Reflections on SNACK Deployment Experience

Anton Derbenev

Nathanael Maytan

Oksana Ivashkevych

EPICS Collaboration Meeting - 2019

BROOKHAVEN NATIONAL LABORATORY

U.S. DEPARTMENT OF ENERGY

BROOKHAVEN SCIENCE ASSOCIATES

May 23rd, 2019

Overview

- SiNgular Application Configuration Kit (SNACK) Background
- Results
- Lessons Learned

SNACK Project Background

- Deploying applications consistently is a challenging effort
  - Information about how a deployed instance is created should be retained (e.g. source code location, in-place modifications)
  - Deployments must be reproducible (e.g. if a system fails)
- The solution was to create a central application “recipe” repository
  - A recipe is a complete description of how to create an application instance
  - SNACK processes recipes to deterministically build and deploy applications
- Developers would provide recipes for their applications and use SNACK to perform deployment

Results

- SNACK is available for production deployment with a rich feature set (remote builders, recipe templates, parallel deployment etc.)
- The tool was partially adopted for accelerator applications, with more than 200 deployed instances
- On the beamline side, the tool is not as widely used
- Overall, the tool is not recognized as much as it was envisioned

Lessons Learned

- Investment in training is of paramount importance
  - A lot of effort was put into making SNACK approachable, e.g. no Ansible knowledge is necessary and only basic git skills are required to use the tool
  - Still, a solid understanding of git, Ansible, and EPICS is essential to satisfy advanced deployment needs (e.g. versioning, complex dependencies, sophisticated build processes)
- “Advised approaches” don’t work well
  - If tool usage is only advised, then adopting it is up to a developer’s discretion
  - Works well for stable / legacy apps because creating a recipe is only required once
  - Some deployment cases may require a considerable time investment to create a complete recipe, deterring developers from using the tool
- Uniformity is key
  - For consistency, deployment processes should be uniform for similar applications (e.g. IOCs)
  - Discretionary approaches to deployment will result in a multitude of solutions which do not conform to each other, impacting system maintainability

Path Forward

- Improve documentation – provide better guidelines and examples
- Identify and act on cases which can benefit from SNACK
- Enroll more developers to use SNACK as their deployment solution

Thank you