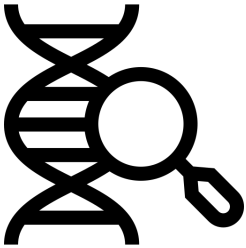# SplAdder Alternative RNA Splicing Analysis
## Using Memory Machine™ Cloud Edition Fault Tolerance Service

Cloud Service Providers recommend that only stateless or fault-tolerant apps to run in spot instances, but large stateful, non-fault tolerant genomic analytic apps can't use spot instances. When the spot instances are preempted, the application can't recover efficiently and often need to re-run from the beginning in a new instance. The Memory Machine Fault Tolerance Service from MemVerge removes this restriction.

## The Memory Machine fault-tolerant service makes stateful, long-running, genomic analytic pipelines suitable for spot Instances

The Memory Machine Fault Tolerance Service (FTS) is Software-as-a-Service that provides end-users a seamless application experience at the lowest cloud infrastructure cost, while giving cloud IT pros full control to meet their security and computing environment requirements.

FTS consists of 2 components, the SpotOn Management Center and SpotOn agent that run inside a cloud VM along with the user apps.

FTS easily integrates with the existing job schedulers, cloud management, and cloud storage services. Once SpotOn is configured by cloud IT pros, the service runs automatically and transparently to the end user.

Snapshots of the complete app states are taken at intervals and asynchronously saved to persistent cloud storage. After a Spot Instance is reclaimed, a new instance is automatically allocated. The FTS Management Center then restores the latest snapshot from the storage service and the app resumes execution.

## How It Works



MemVerge
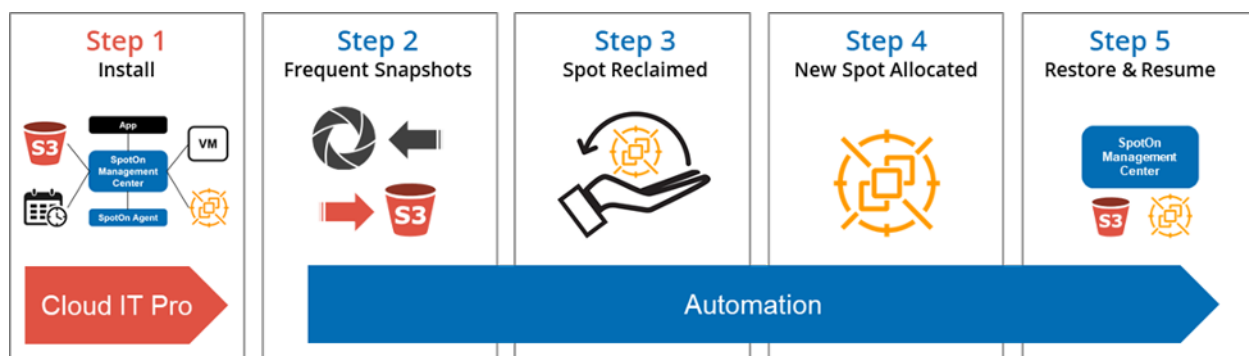
# Cost Analysis for SplAdder Alternative RNA Splicing Analysis using FTS

Shown below is an example of SplAdder Alternative RNA Splicing analytic pipeline. Farther below you can see the execution time the workload is over 2 weeks while using 260GB of memory and an r5d.16xlarge compute instance at $4.60 per hour.

The Memory Machine Fault Tolerance Service made it practical for this non-fault tolerant, long-running workload to run on spot instances because it now can quickly and gracefully recover from a spot termination. The result in moving to spot instances was an 83% cost savings.

## SplAdder Analytic Pipeline
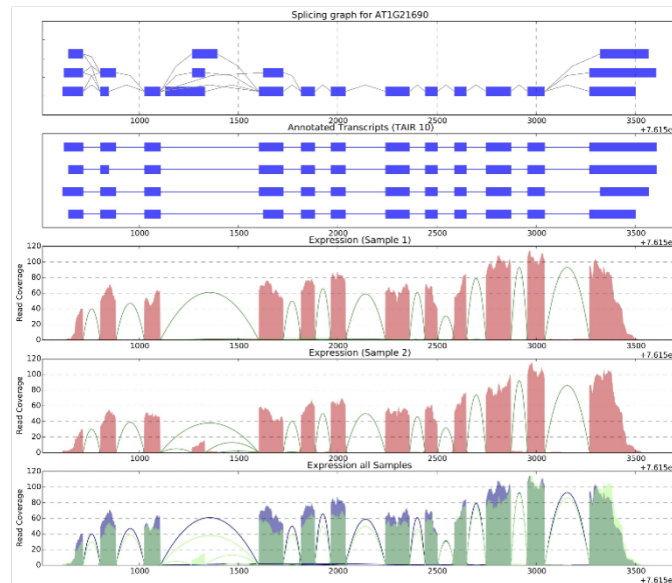


## Savings with FTS

| | |
|---|---|
| Execution Time | 2 weeks + 3 days |
| DRAM Usage | 260 GB |
| AWS Instance | r5d.16xlarge |
| On-demand Pricing | $4.60 per hour |
| Spot Discount | 85% |
| Spot Interruption Rate | < 5% |
| On-demand Cost | $1,559 |
| Spot + Overhead Cost | $263 |
| Saving % | **83%** |

MemVerge

## Learn More

To learn more about MemVerge, Big Memory Cloud Technology, and Memory Machine Cloud Edition, visit **www.memverge.com** and **www.bigmemorycloud.com**.

Watch these videos to see how **Analytical Biosciences** shaved 58% off their execution time and **TGen** cut their time-to-discovery by 37%.