Unified Open-Sourced Splunk Configuration Management System

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splunk>

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About Bridgewater

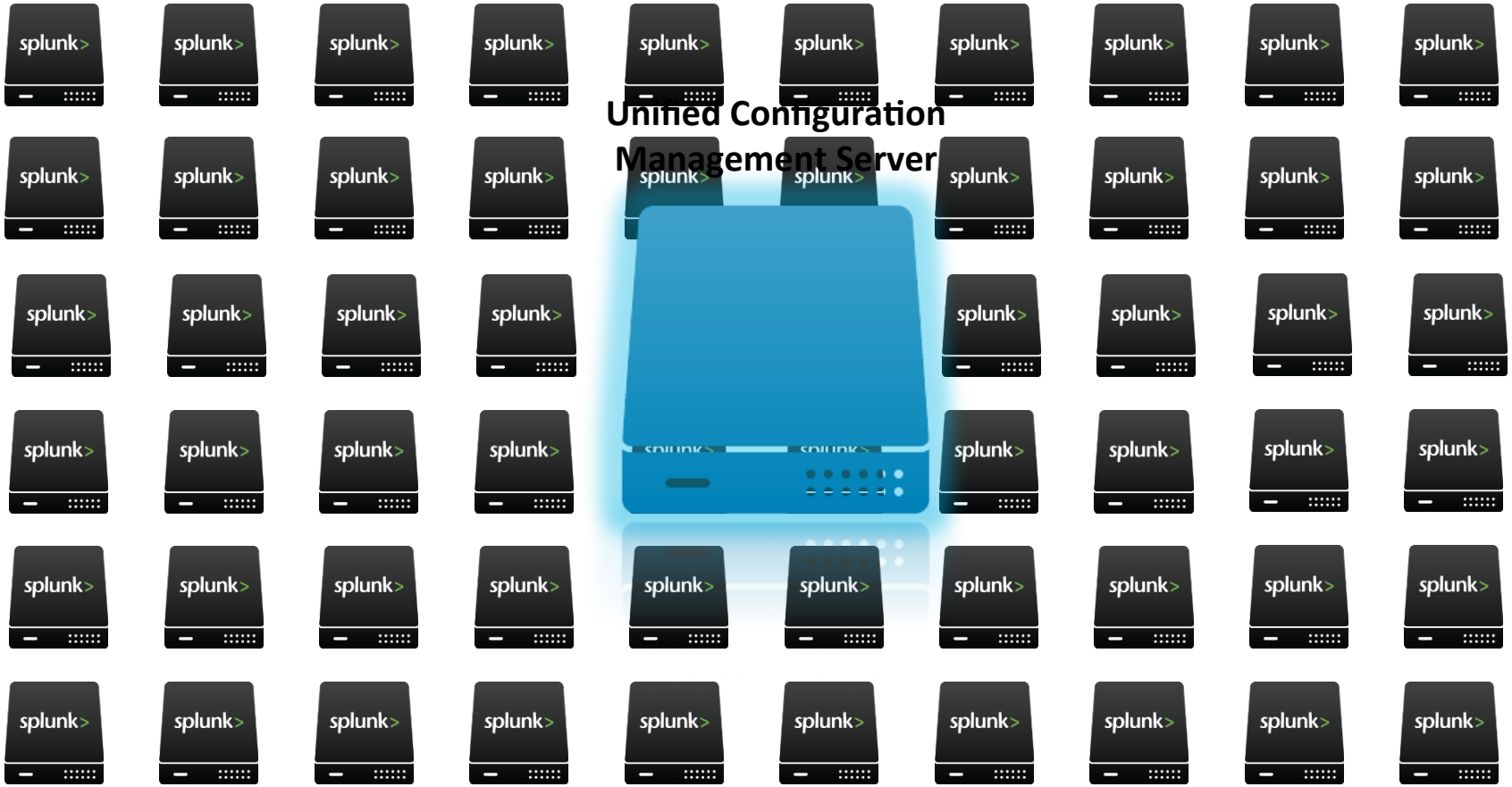
- One of the largest Hedge Funds in the world
- Manages approximately $150 billion in global investments
- Founded in 1975 out of a two-bedroom apartment
- Approximately 1,500 people work at Bridgewater
- Headquartered in Westport, Connecticut

About Us

- **Casey** – Information Systems Consultant at Aplura
  - Splunking since 2012
  - Implemented multiple multi-terabyte Splunk deployments
  - Enjoys long walks Splunking on the beach and candlelight dinners ingesting data
- **Kal** – Software engineer at Bridgewater Associates
  - Cloud engineering and automation specialist
  - Background in developing TV streaming graphics for sporting events
  - Holds multiple patents in gambling gaming technology
- **Vince** – Splunk Tech Lead at Bridgewater Associates
  - Experience in high performance computing and special effects
  - Multiple motion-picture animation movie credits (see my IMDB page)
  - Countless years delivering Unix based solutions as a VAR

Pop Quiz?

- Administered a Splunk cluster?
- Tried jury-rigging various configuration management systems to control Splunk?
- Experience pain just thinking of managing applications on deployers, deployment servers, cluster master, license master, indexers, search heads, and search head clusters?
- Know exactly what version, down to the code changes, of an application that is running on every server of your environment?



Agenda

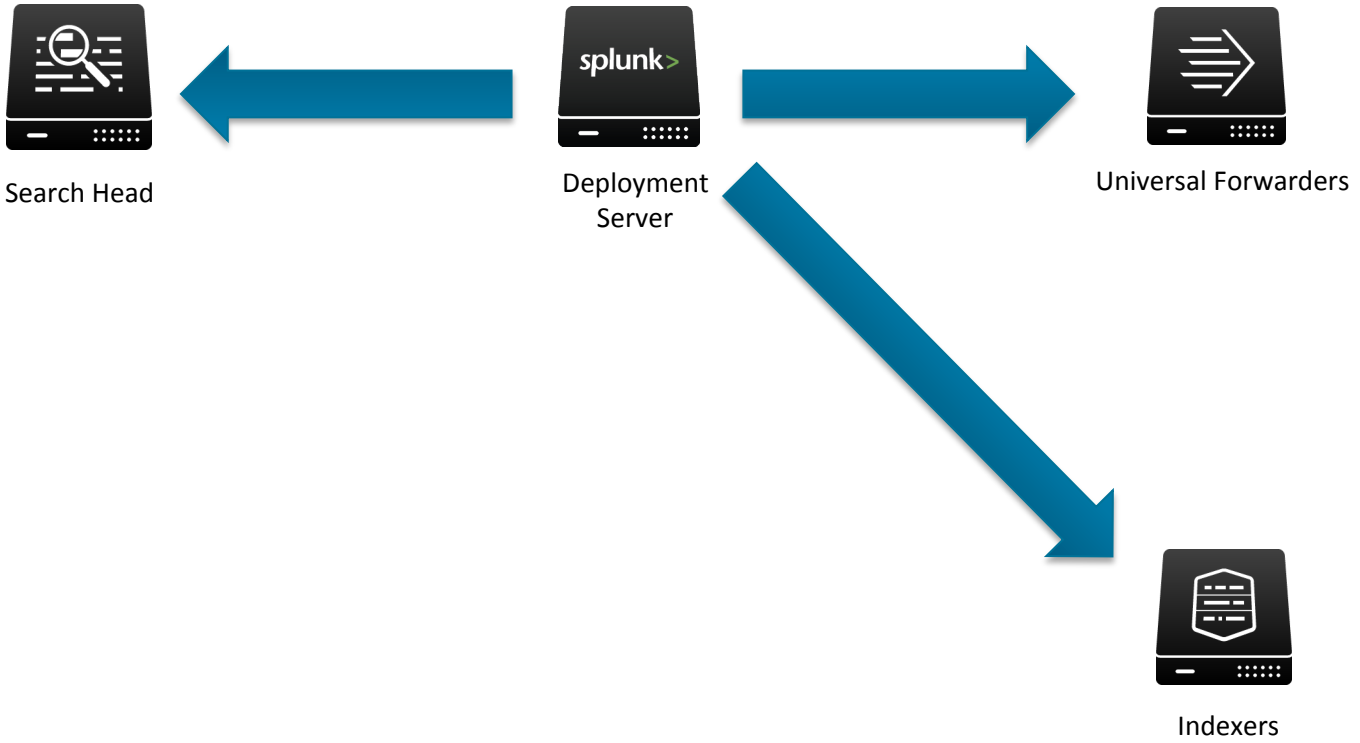
- Why Create A Unified Splunk Configuration Management System?
- What Are We Trying To Achieve?
- Overview Of What We Created
- How It Works
- Demonstration

Why Did We Do This?

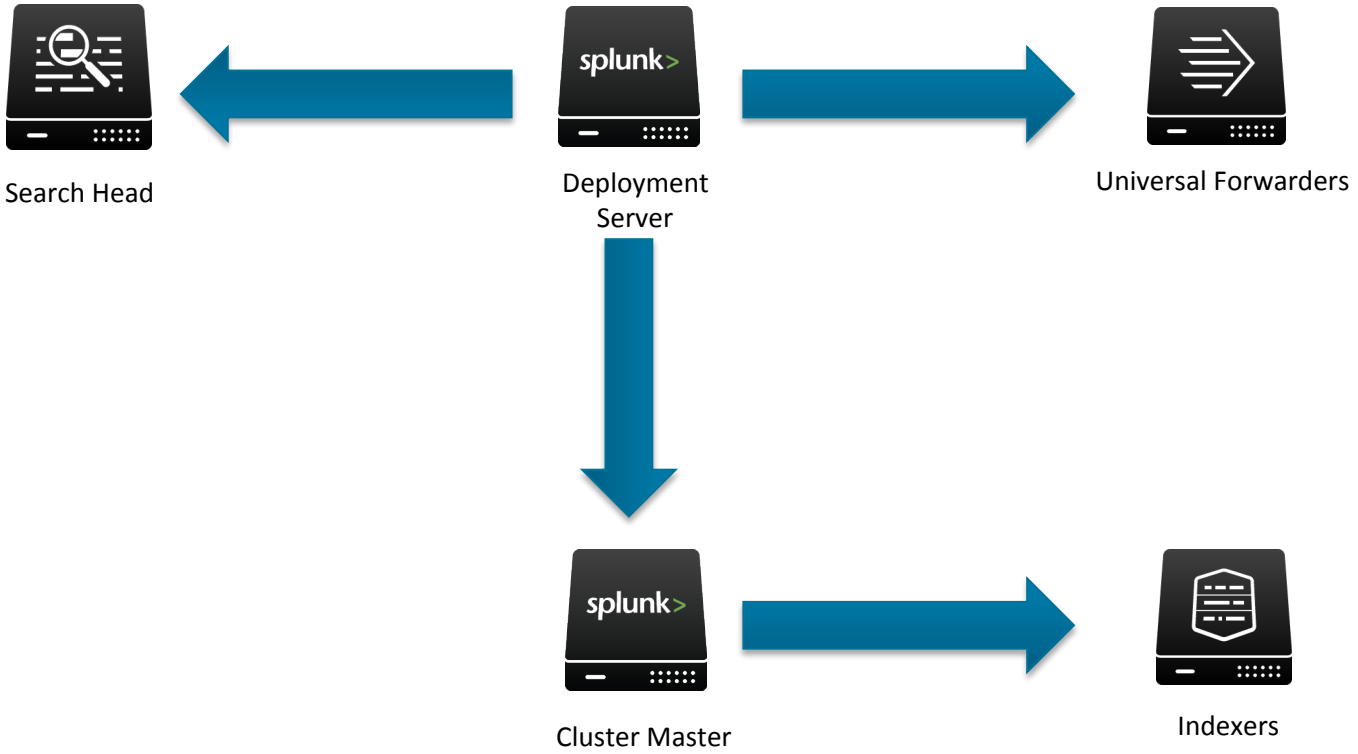
Pain

- Complex Splunk Environment
- 4 Splunk Methods of Deploying
- No Auditing
- Time Consuming
- No Quality Change Control

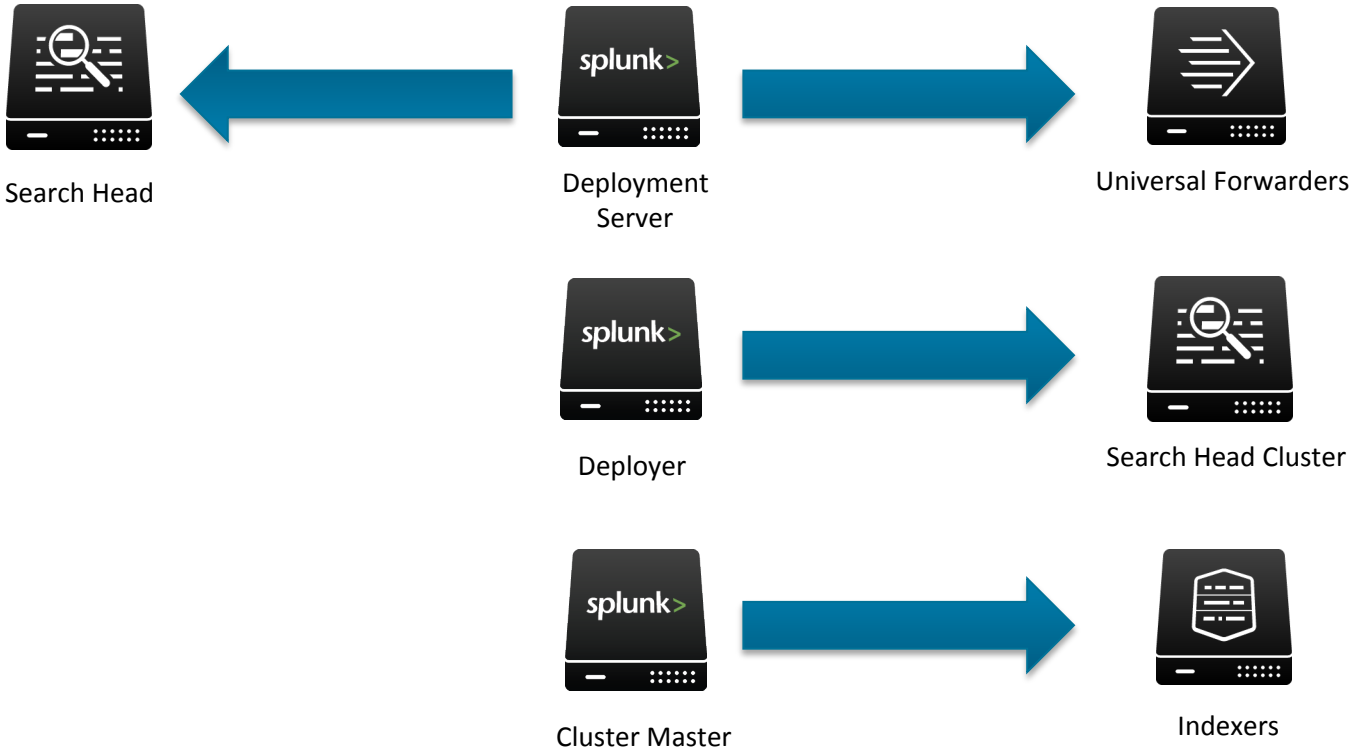
Splunk 4.x Deployment



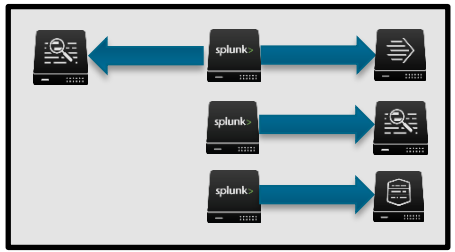
Splunk 5.x Deployment

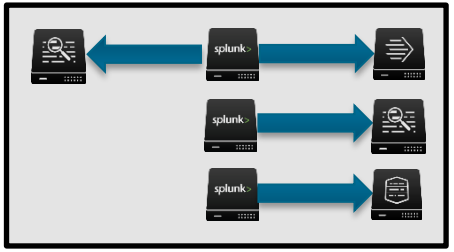


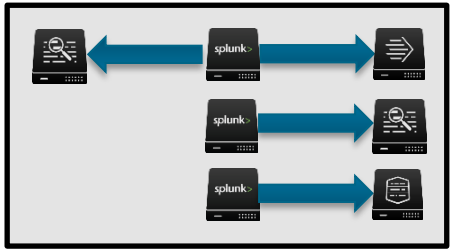
Splunk 6.x Deployment

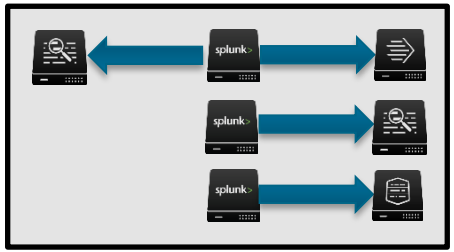


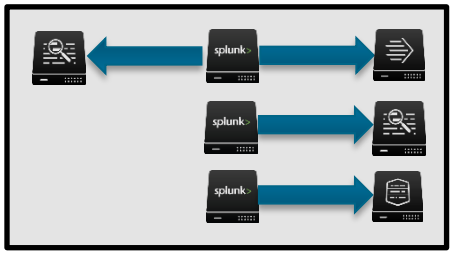
Multi-Environment Deployment











What Are We Trying To Achieve?

Goal

- Auditable tracking of all changes
- Universal deployment of applications
- Repeatable automation
- Inherent change control
- Reduced complexity
- Decreased deployment time
- Does not reinvent the wheel

What Is It?

We call it

Appetite

Appetite!

- Splunk specific python application
- Pulls applications from source control
- Creates host specific install packages
- Deploys to Splunk instances based on a manifest file
- Logs all actions

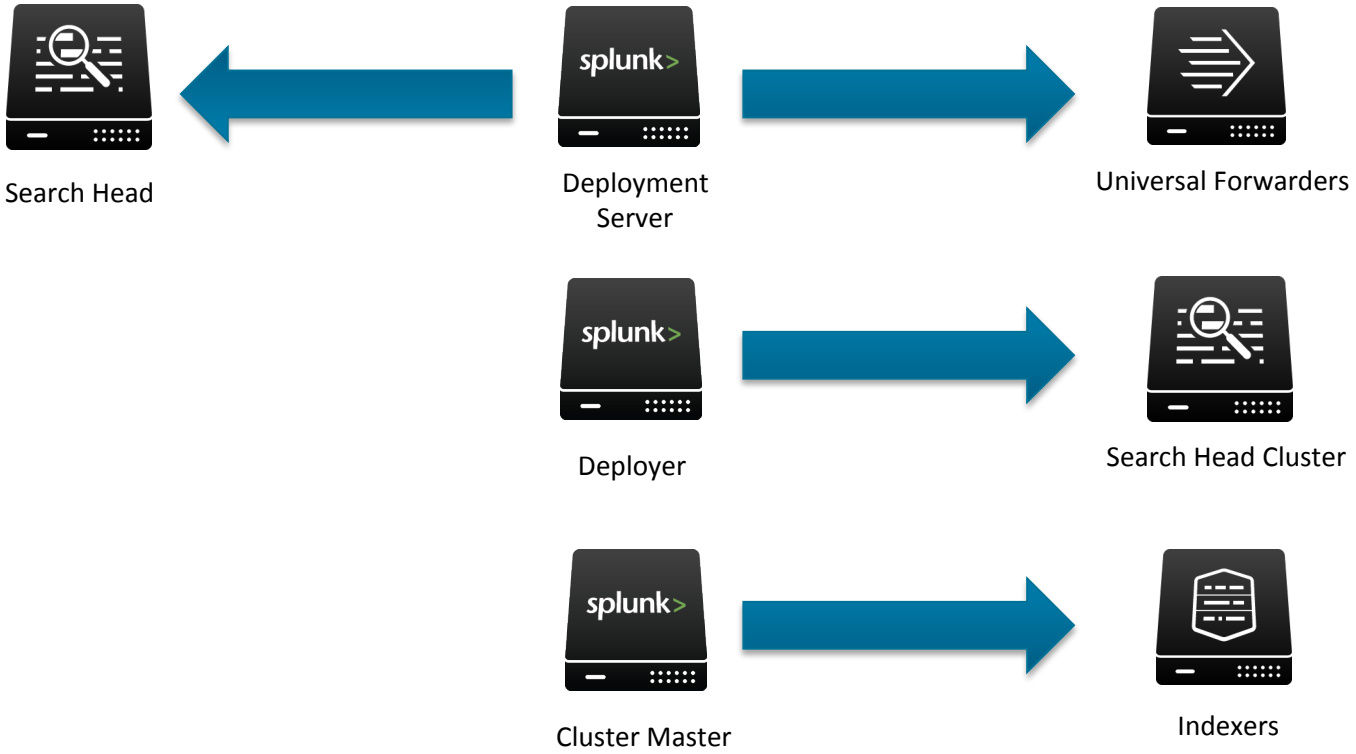
Why The Name Appetite?

- Appetite got its name from its function. The Splunk servers are fed applications from a repo… plus it has App in the name ☺.

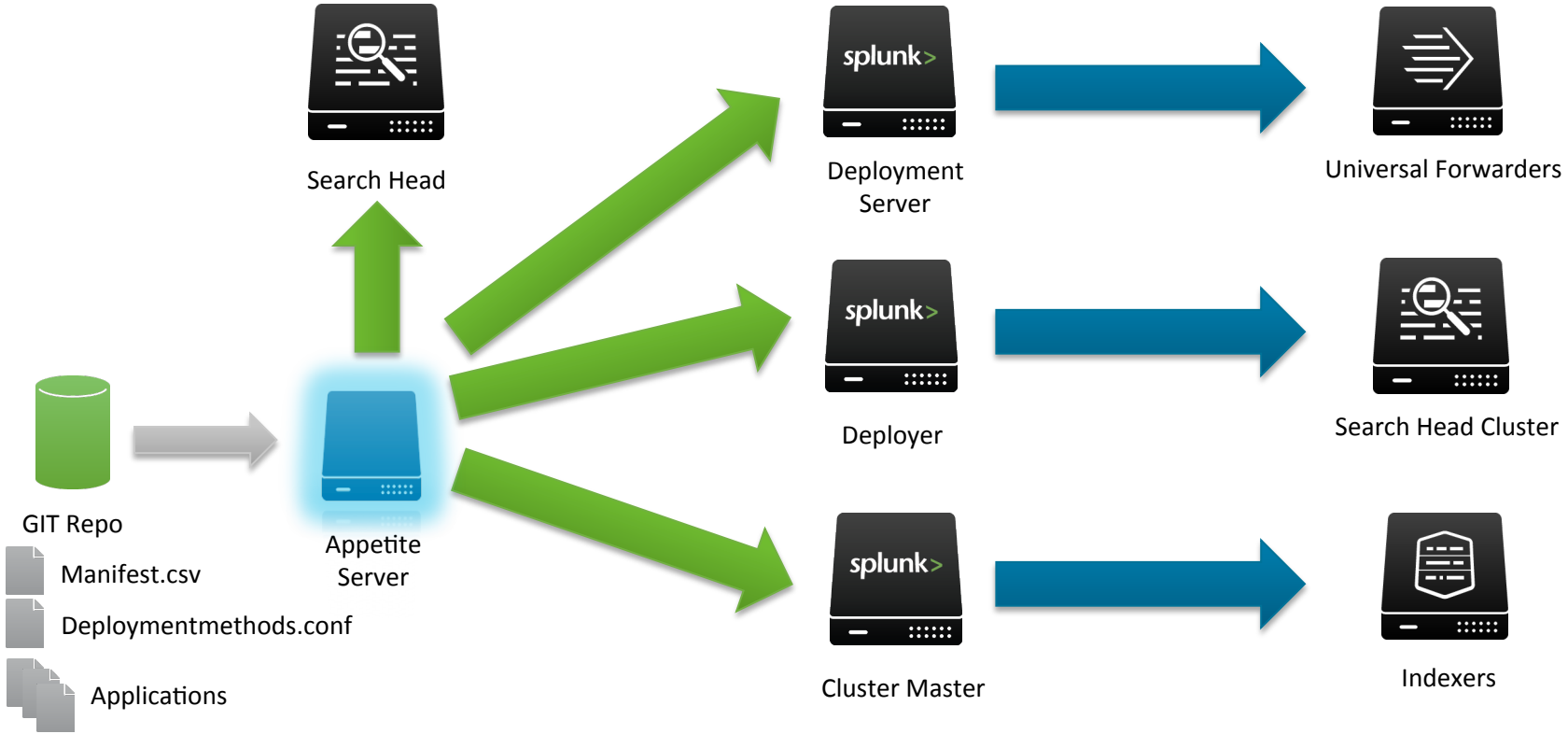
ap·pe·tite
noun
1. a natural desire to satisfy a server's need, especially for ~~food~~ applications.
"it has a healthy appetite"

How Does It Work?

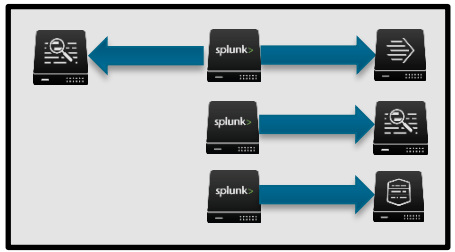
Splunk 6.x Deployment

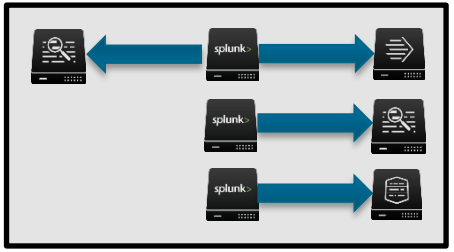


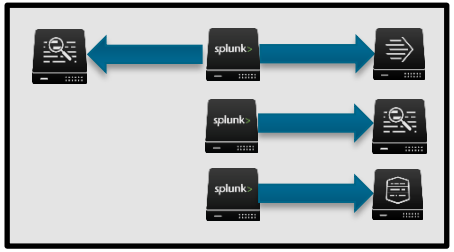
Appetite Diagram

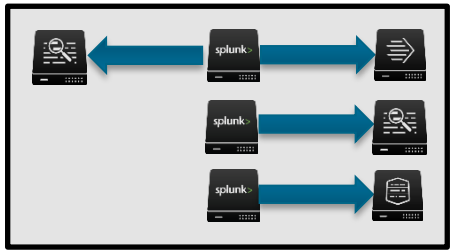


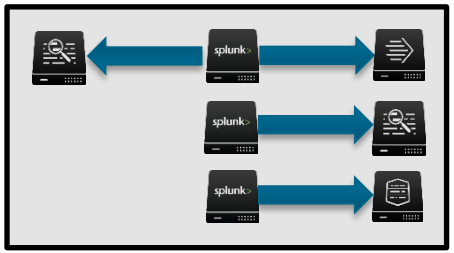
Multi-Environment Deployment











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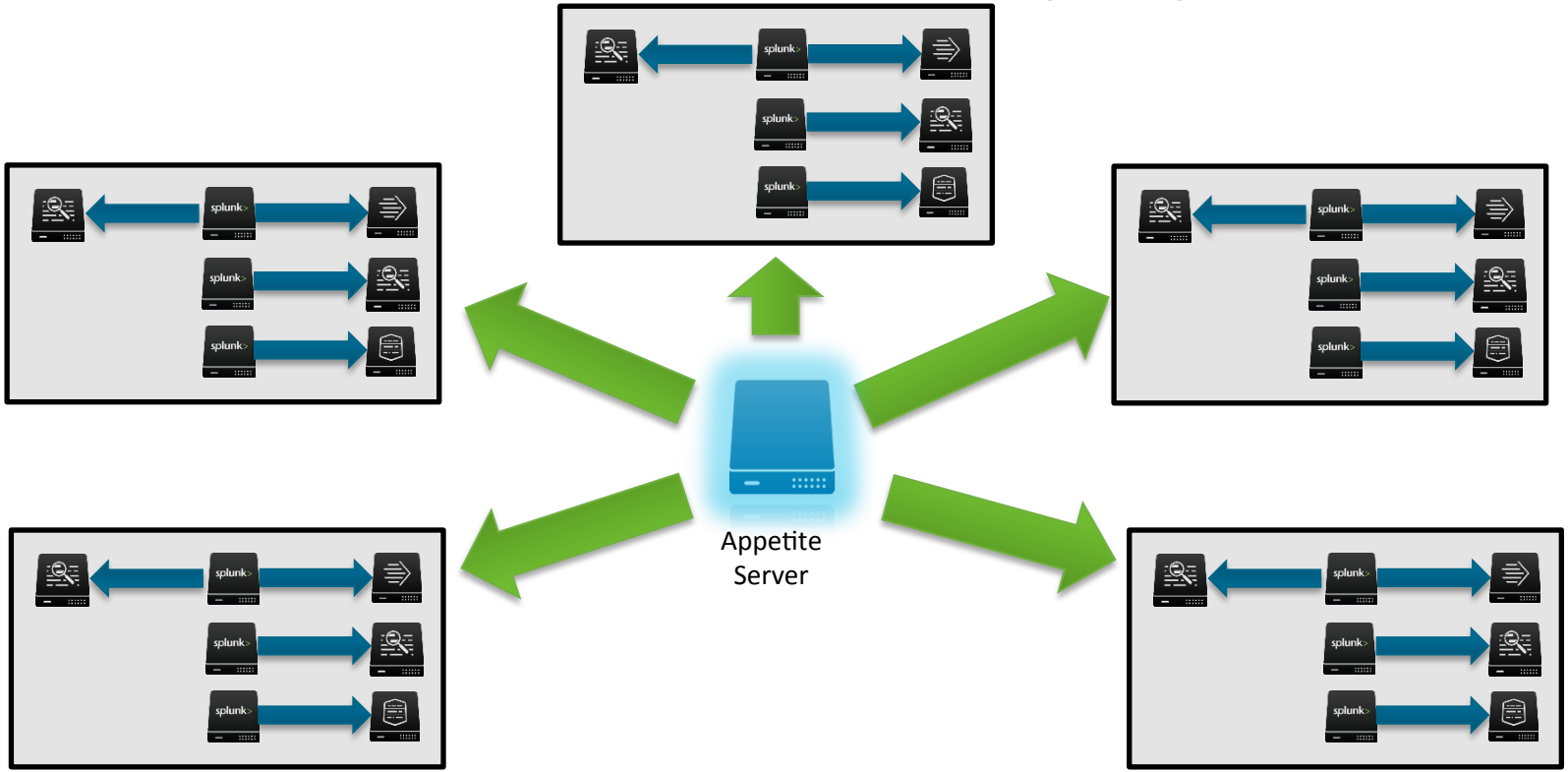
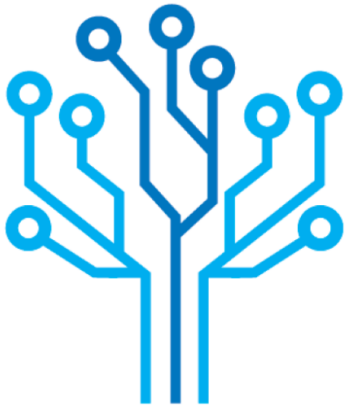


Appetite!

- Only Two Key Components
  - GIT Repository
  - Appetite Server (non-dedicated)

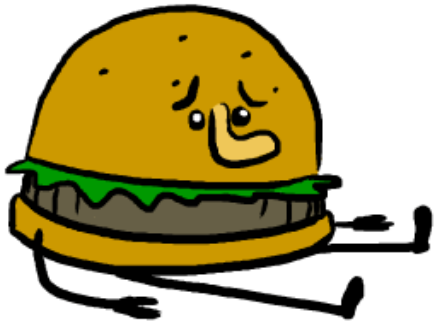
Why GIT?

- Open source distributed version control system
- All changes are individual are mini snapshots
- Each snapshot has a computed hash, called a commit ID
- Appetite uses this commit ID as an application version



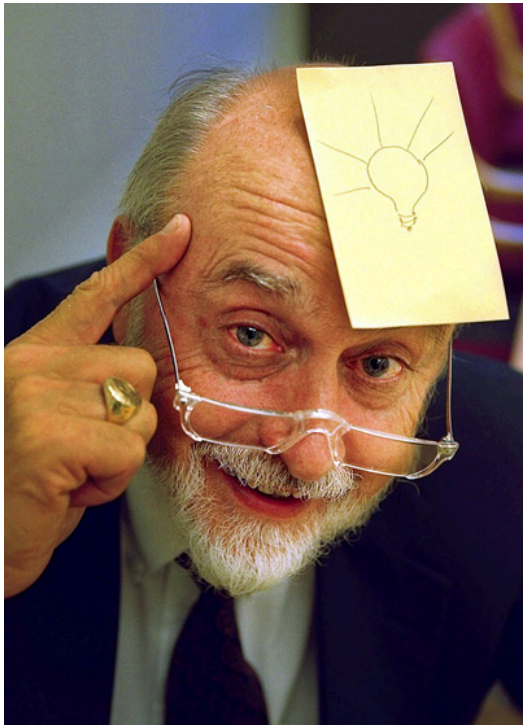
GIT & Splunk Issues

- How do you deploy an application to a host from the repo?
- How do you structure a repo efficiently without duplicating applications?
- How do you track application versions per host?



GIT Repo & Appetite

- Only Two Directories
  - config/
    - deploymenthods.conf
    - manifest.csv
  - apps/
    - Splunk_TA_nix/
    - Splunk_TA_windows/
    - TA_appetite/
    - …



Manifest.csv

- Defines:
  - Applications and specific commitID version
  - Server(s) where app is deployed
  - Method of how it will get there

CommitID	Environment	Application	DeploymentMethod	Whitelist	Blacklist	Comments
c241c6e	PROD	Splunk_TA_nix	ClusterMaster	acme-master.*p$		Unix TA to Prod
1b17b67	DEV	Splunk_TA_nix	Standalone	acme-.*d$	acme-idx.*d$	Unix TA to Dev

- Appetite runs when the commit ID of the manifest changes.

Deploymentmethods.conf

- This file describes the different methods of how applications are deployed within the environment.

[DeploymentServer]

path: "etc/deployment-apps/"

delete_first: true

update_method: "copy"

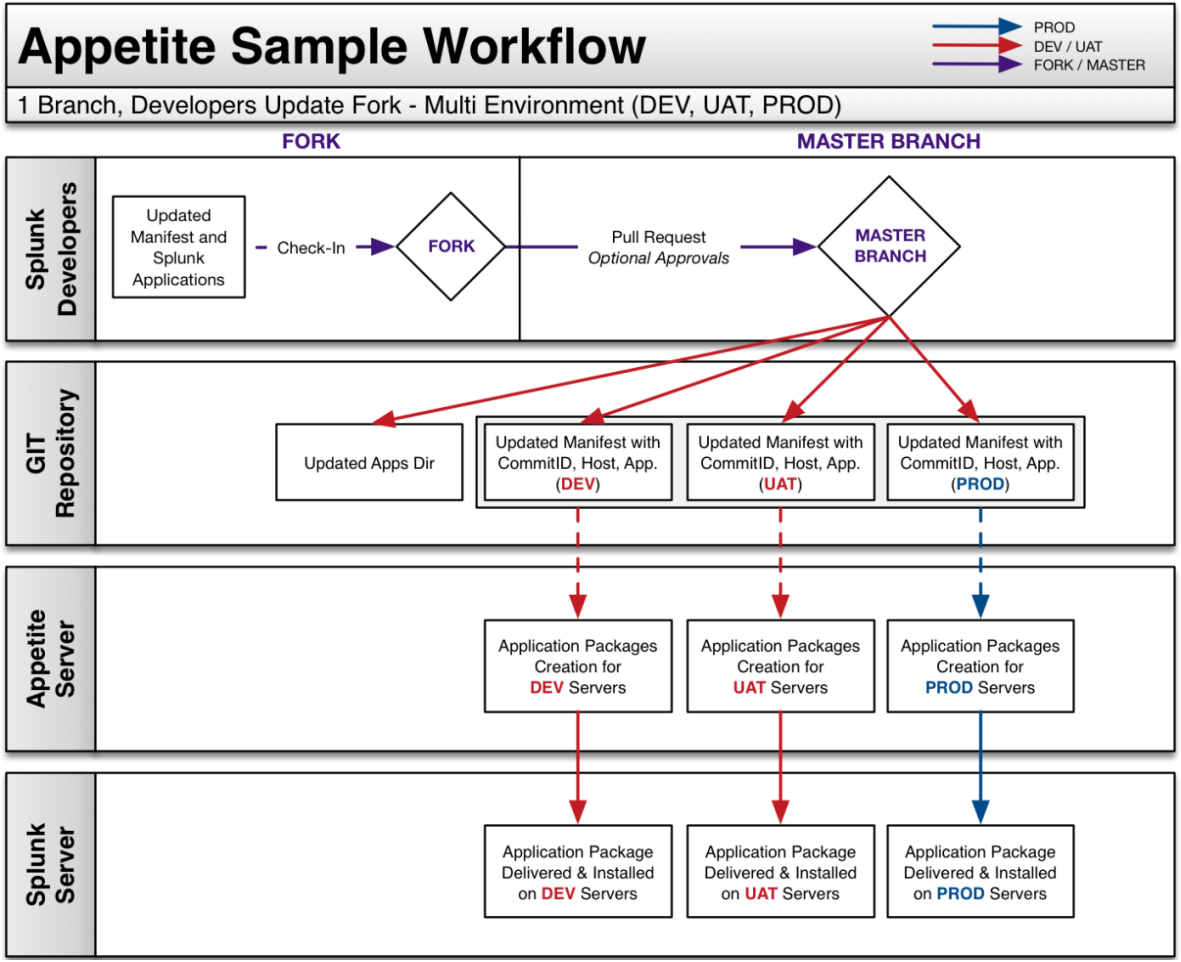
command1: "reload deploy-server --answer-yes”

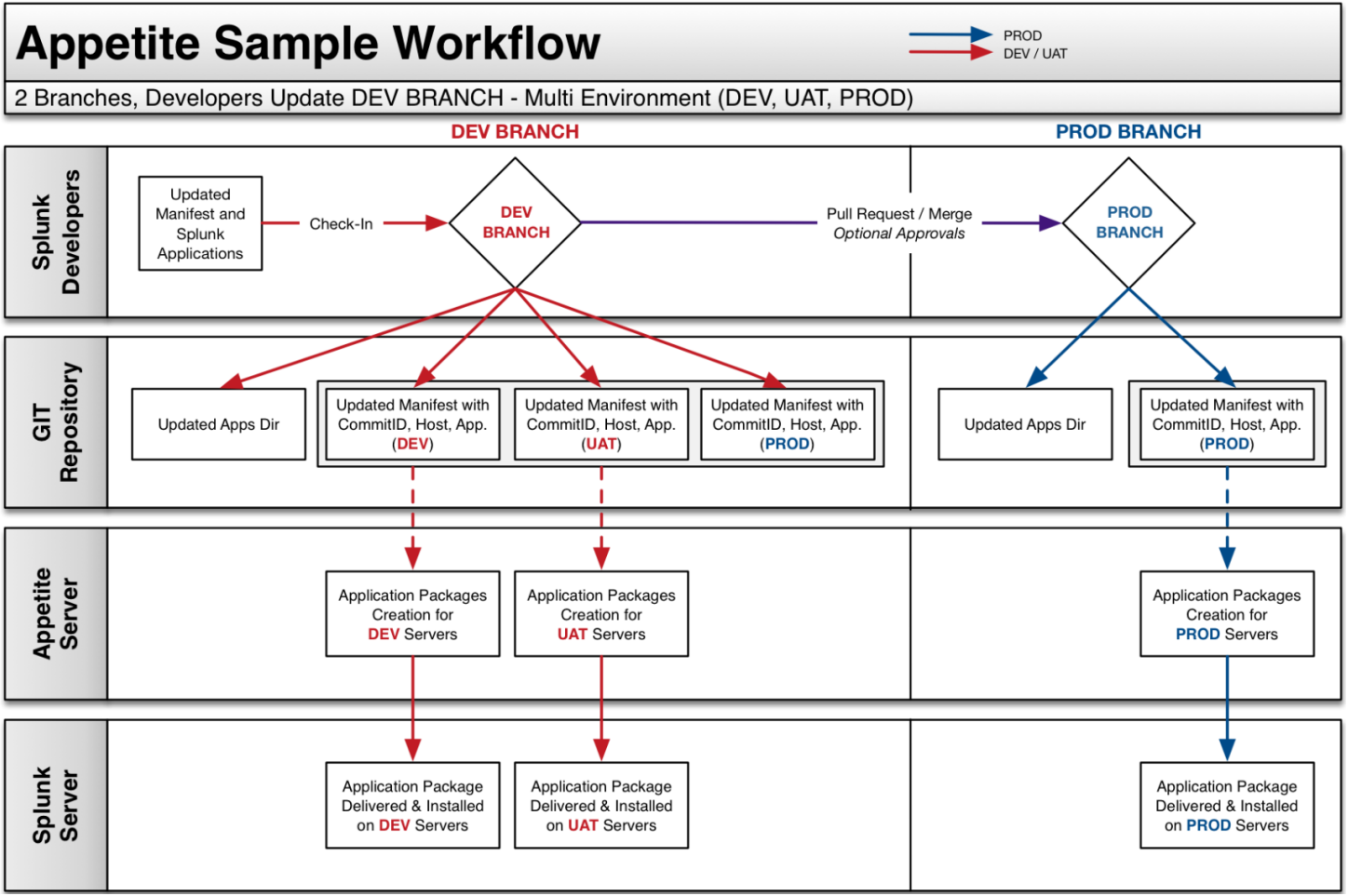
Deploymentmethods.conf & Lookups

- Major pain point!!
- How do you not clobber modified lookups on Search Heads?
- install_ignore = <directory|file list>
  - List of directories or file names which to ignore when being deployed.
  - Appetite will package the application as if these directories or files never existed.
  - IMPORTANT: It is wise to include the lookups directory, to not overwrite lookups changed locally on the server!
- install_inclusion_file = <file_name>
  - Extra file in app root, which lists lookups to include in the application

GIT Workflow

- Highly customizable
- Can set up multiple branches to send to different Splunk environments
  - DEV branch → DEV environment
  - PROD branch → PROD environment
- Can set up one branch to handle all environments
  - Appetite will only send to the servers specified in the manifest
- Configure pull request approvals between branches and/or forks





Appetite Overview

- How does it work?
  - Monitors manifest changes
  - Compares application versions
  - Creates host specific install packages
  - Installs, upgrades, or deletes
  - Modifies Splunk application
- What does it need?
  - Git
  - Python
  - SSH access to Splunk instances

Bon Appétit – Splunk App

- Accompanying Splunk App which audits *everything!*
- Able to track all deployment processes from start to finish

Menu – Manifest Editor

- Makes editing the manifest.csv easier with a UI
- We created a problem:
  - Manifest became unruly
  - Large number of apps
  - Tracking commit IDs
  - Duplicate applications
  - Human errors

Demos

Takeaways & Final Thoughts

- Understand our use case for developing a new system
  - Is this right for your environment?
- Comprehend the high level overview
  - Visualize how it works through our demonstration
- Assess if this is something your company could use
  - Do you have the right resources to implement this solution?
- This is not Splunk supported!
  - Hopefully Splunk comes out with one soon… or bakes this one in? ☺

THANK YOU

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