

example, caching may involve storing commonly-accessed data in geographically-nearby storage to avoid undue latency, while aging of data may involve deleting data from the cache that is older than a certain age. These techniques may not only reduce latency on the delivery of data but also may ensure the latest available data.

[0006] In a cloud computing or other distributed architecture, for example, location independence of terminals, such as mobile devices, may enable the terminals to access data on the cloud regardless of the location of the terminals or the stored data. Thus, the mobile devices may be frequently moving while maintaining access to data on the cloud.

SUMMARY

[0006a] In accordance with an aspect, there is provided a method of staging real-time data in proximity to a mobile device, the method comprising:

predicting multiple geographic locations where the mobile device is likely to move;

identifying multiple storage devices, wherein each of the predicted multiple geographic locations is associated with at least one of the multiple storage devices in proximity to the geographic location;

enabling the mobile device to access a set of real-time data at a location corresponding to one of the predicted multiple geographic locations by transmitting the set of real-time data to each of the multiple storage devices and storing the set of real-time data at each of the multiple storage devices, wherein the real-time data includes an environmental condition associated with the one of the predicted multiple geographic locations,

wherein the mobile device is associated with a package in a delivery network, and the real-time data is used by the mobile device to make a determination to take action relating to the package.

[0006b] In accordance with another aspect, there is provided a system for staging real-time data in proximity to a mobile device, the system comprising a host device and a mobile device, wherein the host device is configured to:

- predict multiple geographic locations where the mobile device is likely to move;
- identify multiple storage devices, wherein each of the predicted multiple geographic locations is associated with at least one of the multiple storage devices in proximity to the predicted geographic location; and
- enable the mobile device to access a set of real-time data at a location corresponding to one of the predicted multiple geographic locations by transmitting the set of real-time data to each of the multiple storage devices and storing the set of real-time data at each of the multiple storage devices, wherein the real-time data includes an environmental condition associated with the one of the predicted multiple geographic locations,

wherein the mobile device is associated with a package in a delivery network, and wherein the mobile device is configured to use the real-time data to make a determination to take action relating to the package.

[0007] In accordance with disclosed embodiments, there is provided a method of staging real-time data in proximity to a mobile device, the method comprising: determining a geographic location associated with the mobile device; identifying a storage device located in proximity to the determined geographic location; and enabling real-time data published by the mobile device or provided to the mobile device to be stored on the identified storage device.

[0008] In accordance with disclosed embodiments, there is further provided a computer-readable medium storing instructions, which, when executed by a processor, cause the processor to perform a method of staging real-time data in proximity to a mobile device, the method comprising: determining a geographic location associated with the mobile device; identifying a storage device located in proximity to the determined geographic location; and enabling real-time data published by the mobile device or provided to the mobile device to be stored on the identified storage device.

[0009] In accordance with disclosed embodiments, there is further provided a system for staging real-time data in proximity to a mobile device, the system comprising a host device configured to: determine a geographic location associated with the mobile device; identify a storage device located in proximity to the determined geographic location; and enable real-time data published by the mobile device or provided to the mobile device to be stored on the identified storage device.

[0010] In accordance with disclosed embodiments, there is further provided a method of staging real-time data to reduce communication latency, the method

WHAT IS CLAIMED IS:

1. A method of staging real-time data in proximity to a mobile device, the method comprising:
 - determining a geographic location associated with the mobile device;
 - identifying a storage device located in proximity to the determined geographic location; and
 - enabling real-time data published by the mobile device or provided to the mobile device to be stored on the identified storage device.
2. The method of claim 1, wherein the geographic location comprises GPS coordinates.
3. The method of claim 1, wherein:
 - the identified storage device is a first storage device;
 - a second storage device is geographically located farther away from the determined geographic location than the first storage device; and
 - enabling the real-time data to be stored on the first storage device instead of the second storage device to reduce latency of delivering the real-time data.
4. The method of claim 1, wherein:
 - the identified storage device is a first storage device located in a same network as the mobile device;
 - a second storage device is located in a different network than the first storage device; and
 - enabling the real-time data to be stored on the first storage device instead of the second storage device to reduce a financial cost of delivering the real-time data.
5. The method of claim 1, wherein determining the geographic location further comprises:
 - polling the mobile device; and

in response to the poll, receiving information identifying the geographic location of the mobile device.

6. The method of claim 1, wherein determining the geographic location further comprises:

predicting one or more locations where the mobile device is likely to move;
and
setting the geographic location to at least one of the predicted locations

7. The method of claim 6, wherein if the mobile device is predicted to move to at least a first location proximate to a first storage device or a second location proximate to a second storage device, the method further comprises:

enabling the real-time data to be stored on both the first storage device and the second storage device.

8. A computer-readable medium storing instructions, which, when executed by a processor, cause the processor to perform a method of staging real-time data in proximity to a mobile device, the method comprising:

determining a geographic location associated with the mobile device;
identifying a storage device located in proximity to the determined geographic location; and

enabling real-time data published by the mobile device or provided to the mobile device to be stored on the identified storage device.

9. The computer-readable medium of claim 8, wherein the geographic location comprises GPS coordinates.

10. The computer-readable medium of claim 8, wherein:

the identified storage device is a first storage device;
a second storage device is geographically located farther away from the determined geographic location than the first storage device; and
enabling the real-time data to be stored on the first storage device instead of the second storage device to reduce latency of delivering the real-time data.

11. The computer-readable medium of claim 8, wherein:
the identified storage device is a first storage device located in a same network as the mobile device;
a second storage device is located in a different network than the first storage device; and
enabling the real-time data to be stored on the first storage device instead of the second storage device to reduce a financial cost of delivering the real-time data.

12. The computer-readable medium of claim 8, wherein determining the geographic location further comprises:
polling the mobile device; and
in response to the poll, receiving information identifying the geographic location of the mobile device.

13. The computer-readable medium of claim 8, wherein determining the geographic location further comprises:
predicting one or more locations where the mobile device is likely to move;
and
setting the geographic location to at least one of the predicted locations

14. The computer-readable medium of claim 13, wherein if the mobile device is predicted to move to at least a first location proximate to a first storage device or a second location proximate to a second storage device, the method further comprises:
enabling the real-time data to be stored on both the first storage device and the second storage device.

15. A system for staging real-time data in proximity to a mobile device, the system comprising a host device configured to:
determine a geographic location associated with the mobile device;
identify a storage device located in proximity to the determined geographic location; and
enable real-time data published by the mobile device or provided to the mobile device to be stored on the identified storage device.

16. The system of claim 15, wherein the geographic location comprises GPS coordinates.

17. The system of claim 15, wherein
the identified storage device is a first storage device;
the system further comprises a second storage device that is geographically located farther away from the determined geographic location than the first storage device; and

the host device is further configured to enable the real-time data to be stored on the first storage device instead of the second storage device to reduce latency of delivering the real-time data.

18. The system of claim 15, wherein:
the identified storage device is a first storage device located in a same network as the mobile device;
the system further comprises a second storage device that is located in a different network than the first storage device; and
the host device is further configured to enable the real-time data to be stored on the first storage device instead of the second storage device to reduce a financial cost of delivering the real-time data.

19. The system of claim 15, wherein by determining the geographic location, the host device is further configured to:
poll the mobile device; and
in response to the poll, receive information identifying the geographic location of the mobile device.

20. The system of claim 15, wherein by determining the geographic location, the host device is further configured to:
predict one or more locations where the mobile device is likely to move; and
set the geographic location to at least one of the predicted locations

21. The system of claim 20, wherein if the mobile device is predicted to move to at least a first location proximate to a first storage device or a second location proximate to a second storage device, the host is further configured to:

enable the real-time data to be stored on both the first storage device and the second storage device.

22. A method of staging real-time data to reduce communication latency, the method comprising:

identifying a storage device from a plurality of possible storage devices, the identified storage device having a lower connection latency to the mobile device than others from the possible storage devices; and

enabling real-time data published by the mobile device or provided to the mobile device to be stored on the identified storage device.

23. The method of claim 22, wherein:

the identified storage device is a first storage device located in a same network as the mobile device;

a second storage device, of the possible storage devices, is located in a different network than the first storage device; and

enabling the real-time data to be stored on the first storage device instead of the second storage device to reduce a financial cost of delivering the real-time data.

24. The method of claim 22, further comprising:

predicting one or more locations where the mobile device is likely to move.

25. The method of claim 24, wherein if the mobile device is predicted to move to at least a first location or a second location, the method further comprises:

identifying a first storage device from a first plurality of possible storage devices, the identified first storage device having a lower connection latency to the mobile device than others from the first plurality of possible storage devices;

identifying a second storage device from a second plurality of possible storage devices, the identified second storage device having a lower connection latency to the mobile device than others from the second plurality of possible storage devices;

enabling the real-time data to be stored on the identified first and second storage devices.

WHAT IS CLAIMED IS:

1. A method of staging real-time data in proximity to a mobile device, the method comprising:
 - predicting multiple geographic locations where the mobile device is likely to move;
 - identifying multiple storage devices, wherein each of the predicted multiple geographic locations is associated with at least one of the multiple storage devices in proximity to the geographic location;
 - enabling the mobile device to access a set of real-time data at a location corresponding to one of the predicted multiple geographic locations by transmitting the set of real-time data to each of the multiple storage devices and storing the set of real-time data at each of the multiple storage devices, wherein the real-time data includes an environmental condition associated with the one of the predicted multiple geographic locations,
 - wherein the mobile device is associated with a package in a delivery network, and the real-time data is used by the mobile device to make a determination to take action relating to the package.
2. The method of claim 1, wherein the predicted multiple geographic locations comprise GPS coordinates.
3. The method of claim 1, wherein:
 - one of the multiple storage devices is a first storage device;
 - a second storage device is geographically located farther away from one of the predicted multiple geographic locations associated with the first storage device than the first storage device; and
 - enabling the set of real-time data to be stored on the first storage device instead of the second storage device to reduce latency of delivering the set of real-time data.
4. The method of claim 1, wherein predicting the multiple geographic locations further comprises:
 - polling the mobile device;
 - in response to the poll, receiving information identifying the geographic

location of the mobile device; and

predicting the multiple geographic locations based on a speed and direction associated with the received information.

5. The method of claim 1, wherein predicting the multiple geographic locations is based on a plurality of possible routes of the mobile device.

6. The method of claim 5, wherein each of the predicted multiple geographic locations is associated with a probability that the mobile device will travel there.

7. A computer-readable medium storing instructions, which, when executed by a processor, cause the processor to perform a method according to any one of claims 1 to 6.

8. A system for staging real-time data in proximity to a mobile device, the system comprising a host device and a mobile device, wherein the host device is configured to:
predict multiple geographic locations where the mobile device is likely to move;
identify multiple storage devices, wherein each of the predicted multiple geographic locations is associated with at least one of the multiple storage devices in proximity to the predicted geographic location; and
enable the mobile device to access a set of real-time data at a location corresponding to one of the predicted multiple geographic locations by transmitting the set of real-time data to each of the multiple storage devices and storing the set of real-time data at each of the multiple storage devices, wherein the real-time data includes an environmental condition associated with the one of the predicted multiple geographic locations,
wherein the mobile device is associated with a package in a delivery network, and
wherein the mobile device is configured to use the real-time data to make a determination to take action relating to the package.

9. The system of claim 8, wherein the predicted multiple geographic locations comprise GPS coordinates.

10. The system of claim 8, wherein

one of the multiple storage devices is a first storage device;

the system further comprises a second storage device that is geographically located farther away from one of the predicted multiple geographic locations associated with the first storage device than the first storage device; and

the host device is further configured to enable the set of real-time data to be stored on the first storage device instead of the second storage device to reduce latency of delivering the set of real-time data.

11. The system of claim 8, wherein by determining the geographic location, the host device is further configured to:

poll the mobile device;

in response to the poll, receive information identifying the geographic location of the mobile device; and

predict the multiple geographic locations based on a speed and direction associated with the received information.

12. The system of claim 8, wherein predicting the multiple geographic locations is based on a plurality of possible routes of the mobile device.

13. The system of claim 12, wherein each of the predicted multiple geographic locations is associated with a probability that the mobile device will travel there.