Team Decided – Raft Consensus

Inception Iteration Plan 10 - Starting 06/08/2018

1. Key Milestones

Milestone	Date
Iteration Start	6/08/2018
Dynamic Cluster Membership (nodes coming and leaving from cluster, cluster expanding/shrinking with more/less nodes) and Designate UAS	20/08/2018
Achieving complete unit testing coverage of existing code base	20/08/2018
Add option for persistent storage of log records	20/08/2018
Detailed Performance Analysis/optimisation	20/08/2018
Iteration End	20/08/2018

2. High-level Objectives

ID	Objective	Date
1	Dynamic Cluster Membership (nodes coming and leaving from cluster, cluster expanding/shrinking with more/less nodes) and Designate UAS	20/08/2018
2	Achieving complete unit testing coverage of existing code base	20/08/2018
3	Add option for persistent storage of log records	20/08/2018
4	Detailed Performance Analysis/optimisation	20/08/2018

3. Evaluation Criteria

Obj. ID	Evaluation Criteria
1	Create ability to have Dynamic Cluster Membership (nodes coming and leaving from cluster, cluster expanding/shrinking with more/less nodes) and Designating a UAS
2	Complete the rest of the full coverage unit testing required
3	Add ability to optionally use persistent storage for log entries
4	Implemented multiple techniques to improve consensus throughput

4. Work Item Assignments

State:
C – Complete
P – In Progress
W – Waiting to start

Work ID	Name or keywords	Outcome	State	Assigned to	Est (hrs)	Act (hrs)	Left (hrs)
1	Dynamic Cluster Membership	Won't do - Not as important as other features in our limited time frame	C	Joshua	0:00	0:00	0:00
2	Achieving complete unit testing coverage of existing code base	We've achieved >85%, and as some of the code base is still in flex this is reasonable	P	Sean	5:00	5:00	0:00
3	Add option for persistent storage of log records	Completed. Although existing bug is in our way for testing consensus, all our distributed log tests all pass. Would like to add better UI for people to select option.	C	Joshua	10:00	20:00	4:00
4	Detailed Performance Analysis/Optimization	Identified bottleneck	P	Sean	25:00	20:00	40:00
				Totals	40:00	45:00	44:00

5. Issues

Issue	Status	Notes
Dynamic cluster membership difficulty	Closed	We spent the time considering the changes that would be required for dynamic cluster membership, and there are simply too many large protocol level changes that need to be made that it's not worth the benefit compared to something like increasing message performance
Performance analysis starting	Closed	This is taking longer than we're expecting it to, however since it's only really an optional path we just wanted to put some time into it's not really an issue. It can be completed with any extra available time left in the project schedule.
Starting on the manual	Closed	We got an unexpected use of Sean's time as he's started working on the manual for the project. We've decided to use to team wiki on bitbucket with markdown. No need to track this as a work item as we'll be including this into our assessment next iteration.

6. Assessment

Assessment target	Inception Iteration 10	
Assessment date	20/08/2018	
Participants	All - Joshua and Sean	
Project status	Green - After making some reasonable changes to our schedule by changing out a big redesign for dynamic cluster membership for iterative work on performance, we're still on track. We're continually releasing new Nuget packages with updated code, and we're ready to start our next iteration.	
Assessment against objectives	**Objective**	**Result**
	Dynamic Cluster Membership (nodes coming and leaving from cluster, cluster expanding/shrinking with more/less nodes) and Designate UAS	Will not continue. The big redesign is simply not worth the effort for the feature at this stage, performance is more a concern
	Achieving complete unit testing coverage of existing code base	We're getting closer to the official target of 100%, but we are currently covering all "happy day" scenarios, it's simply exception/fault paths which are currently not tested
	Add option for persistent storage of log records	This has been added, however instead of using it by default we'd like to add an interface for the user to select it.
	Detailed Performance Analysis/Optimization	Greatly improved performance for 2 node clusters. Changes are currently not scaling past 2 nodes due to other code pathways, so with any extra time this feature will primarily be the one focused on