Reserve Instance (RI):

Since all client servers are run on a 24/7 basis, we recommend to convert the current on-demand EC2 instance to a Reserve Instance. This is applicable to all clients that have been running the application in cloud for a longer period by now.

Plan:

- Prepare the list of clients that have been using the on-demand EC2 instance for longer period
- Estimate monthly billing
- Monitor server performance
  - This is because since the application is still growing with more and more features, the need for upgrading the current t2.medium instance to a more CPU or memory optimized server will arise.
  - If required, migrate the instance to Compute optimized (c-series) or memory optimized (r-series).
- Discuss with client regarding RI Payment options and duration and confirm the best plan for them
  - There are 3 payment options and opt reserve instance for 1 year term and 3 year term
- Purchase a reserve instance that matches requirement
- Once the RI is purchased, the on-demand instance will be converted to RI and billing will be adjusted accordingly

Cost involved:

T2.Medium Reserved Instance 1-Year Term					**T2.Medium Reserved Instance 3-Year Term**				
Payment Option	**Upfront**	**Monthly**	**Effective Hourly**	**Savings over On-Demand**	**Payment Option**	**Upfront**	**Monthly**	**Effective Hourly**	**Savings over On-Demand**
No Upfront	$0	**$20.95**	$0.029	**38%**	No Upfront	$0	**$14.60**	$0.020	**57%**
Partial Upfront	$120	**$10.00**	$0.027	**41%**	Partial Upfront	$244	**$6.79**	$0.019	**60%**
All Upfront	$235	**$0**	$0.027	**42%**	All Upfront	$458	**$0**	$0.017	**63%**

Storage upgrade:

List of clients require storage upgrade in initial phase: Clients reached 70% and above disk usage.

Client name	IP	Disk usage
DS Heating & Air	52.15.107.193	81%
Southern Services	13.59.4.131	73%
Veteran Air	52.15.155.82	84%
Advent Air	13.59.32.56	83%
Comfort Master	18.220.117.171	75%
Cape Fear	13.58.33.35	74%
O'Brien Service	52.1.45.235	71%
Holtzople	18.221.87.104	73%
Integrity	18.220.208.110	76%
Bay Breeze	13.58.153.182	77%

Plan:

- Schedule a maintenance window for each clients with Opman
- During the scheduled window perform the following actions.
  - Attach a new 20GB EBS volume to the EC2 Instance
  - Mount the volume
  - Stop Apache and PostgreSQL service
  - Migrate the Apache and PostgreSQL data folder to the new disk mounted
  - Start the services

Cost involved:

All clients are normally billed on an average of $35 per month. Adding additional 20GB disk would cost extra $2 per month. But this is recommended to meet the storage requirements of OpMan application.

Cost Per GB	Recommended upgrade size	Additional Cost per month
$0.10	20 GB	$2

Since purchasing RI requires payment, the end clients will be able to do this once we provide enough documentation. Once the RI is purchased, the current instance billing will automatically changed to RI and the effective cost will be recalculated. The remaining work is with disk upgrade which we will need to perform.

Disk Upgrade work estimate per client	
Tasks	Hours
Create new EBS volume	2
Mount the volume on to the server	
Take a backup of Applilcation and database	
Copy the application files to new volume and change Application document root	
Change PostgreSQL data directory	
Confirm Application is UP	

CloudWatch monitoring and Alerting

Plan:

- Prepare the list of clients that are using AWS
- Send the list to OpMan and confirm the clients opted for monitoring
- Prepare a sheet for tracking and update the email address of person which receives CloudWatch alerts
- Setup monitoring and acknowledge.

This is done per account basis. That is, for each client running on AWS we can setup monitoring independently and alerting can be sent to the responsible person. We can set monitoring for Storage, Memory and CPU usage and alerts will be triggered for any events reaching critical level that we set. We will be setting 5 matrix initially, later can include more services

Cost involved:

AWS provides upto 3 Dashboard, 50 matrix per month and 10 alarms per month as per free tire policy, for 1 year from the starting of AWS account. However, if there are more than 10 alarms per month, each will costs them at $0.10 per alarm per month.

After 1 year, the costs will increase as follows;

$3.00 per dashboard per month
$0.30 per metric per month for the first 10,000 metrics
$0.10 per alarm per month

CloudWatch monitoring work estimate per client	
Tasks	**Hours**
Create IAM user with correct permission	**1**
Prepare server for monitoring	
Install the scripts	
Create cron job to public the data to CW	
Create dashboard in CW to view data realtime	
Create Alarm to trigger notification	