



Working in collaboration to get Tosca running with on-demand pipelines

TTC & LINZ

Prepared By: Carl Ellis



Introduction and Acknowledgements



Carl Ellis

Principal Consultant TTC

17 Years in Finance, 13 of those years have been testing and 5 of those years has been automating using Tosca

This was a collaboration of efforts involving these Test Automation Engineers



Kranti Mavaram TTC



Fabio Santoro LINZ



Joseph Tacuyan Deloitte

Background

Tosca at LINZ is being used to automate a UI front end to validate a databases migration.

With Tosca we know that we can use the same automation to test a client built and configured for either backend database.

This is the journey we went through to get the Tosca pipelines up and running.



Journey Plan

Developing
Automation
Locally

Developing
Automation in
AWS EC2 Instances

Getting the Tosca
Local Repository
working in AWS

Running SUT within
the pipeline

Finished pipeline
solution.

Scaling solution up

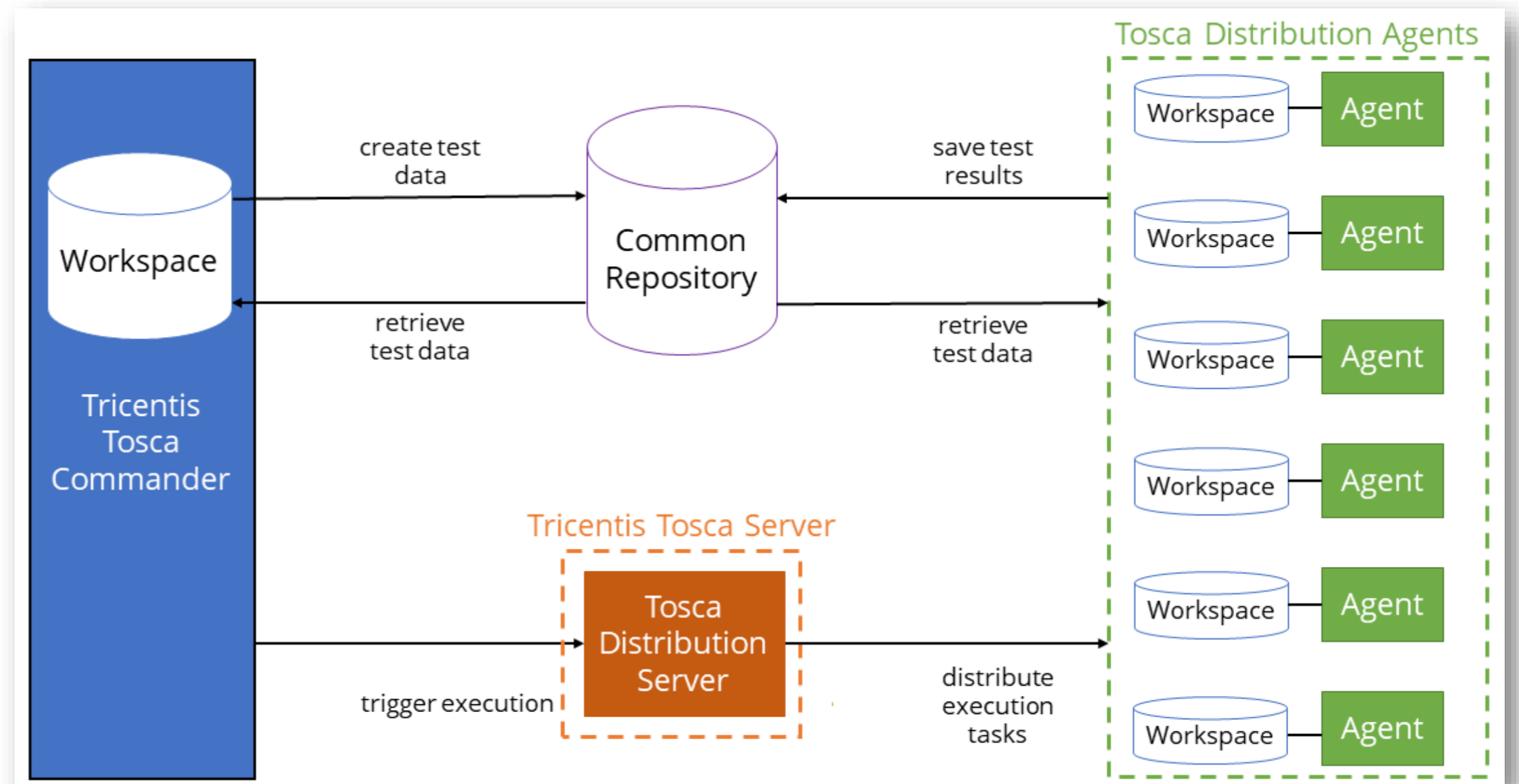
Getting the Tosca
Distribution Agent
working in AWS

Developing Automation Locally

- This is what we are used to
- The SUT is not easy to automate but...



- We have previous project work running in other areas using the Tosca Distributed Execution service (DEX) with on prem virtual machines.



Developing Automation on AWS EC2 Instances



- I've found that it's best to work within a virtual machine when developing automation as it frees up your local machine
- Development of tests couldn't start as they were unable to connect to various Tosca services or the Tosca repository due to firewall rules. The client and databases also needed firewall changes.
- When running tests we noticed that they started failing and it seemed to be due to additional latency when running from our AWS instances which are hosted in Sydney.

Journey changes...

Developing Automation Locally

Add additional wait on's and while loops

Raise firewall changes

Developing Automation in AWS EC2 Instances

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Running SUT within the pipeline

Finished pipeline solution.

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Scaling solution up



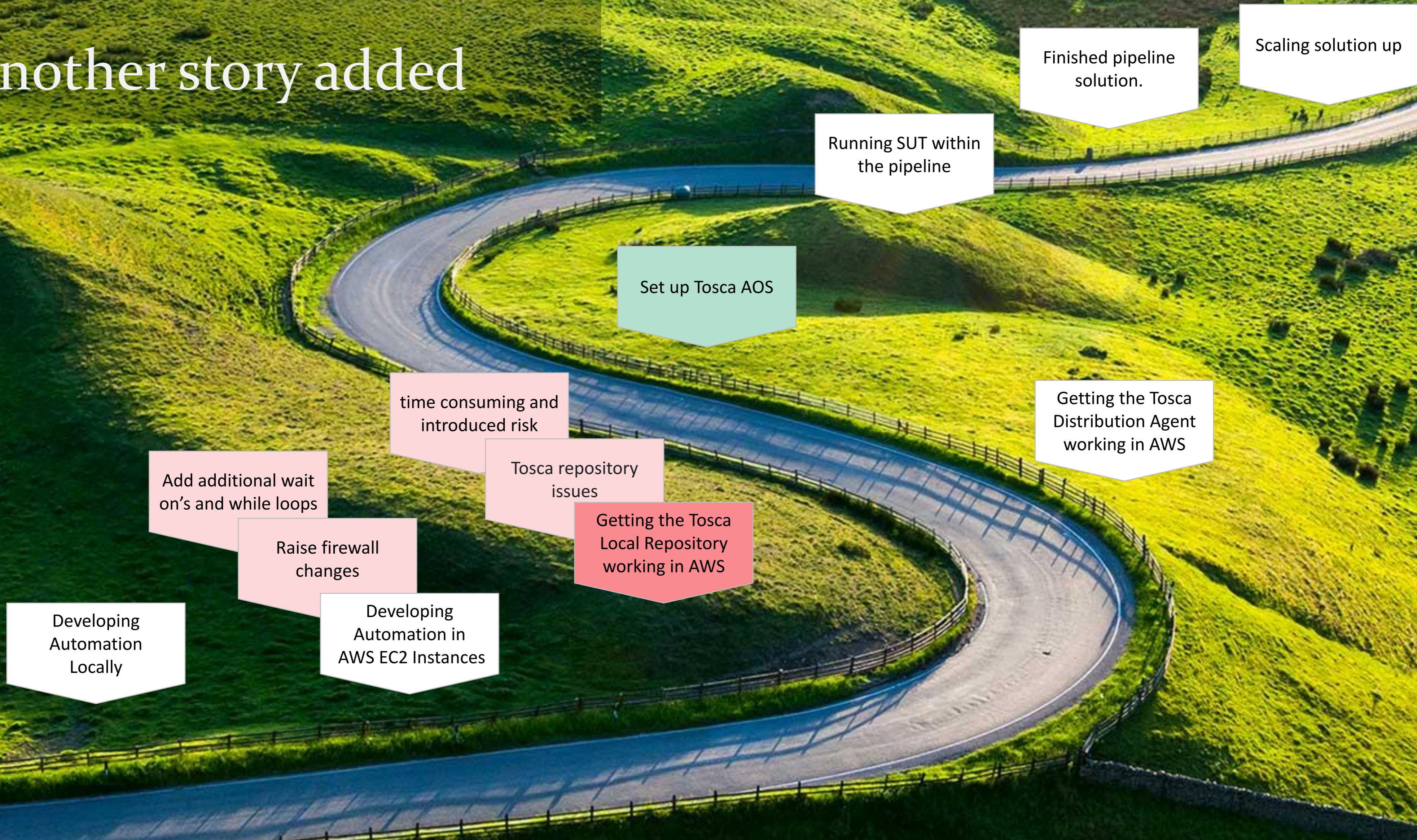
Getting the Tosca Local Repository working within AWS

- We needed the Tosca Commander installed on the AWS instances as we were running modules from the classic engine so assumed we would need the Tosca repository as part of the base AWS image for it to work when running the Tosca DEX Agent.
- When having the Tosca repository as part of the base image of AWS we ended up getting issues with Tosca knowing that the repository is a clone when we spun up additional images

*Unable to proceed! Another workspace, which is a copy of this one, committed changes earlier.
You will not be able to access the common repository through this workspace.*

- Another issue was that we didn't want to consume space online and it would most likely be a time consuming exercise preparing a Tosca repository on the fly within the pipelines. Another issue is that it might introduce security issues by storing sensitive test data within an offshore data center
- We talked to people back at TTC and was advised to look into setting up AOS to see if that would help the situation

Another story added



Scaling solution up

Finished pipeline solution.

Running SUT within the pipeline

Set up Tosca AOS

time consuming and introduced risk

Getting the Tosca Distribution Agent working in AWS

Tosca repository issues

Getting the Tosca Local Repository working in AWS

Add additional wait on's and while loops

Raise firewall changes

Developing Automation Locally

Developing Automation in AWS EC2 Instances

Getting the Tosca Distribution Agent working within AWS

- Created a mini test as an event for the Jenkins pipeline to prove that the Tosca solution works.
- Fabio and Joseph quickly realised issues with getting the Tosca DEX Agent working in the Jenkins/AWS pipeline as they built the AWS instance to run headless at least initially
- Create a solution where the security details are known for the AWS instance and the Tosca DEX Agent and insert those as encrypted strings into the configuration file.
- Changed the pipeline so it logs a user into the OS

Name	Value
▶ Hello AWS	
▶ Set Buffer to HelloWorld	
<input checked="" type="checkbox"/> Hello	HelloWorld
<input type="checkbox"/> <Buffername>	
▶ Evaluate buffer is true	
<input checked="" type="checkbox"/> Expression	' B Hello '=='HelloWorld'
<input type="checkbox"/> Expression	

Getting the Tosca Distribution Agent working in AWS Cont...

\user
.\user
user
ad\user

Frustrated I tried...
Klsdfijsrl\user
and it worked

settled on
localhost\user

ToscaDistributionAgent Configuration

Configure machine To enable key and mouse commands within TestEvents, you have to enable Remote Desktop on this computer.

Set up workspace Don't allow to open remote connections to this computer.
 Allow to open remote connections to this computer.

Connect to server Use RDP connection

Unattended execution

Username: something\user

Password: *****

Desktop Width: 1600

Desktop Height: 1200

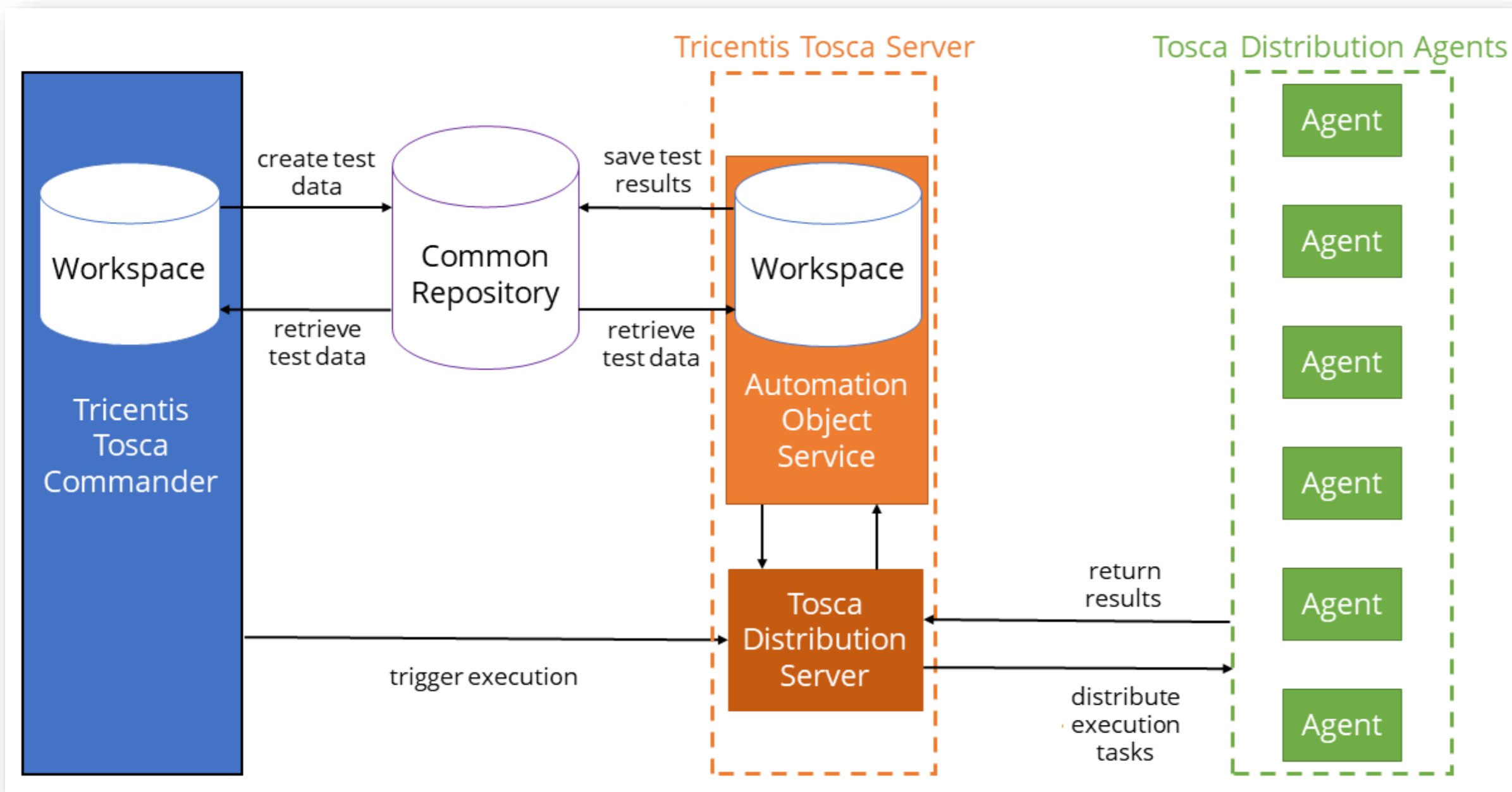
Color Depth: High Color (16 bit)

Save Cancel

Overcame big hurdles

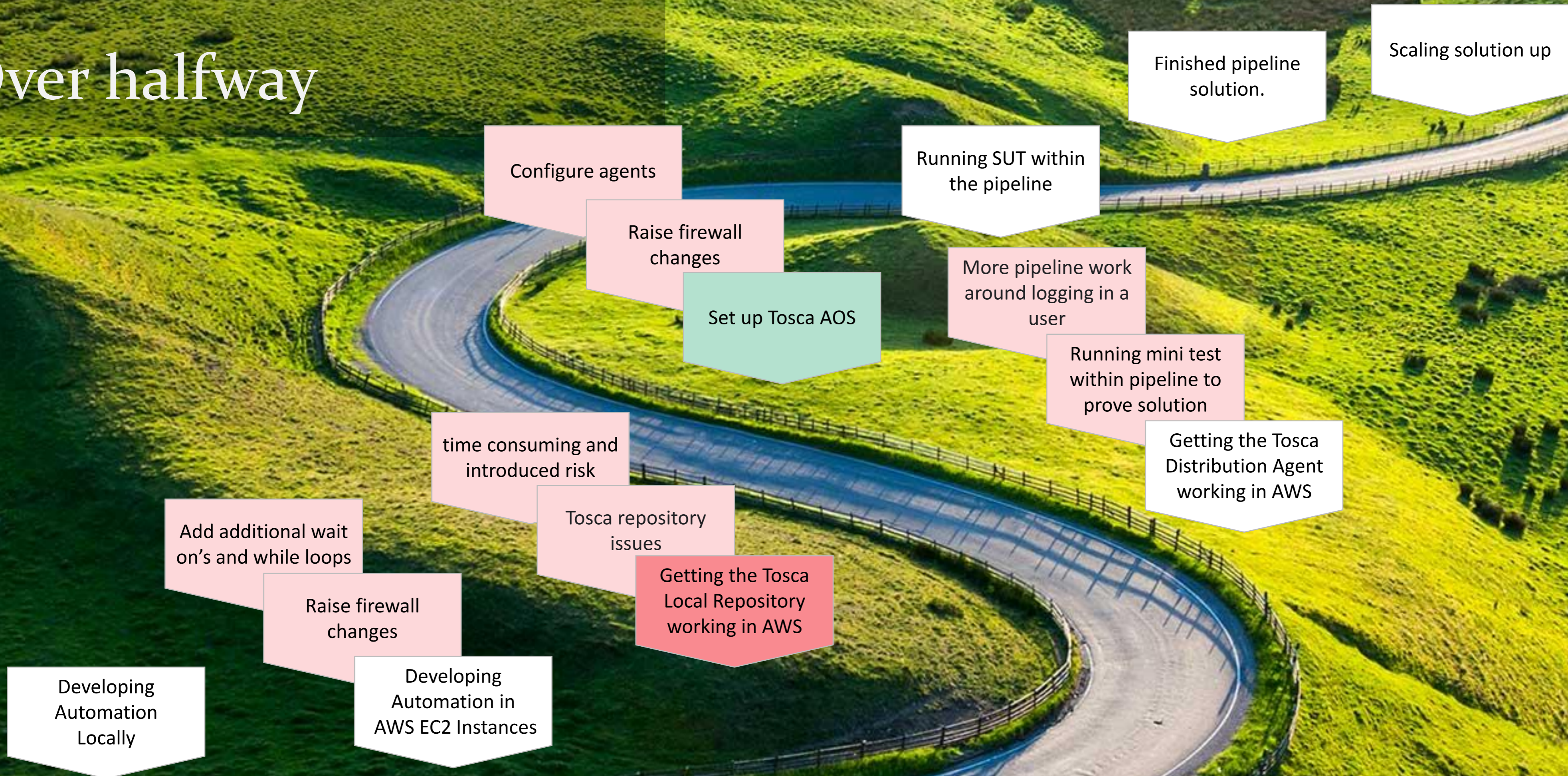


Set up AOS (Automation Object Service)



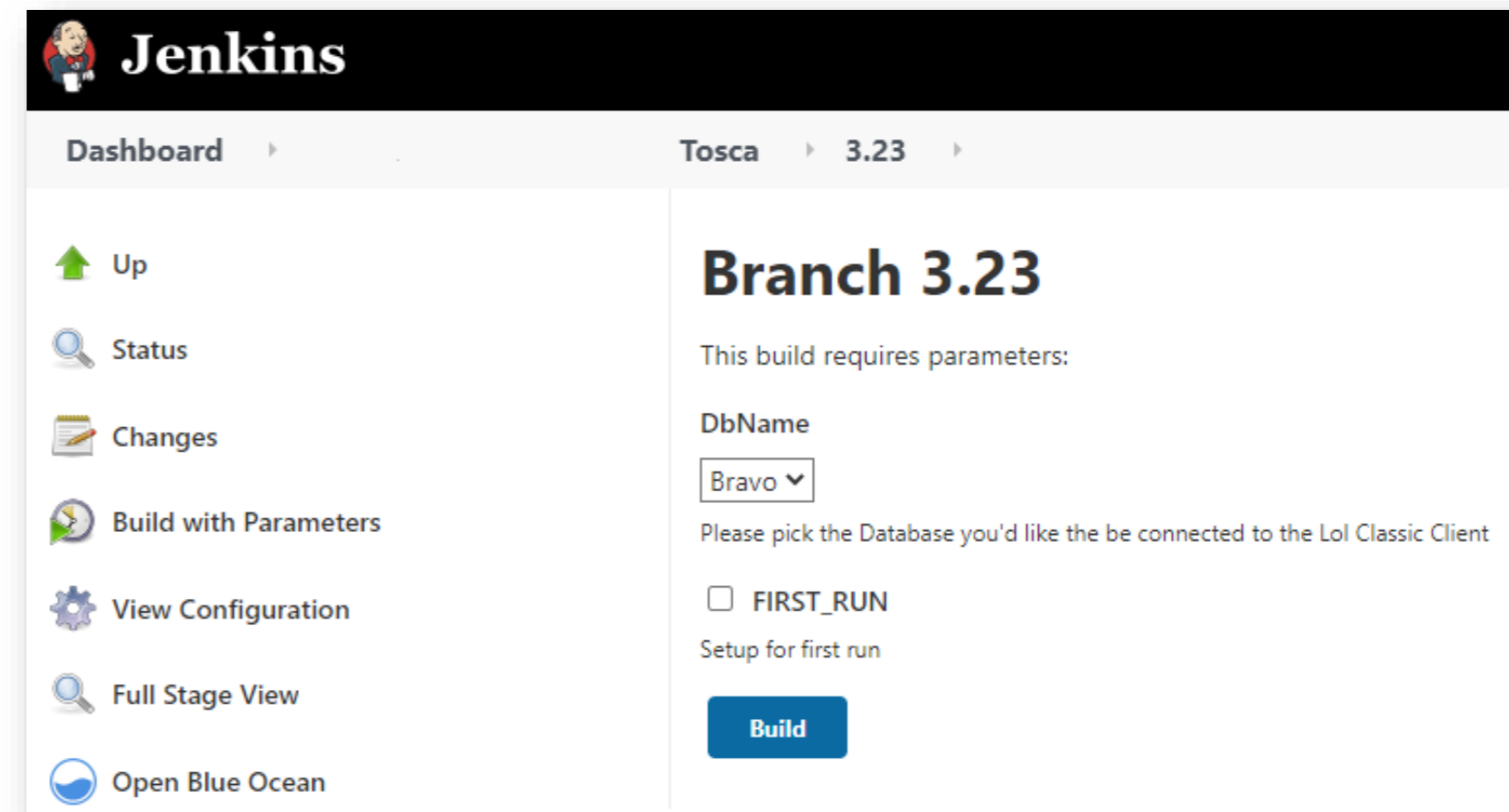
- Setting up AOS isn't hard. Follow the instructions
- More changes need to our firewalls
- Make sure you update Tosca Distribution Agents and supporting pipeline configurations
- I find it great from an audit point of view as it's hard to remove test execution runs with AOS
- Only downside is that it takes a moment to download the assets to host machine at run time as it is not the whole repository

Over halfway



Running SUT within the pipeline

- Now we can start running our tests within the pipeline proper.
- RDP is now turned on within the Tosca DEX agents.
- Noticed that with RPD turned on that test steps involving classic modules that drove tables started failing.
- We had further performance issues that required additional wait on's and while loops to be added.



The screenshot shows a test execution summary table for 'LOL Carl 170 AWS'. The table has a blue header bar with the title 'LOL Carl 170 AWS' and a close button. Below the header, there are three columns: 'Test Event Owner', 'Test Event Status' (Finished), and 'Duration' (1h 49m 12s). A green progress bar indicates '11 Passed' out of '11 ExecutionList(s)'. The table has a 'State' column with a dropdown arrow, and columns for 'ExecutionList', 'Agent', 'Start Time', 'End Time', and 'Actual Result'. Each row represents a test event, all of which are marked as '1 Passed'.

State	ExecutionList	Agent	Start Time	End Time	Actual Result
✓	1_Stop Start DB Container		Mar 29, 2021, 11:09	Mar 29, 2021, 11:10	1 Passed
✓	Cancellation of Condition		Mar 29, 2021, 11:34	Mar 29, 2021, 11:41	1 Passed
✓	Discharge of Statutory Land Charge		Mar 29, 2021, 11:42	Mar 29, 2021, 11:49	1 Passed
✓	Withdrawal of Caveat		Mar 29, 2021, 11:49	Mar 29, 2021, 11:56	1 Passed
✓	Discharge of Compensation Certificate		Mar 29, 2021, 11:56	Mar 29, 2021, 12:03	1 Passed
✓	Discharge of Encumbrance		Mar 29, 2021, 12:03	Mar 29, 2021, 12:11	1 Passed
✓	Memorandum of Priority_Mortgage Priority Instrument		Mar 29, 2021, 12:11	Mar 29, 2021, 12:22	1 Passed
✓	Partial Cancellation of Condition		Mar 29, 2021, 12:22	Mar 29, 2021, 12:29	1 Passed
✓	Partial Discharge of Encumbrance		Mar 29, 2021, 12:30	Mar 29, 2021, 12:37	1 Passed
✓	Transfer of Mortgage		Mar 29, 2021, 12:38	Mar 29, 2021, 12:48	1 Passed
✓	Transmission by Survivorship		Mar 29, 2021, 12:48	Mar 29, 2021, 12:56	1 Passed

Journey almost complete

Add additional wait on's and while loops

Fixing tables

Finished pipeline solution.

Scaling solution up

Configure agents

Running SUT within the pipeline

Raise firewall changes

More pipeline work around logging in a user

Set up Tosca AOS

Running mini test within pipeline to prove solution

time consuming and introduced risk

Getting the Tosca Distribution Agent working in AWS

Add additional wait on's and while loops

Tosca repository issues

Getting the Tosca Local Repository working in AWS

Raise firewall changes

Developing Automation Locally

Developing Automation in AWS EC2 Instances

Main Rocks

- Getting the Tosca Distribution Agent working within AWS
- Tosca repository working within AWS – Then using AOS
- Latency with AWS in Sydney
- DEX/RDP behave differently than when running tests locally
- Firewalls



Learnings

- Try to get to your end state as quickly as possible. With as little assets as you can get away with.
- It's a good idea to share the load of work between people. New ideas and solutions can be discovered earlier.



Discussion & Questions

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