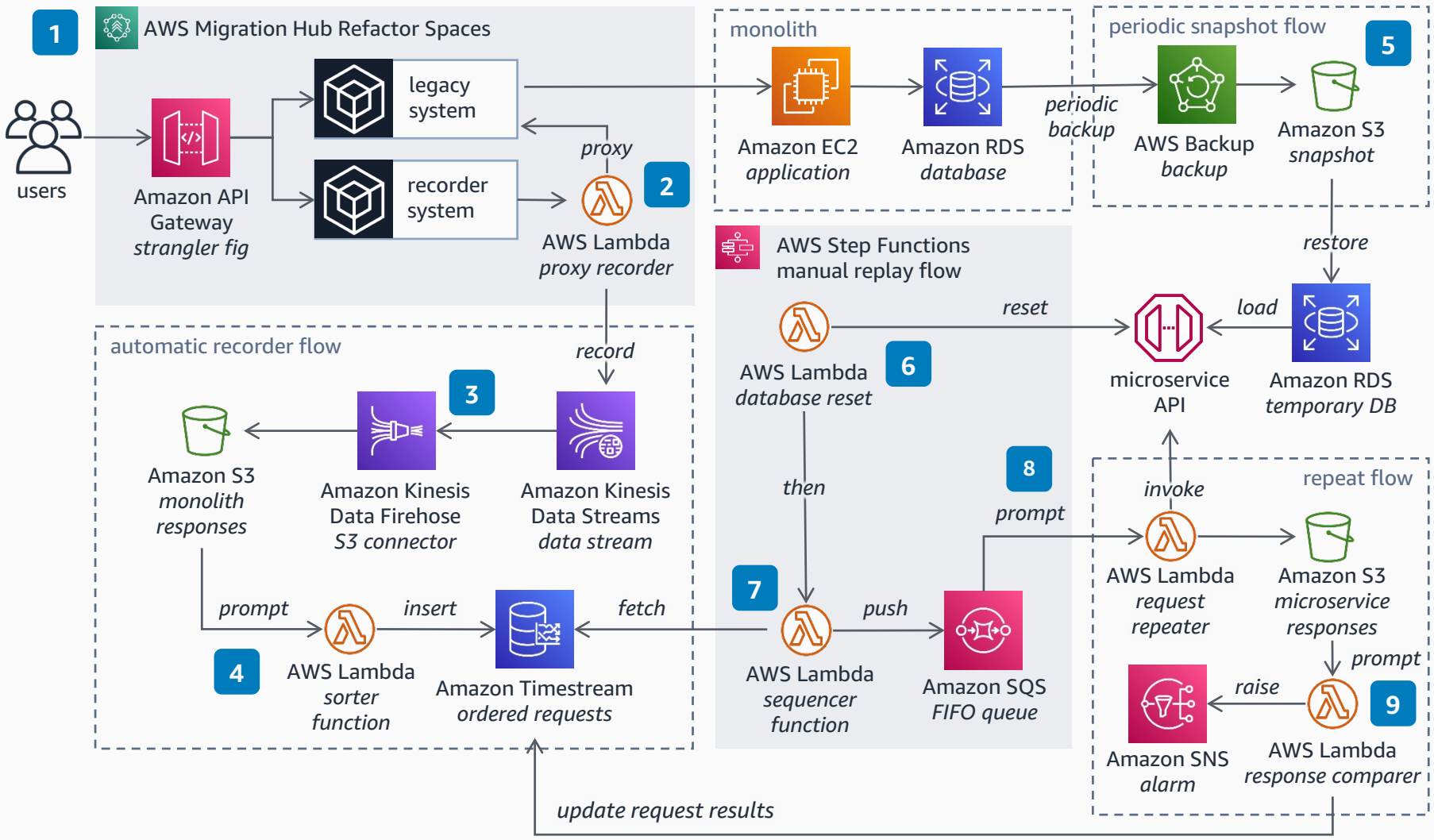
Replaying Parallel Requests to Break a Monolith

Use this architecture to break your monolith with confidence by setting up a parallel run strategy combined with the strangler fig pattern. First proxy the methods to be replaced with a microservice, storing a copy of user requests and monolith responses in a time-series database. Then replay the requests on your new microservice to compare the responses between the legacy monolith and the replacement microservice.



1. Assuming a legacy cloud monolith standing on **Amazon Elastic Compute Cloud (Amazon EC2)** and **Amazon Relational Database Service (Amazon RDS)**, apply the *strangler fig* pattern with **AWS Migration Hub Refactor** to place an API in front of your monolith and re-route the endpoints-to-modernize into a *recorder system* that records all requests and responses.
2. Use a *proxy recorder* **AWS Lambda** function to proxy requests back to the legacy monolith, and push a copy of all request-and-response payloads into **Amazon Kinesis Data Streams**.
3. Use **Amazon Kinesis Data Firehose** to deliver the monolith-payload stream into an **Amazon Simple Storage Service (Amazon S3)** bucket.
4. Use a *sorter* function to store the payloads in **Amazon Timestream** in a time-based order.
5. Using **AWS Backup**, periodically back up the monolith's database. This baselines the replay flow's start time to replay payloads.
6. Use an **AWS Step Functions** workflow to replay the requests, first resetting the microservice's temporary databases from a monolith's database backup, then replaying the requests into the microservice from the date/time of the backup.
7. Fetch all requests in the replay-time window, sorted by request date/time, then push them to a first-in-first-out (FIFO) queue using **Amazon Simple Queue Service (Amazon SQS)**.
8. For each request in the queue, invoke the same request in the microservice's API, recording the responses in an **S3** bucket.
9. From the last **S3** bucket, prompt a function to compare the responses to the same request sent to the monolith and to the microservice. Raise an alarm for any differences using **Amazon Simple Notification Service (Amazon SNS)**, and store the final results in the requests database.

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AWS Reference Architecture