

CLAIMS

1. A method for aggregating application functions on multi-access edge computing (MEC) hosts across multiple carriers, comprising:
 - receiving performance data from a first MEC host and a second MEC host, by an application service provider system associated with a particular application, the first MEC host deployed on a network of a first carrier and coupled to a first plurality of user terminals, the second MEC host deployed on a network of a second carrier and coupled to a second plurality of user terminals, the particular application being installed on the first MEC host and the second MEC host;
 - determining, by the application service provider system, whether the performance data from the second MEC host exceeds a threshold value; and
 - in response to determining that the performance data from the second MEC host exceeds the threshold value, sending, by the application service provider system, instructions to the second MEC host to aggregate one or more functions of the particular application to the first MEC host.
2. The method of claim 1, wherein in response to determining that the performance data from the second MEC host exceeds the threshold value, the application service provider system further:
 - determines delivery of content for the particular application is to be aggregated at the first MEC host based at least on load distribution criteria; and
 - sending the instructions to an application server in the second MEC host to aggregate the one or more functions of the particular application to an application server in the first MEC host.
3. The method of claim 1, further comprising:
 - in response to receiving the instructions from the application service provider system, sending, by the second MEC host, second instructions to each of the second plurality of user terminals to change a connection for the particular application to the first MEC host.
4. The method of claim 3, wherein the sending of the second instructions to each of the second plurality of user terminals comprises:
 - receiving, by a connection destination change instruction module on the second MEC host, the instructions from the application service provider system; and
 - in response to receiving the instructions from the application service provider system, sending, by a connection destination change instruction module on the second MEC host, the second instructions to a connection destination control module of each of the second plurality of user terminals to a change connection destination for the particular application to the first MEC host.

5. The method of claim 3, further comprising:
establishing, by each of the first plurality of user terminals and each of the second plurality of user terminals, the connection to the first MEC host to receive content for the particular application.
6. The method of claim 5, wherein in establishing the connection to the first MEC host, each of the second plurality of user terminals:
in response to receiving the second instructions from the second MEC host, instructs, by a connection destination control module, a content reception module to receive content for the particular application from the first MEC host;
stores, by the connection destination control module, an original connection destination for the particular application; and
establishes, by the content reception module, the connection to the first MEC host to receive the content for the particular application.
7. The method of claim 1, wherein after aggregating the one or more functions of the particular application to the first MEC host, the method further comprises:
receiving, by the application service provider system, from the first MEC host and the second MEC host, further performance data related to delivery of content to the first plurality of user terminals and the second plurality of user terminals;
determining, by the application service provider system, whether the further performance data from the second MEC host is below the threshold value; and
in response to determining that the further performance data from the second MEC host is below the threshold value, sending, by the application service provider system, second instructions to the first MEC host to change user terminal connections for the particular application to original connections.
8. The method of claim 7, wherein the determining whether the further performance data from the second MEC host is below the threshold value, comprises:
determining, by the application service provider system, whether a given combination of values in a set of performance criteria received from the second MEC host is below the threshold value or whether content delivery for the particular application is finished.
9. The method of claim 7, further comprising:
in response to receiving the second instructions from the application service provider system, sending, by the first MEC host, second instructions to each of the first plurality of user terminals and each of the second plurality of user terminals to change the connection for the particular application to the original connections.
10. The method of claim 9, wherein the sending of the second instructions to change the connection for the particular application to the original connections comprises:

sending, by a connection destination change instruction module on the first MEC host, third instructions to a connection destination control module of each of the first and second plurality of user terminals to change connection destinations for the particular application to the original connections.

11. The method of claim 9, further comprising:

establishing, by each of the first and second plurality of user terminals, the connection with an original MEC host to receive the content for the particular application.

12. The method of claim 11, wherein the establishing of the connection with the original MEC host comprises:

in response to receiving the third instructions, retrieving, by a connection destination control module of each of the second plurality of user terminals, connection destination information for the second MEC host; and

establishing, by each of the first and second plurality of user terminals, a connection to the second MEC host to receive the content for the particular application.

13. A computer program product for aggregating application functions on multi-access edge computing (MEC) hosts across multiple carriers, the computer program product comprising a computer readable storage medium having program instructions embodied therewith, the program instructions executable by one or more processors to cause the one or more processors to:

receive performance data from a first MEC host and a second MEC host, by an application service provider system associated with a particular application, the first MEC host deployed on a network of a first carrier and coupled to a first plurality of user terminals, the second MEC host deployed on a network of a second carrier and coupled to a second plurality of user terminals, the particular application being installed on the first MEC host and the second MEC host;

determine, by the application service provider system, whether the performance data from the second MEC host exceeds a threshold value; and

in response to determining that the performance data from the second MEC host exceeds the threshold value, send, by the application service provider system, instructions to the second MEC host to aggregate one or more functions of the particular application to the first MEC host.

14. The computer program product of claim 13, wherein the one or more processors are further caused to:

in response to receiving the instructions from the application service provider system, sending, by the second MEC host, second instructions to each of the second plurality of user terminals to change a connection for the particular application to the first MEC host.

15. The computer program product of claim 13, wherein after aggregating the one or more functions of the particular application to the first MEC host, the one or more processors are further caused to:

receive, by the application service provider system, from the first MEC host and the second MEC host, further performance data related to delivery of content to the first plurality of user terminals and the second plurality of user terminals;

determine, by the application service provider system, whether the further performance data from the second MEC host is below the threshold value; and

in response to determining that the further performance data from the second MEC host is below the threshold value, send, by the application service provider, second instructions to the first MEC host to change user terminal connections for the particular application to original connections.

16. The computer program product of claim 15, wherein the one or more processors are further caused to:

in response to receiving the second instructions from the application service provider system, send, by the first MEC host, third instructions to each of the first plurality of user terminals and each of the second plurality of user terminals to change the connection for the particular application to the original connections.

17. A system, comprising:

a first MEC host deployed on a network of a first carrier and coupled to a first plurality of user terminals;

a second MEC host deployed on a network of a second carrier and coupled to a second plurality of user terminals;

an application service provider system coupled to the network of the first carrier and to the network of the second carrier, wherein a particular application associated with the application service provider system is installed on the first MEC host and the second MEC host, wherein the application service provider system:

receives performance data from the first MEC host and the second MEC host,

determines whether the performance data from the second MEC host exceeds a threshold value, and

in response to determining that the performance data from the second MEC host exceeds the threshold value, sends first instructions to the second MEC host to aggregate one or more functions of the particular application to the first MEC host,

wherein in response to receiving the first instructions, the second MEC host sends second instructions to each of the second plurality of user terminals to change a connection for the particular application to the first MEC host.

18. The system of claim 17, wherein after aggregating the one or more functions of the particular application to the first MEC host,

the application service provider system:

receives further performance data related to delivery of content to the first plurality of user terminals and the second plurality of user terminals from the first MEC host and the second MEC host

determines whether the further performance data from the second MEC host is below the threshold value; and

in response to determining that the further performance data from the second MEC host is below the threshold value, sends third instructions to the first MEC host to change user terminal connections for the particular application to original connections,

wherein in response to receiving the third instructions, the first MEC host sends fourth instructions to each of the first plurality of user terminals and each of the second plurality of user terminals to change the connection for the particular application to the original connections.

19. A method for aggregating application functions on multi-access edge computing (MEC) hosts across multiple carriers, comprising:

receiving values for a set of performance criteria from a first MEC host and a second MEC host, by an application service provider system associated with a particular application, the first MEC host deployed on a network of a first carrier and coupled to a first plurality of user terminals, the second MEC host deployed on a network of a second carrier and coupled to a second plurality of user terminals, the particular application being installed on the first MEC host and the second MEC host;

determining, by the application service provider system, whether a given combination of the performance criteria in the set from the second MEC host exceeds a threshold value;

in response to determining that the given combination of the performance criteria in the set from the second MEC host exceeds the threshold value, determining, by the application service provider system, that delivery of content for the particular application is to be aggregated at the first MEC host based at least on load distribution criteria;

sending, by the application service provider system, instructions to an application server in the second MEC host to aggregate the one or more functions of the particular application to an application server in the first MEC host.

20. The method of claim 19, further comprising:

receiving, by a connection destination change instruction module on the second MEC host, the instructions from the application service provider system; and

in response to receiving the instructions from the application service provider system, sending, by a connection destination change instruction module on the second MEC host, second instructions to a connection destination control module of each of the second plurality of user terminals to change connection destinations for the particular application to the first MEC host.

21. The method of claim 20, further comprising:

receiving, by the connection destination control module of each of the second plurality of user terminals, the second instructions to change the connection destinations for the particular application to the first MEC host; and

in response to receiving the second instructions, instructing a content reception module of each of the second plurality of user terminals to receive content for the particular application from the first MEC host and storing the original connection destination.

22. A method for distributing aggregated functions of an application across multi-access edge computing (MEC) hosts across multiple carriers, comprising:

aggregating one or more functions of a particular application to a first MEC host, the first MEC host deployed on a network of a first carrier and coupled to a first plurality of user terminals subscribed to the first carrier, the first MEC host further coupled to a second plurality of user terminals subscribed to a second carrier, the second plurality of user terminals further coupled to a second MEC host deployed on a network of the second carrier;

after aggregating the one or more functions of the particular application to the first MEC host, receiving, by an application service provider system associated with the particular application, from the first MEC host and the second MEC host, values of a set of performance criteria related to delivery of content to the first plurality of user terminals and the second plurality of user terminals;

determining, by the application service provider system, whether a given combination of values in the set of performance criteria received from the second MEC host is below the threshold value or whether content delivery for the particular application is finished; and

in response to determining that the given combination of values in the set of performance criteria from the second MEC host is below the threshold value or determining that the content delivery for the particular application is finished, sending, by the application service provider system, instructions to an application server of the first MEC host to change user terminal connections for the particular application to original connections.

23. The method of claim 22, further comprising:

in response to the instructions, sending, by a connection destination change instruction module on the first MEC host, second instructions to a connection destination control module of each of the first and second plurality of user terminals to change connection destinations for the particular application to the original connections.

24. The method of claim 23, further comprising:

in response to the second instructions, retrieving, by the connection destination control module of each of the second plurality of user terminals, connection destination information for the second MEC host; and

establishing, by each of the second plurality of user terminals, the connection to the second MEC host to receive the content for the particular application.