

Deployment Compilation Utility

- *SMACK PRINT* -
WINTER 2016

Introduction

The purpose of the SMACK Deployment Configuration Script will be to provide a single point of contact between the cluster developers and administrators and the cluster configurations. Due to the dynamic nature of clusters and their ability to scale up and down to accommodate both increase in traffic and computational complexity they require an equally dynamic method of configuring them - both for production as well as testing purposes. Additionally, clusters have the potential to provide an efficient way to add functionality through additional nodes and networking configuration without necessarily tearing down and rebuilding it completely from scratch. This same idea can be used to slowly transition from one system to another, or to phase in-and-out various functionality. In short, this script aims to provide both robustness as well as usability for future changes and arrangements within clusters both running and in development.

The script will be used to compile finalized versions of complex deployment scripts through a simple guided interface. Rather than editing each and every script by hand, this will offer a method to streamline production and testing by auto-building the final scripts from individual components. It will be designed similarly to a package manager - it will offer a variety of modules that can be selected and unchecked which can be included or excluded from a script and it will provide the necessary tools to interleave these individual modules into a final complex script (such as the development-machine script).

Due to the nature of dependencies and conflicting packages, some modules may be restricted from being implemented alongside certain other modules. In the same vein, they may in fact automatically force necessary packages into the scripts if needed. This should help to avoid unnecessary difficulties in updating, version control, and package dependencies. Rather than going through every script and changing something by hand, only the individual components need to be edited - once that is - and then the scripts can be recompiled with ease and a new cluster can be spun up and initialized.

Whilst it may be included into future versions, it is unlikely that the first version of this utility will provide anything other than script compilation and compression. Such additional functionality may include the ability to configure OpenStack Heat templates as well as potentially configuring whole clusters.

Proposed Structure

Welcome & Instructions

```
|
|__Name:
|__Comments:
|__Project:
|
|__Modules and Functionality
.    |
.    |__Main Services (Pre-configured Modules):
.    .    |
.    .    |__Development Toolchain
.    .    |__Web Server
.    .    |__Hadoop
.    .    |__YARN
.    .    |__HIVE
.    .    |__Spark
.    .    |__Simulation Files
.    .    |__Scheduled Jobs
.    .
.    |__Custom Services:
.    .    |
.    .    |__Custom Scripts
.    .    |__Custom Packages
.    .    |__Custom Libraries
.    .    |__Custom Simulation Files
|
|__Compression:
|__Heat Configuration:
|__Storage:
|
```

Exit Message

Module Overviews

This section will cover the various details regarding each individual module as well as any dependencies they may require.