

Claims

1. A computer-implemented method for routing requests when performing a canary analysis, the method comprising:
 - computing a first mapping based on at least one characteristic of a first
 - 5 request, a time associated with the first request, and a time window for a routing;
 - determining whether the first mapping indicates that the first request is to be associated with a modification to a service provided via a plurality of servers; and
 - 10 routing the first request to either a first server that implements the modification or a second server that does not implement the modification based on whether the first mapping indicates that the first request is to be associated with the modification.
- 15 2. The computer-implemented method of claim 1, wherein the at least one characteristic of the first request comprises a device identifier, and computing the first mapping comprises:
 - performing a first hashing operation on the device identifier to generate a device hash;
 - 20 dividing a current time by the time window for the routing to determine a segment of time, wherein the time associated with the first request lies within the segment of time;
 - performing a second hashing operation on the segment of time to generate a time hash; and
 - 25 performing a third hashing operation on the device hash and the time hash to generate the first mapping.
3. The computer-implemented method of claim 1 or claim 2, wherein the time associated with the first request lies within a first segment of time, a duration of the
- 30 first segment of time is equal to the time window for the routing, and further comprising:
 - receiving a second request, wherein at least one characteristic of the second request is equal to the at least one characteristic of the first request; and
 - routing the first request to either a third server that implements the modification

or a fourth server that does not implement the modification based on whether a time associated with the second request lies within the first segment.

- 5 4. The computer-implemented method of any one of claims 1 to 3, wherein computing the first mapping comprises performing at least one of a hashing operation and a cyclic redundancy check operation on a first characteristic of the first request, the time associated with the first request, and the time window for the routing.
- 10 5. The computer-implemented method of any one of claims 1 to 4, wherein the modification comprises a software update.
6. The computer-implemented method of any one of claims 1 to 5, wherein the at least one characteristic of the request comprises one of a device identifier, a client
 15 identifier, an electronic serial number, or a session identifier
7. A computer-readable storage medium including instructions that, when executed by a processor, cause the processor to perform the steps of:
 - determining a percentage of mappings that are to be associated with a
 20 modification to a service based on a first characteristic of a first request;
 computing a first mapping based on a second characteristic of the first request,
 a time associated with the first request, and a time window for a routing;
 performing a comparison operation based on the first mapping and the
 percentage of mappings to determine whether the first mapping
 25 indicates that the first request is to be associated with the modification;
 and
 routing the first request to either a first server that implements the modification
 or a second server that does not implement the modification based on
 whether the first mapping indicates that the first request is to be
 30 associated with the modification.
8. The computer-readable storage medium of claim 7, wherein computing the first mapping comprises performing at least one of a hashing operation and a cyclic redundancy check operation on the second characteristic, the time associated with
 35 the first request, and the time window for the routing.

9. The computer-readable storage medium of claim 7 or claim 8, wherein the at least one of the hashing operation and the cyclic redundancy check is based on a unique constant that is associated with the modification.
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10. The computer-readable storage medium of any one of claims 7 to 9, wherein the second characteristic comprises a device identifier, and computing the first mapping comprises:
- 10 performing a first hashing operation on the device identifier to generate a device hash;
- dividing a current time by the time window for the routing to determine a segment of time, wherein the time associated with the first request lies within the segment of time;
- performing a second hashing operation on the segment of time to generate a time hash; and
- 15 performing a third hashing operation on the device hash and the time hash to generate the first mapping.
11. The computer-readable storage medium of any one of claims 7 to 10, wherein the time associated with the first request lies within a first segment of time, a duration of the first segment of time is equal to the time window for the routing, and further comprising:
- 20 receiving a second request, wherein a first characteristic of the second request is equal to the first characteristic of the first request; and
- 25 routing the first request to either a third server that implements the modification or a fourth server that does not implement the modification based on whether a time associated with the second request lies within the first segment.
- 30 12. The computer-readable storage medium of any one of claims 7 to 11, wherein a difference between a start time and an end time equals the time window for the routing, and computing the first mapping comprises:
- setting the first mapping equal to a first hash value, if a current time is greater than the start time and is not greater than the end time; or

setting the first mapping equal to the second hash value, if the current time is not greater than the start time or is greater than the end time.

13. The computer-readable storage medium of any one of claims 7 to 12, wherein
5 the second characteristic of the first request specifies that the first request is associated with a first client device, the first client device is associated with a first device type, and determining whether the first mapping indicates that the request is to be associated with the modification comprises performing a comparison operation based on the first mapping and a rate that specifies a percentage of client devices of
10 the first device type that are to be associated with the modification.

14. The computer-readable storage medium of claims 7 to 13, further comprising setting the time window for the routing based on the first characteristic.

15 15. A system configured to route requests when performing a canary analysis, the system comprising:
a first server that implements a modification to a service;
a plurality of servers that implement the service but do not implement the modification; and
20 a sticky canary router configured to:
compute a first value based on at least one characteristic of a request;
compute a second value based on a time associated with the request, a time window for a routing, and a unique constant that is associated with the modification;
25 compute a mapping based on the first value and the second value;
determine whether the mapping indicates that the request is to be associated with the modification; and
route the request to either the first server or the plurality of servers based on whether the mapping indicates that the request is to be
30 associated with the modification.