypt the packet in accordance with the second encryption method.

47. The method of Claim 46 comprising changing the first and second tables of scrambling algorithms periodically, the first table of scrambling algorithms remaining identical to the second table of scrambling algorithms after each change.

48. The method of Claim 47 comprising changing the first and second tables of encryption methods periodically, the first table of encryption methods remaining identical to the second table of encryption methods after each change.

49. A method of transmitting packets containing digital data through a cloud, the cloud comprising a network of media nodes, the media nodes being hosted on servers, each of the media nodes receiving packets from other media nodes in the network and transmitting packets to other media nodes in the network, each of the packets comprising a series of data segments, the method comprising:

encrypting the packet in a first media node;

transmitting the packet to a second media node; and

decrypting the packet in the second media node as to recreate the packet prior to the encrypting in the first media node.

50. A method of transmitting packets containing digital data through a cloud, the cloud comprising a network of media nodes, the media nodes being hosted on servers, each of the media nodes receiving packets and sub-packets thereof from other media nodes in the network and transmitting packets and sub-packets thereof to other media nodes in the network, each of the packets and sub-packets comprising a series of data segments, the method comprising:

splitting a first packet into at least two sub-packets in a first media node in the network;

transmitting the at least two sub-packets to a second media node in the network; and

mixing the at least two sub-packets in the second media node so as to recreate the first packet.

51. A method of transmitting packets containing digital data through a cloud, the cloud comprising a network of media nodes, the media nodes being hosted on servers, each of the media nodes receiving packets from other media nodes in the network and transmitting

packets to other media nodes in the network, each of the packets comprising a series of data segments, the method comprising:

mixing at least two packets in a first media node so as to create a mixed packet; and

transmitting the mixed packet to a second media node in the network.

52. A method of routing a packet containing digital data from a first client device to a second client device through a cloud, the cloud comprising a network of media nodes, the media nodes being hosted on servers, each of the media nodes receiving packets from other media nodes in the network and transmitting packets to other media nodes in the network, the first client device being in communication with an entry gateway media node, the second client device being in communication with an exit gateway media node, the method comprising:

transmitting a packet from the first client device to the entry gateway media node, the packet comprising data content to be transmitted to the second client device as well as information for routing the packet through the network via a path, the path comprising a sequence of intermediate media nodes and ending at the exit gateway media node;

causing the entry gateway media node to instruct each of the intermediate media nodes of the next media node in the path to which the packet is to be transmitted;

causing the entry gateway media node to transmit the packet to a first intermediate media node;

causing each or the intermediate media nodes to transmit the packet to the next media node in the path; and

causing the exit gateway media note to transmit the packet to the second client device.