How to lift elephant with Arm

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How? Key takeaways
Agenda

- Ambari and Mpack Introduction
- Bigtop Overview
- Bigtop-Mpack Definition
- What We have Done
- Future Work
- Demo
What Is Apache Ambari?

An open-source central management platform for provisioning, managing, monitoring and securing Hadoop clusters.

- Simplified Installation, Configuration and Management.
- Centralized Security Setup.
- Highly Extensible and Customizable.
Ambari Architecture

Ambari Web

Ambari Views

REST API

Ambari Server

Stack

Orchestrator

Heartbeats

Metrics

Stats

Service Health

python

Java

Ambari Agent

Extension added
Ambari Stack

- **Stacks define Services + Repos**
  What is in the Stack, and where to get the bits

- **Each Service has a definition**
  What Components are part of the Service

- **Each Service has defined lifecycle commands scripts**
  start, stop, status, install, configure

*Limitations*

- Stack definitions are bundled within Ambari releases
- A new version of a stack is released; Enforce having to do an Ambari release.
- There is no release vehicle that can be used to ship add-on services (Custom service).
Management Packs (Mpacks)

A high-level design can bundle multiple stack definitions, views and Add-On services.

- Improved Release Management:
  - Decoupling stacks from Ambari core
  - Allow stack definition to be a deploy time artifact, not compile time

- Support Add-on Services:
  - Release vehicle for 3rd party services, views
  - Self-contained release artifacts
What is Bigtop?

- Package Hadoop ecosystem to RPM/DEB artifacts
- Support 25+ Hadoop Ecosystem Components
Bigtop Feature Snapshot

Packaging

Virtualization

Deployment

Testing

Total solution to build Big Data Stack

arm
Bigtop on Arm64

- Bigtop v1.2.1 released with a lot of Arm64 related patches merged
- Arm64 CI nodes added
- v1.3 release: Arm64 was officially added to support matrix
- v1.4 release: Arm64 smoke test CI Matrix go online
Bigtop Mpack (BGTP) for Arm64 Servers

BGTP targets to address the complete needs of running big data on Arm64, provide data-at-rest, power real-time customer applications and accelerate decision making on Arm64. (Zookeeper, HDFS, Yarn, MapReduce2)
BGTP Mpack Processing Overview

Ambari Web

HTTP GET

Stack API
Ambari REST API
Mack API

Stack Manager
DB
Mpack Manager

Stacks
Common Services
Mpacks

Refresh

Mpack packages Repo

Bigtop Mpack
HDP Mpack

http://repos.bigtop.apache.org/releases/1.4.0/
BGTP-1.0 Stack Snapshot
Bigtop Mpack Files Structure
BGTP Mpack - Big Picture

Key Takeaways

- BGTP Mpack makes Hadoop-ecosystem deployment and management simpler on Arm64 servers.
- BGTP Mpack is extensively extendable and has an option to customize.
What We have Done

Bigtop:
- Roll out Bigtop 1.3.0 release: [https://www.apache.org/dyn/closer.lua/bigtop/bigtop-1.3.0/](https://www.apache.org/dyn/closer.lua/bigtop/bigtop-1.3.0/)
  Made Arm officially the first-class citizen with full Arm64 support from the most advanced Big Data stack to date.
- Contribute code to Bigtop and make it happen
  [BIGTOP-2723] [BIGTOP-3088] [BIGTOP-3089] [BIGTOP-3090] [BIGTOP-3091] [BIGTOP-3086]
  [BIGTOP-3135] [BIGTOP-3137] [BIGTOP-3125] [BIGTOP-3145] [BIGTOP-3151] [BIGTOP-3216]
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  [BIGTOP-3068] [BIGTOP-3067] [BIGTOP-2858] [BIGTOP-3064] [BIGTOP-3062] [BIGTOP-3065]

Ambari:
- Propose the Bigtop mpack definition: AMBARI-25366
  PR: [https://github.com/apache/ambari/pull/3073](https://github.com/apache/ambari/pull/3073)
Future Work

- Add more services in BGTP mpack.
- Upgrade the Ambari dependency from 2.6.1 to 2.7.3.
- Add BGTP-mpack to Bigtop release matrix.
Questions?

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Bigtop Mailing lists
Bigtop CI page
Bigtop Jira issues
Bigtop Wiki

Ambari Development lists
Ambari Wiki
Mpack RFC
Ambari Bigtop-Mpack PR

Linaro Collaborate Page
Thank you

Join Linaro to accelerate deployment of your Arm-based solutions through collaboration

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