splunk> .conf2017

Splunk and Ansible

Joining forces to increase implementation power

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09/28/2017| Washington, DC

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[root@conf2017]# whoami

Rodrigo Silva @rodsansil

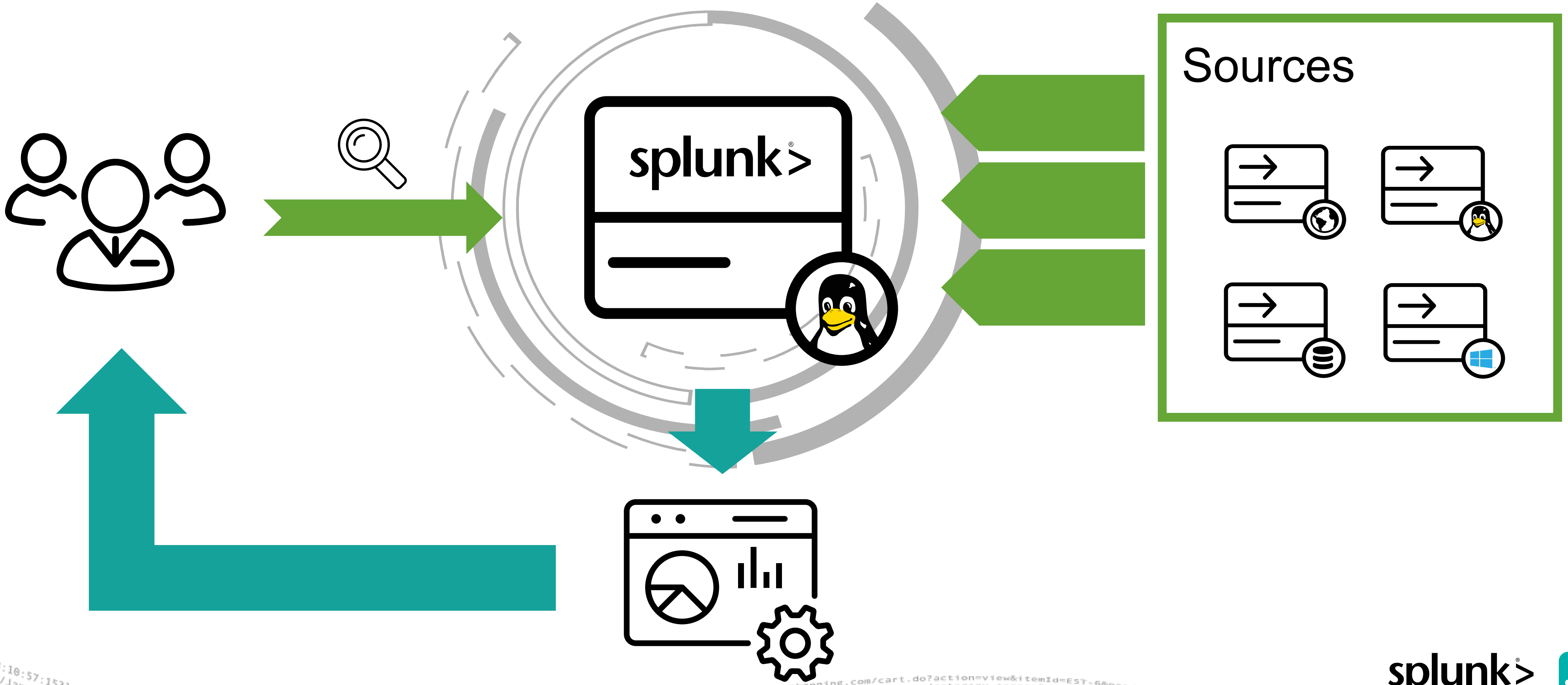
- Manager of Professional Services Team at Tempest Security Intelligence
- +10 year experience in information security
- Head of incident response team experienced with_major Brazilians financial institutions, industries, insurance companies, e-commerce, etc.

The purpose of this talk is to show how automation can be a close friend to the Splunk administrator. We will see how to create a Splunk cluster environment in minutes using Ansible playbooks.

Agenda

- Differences between Single Instance and Cluster Environment
- Orchestration
- What is Ansible?
- Why Ansible?
- Playbook definition and examples
- Demo
- Lessons Learned
- Q&A

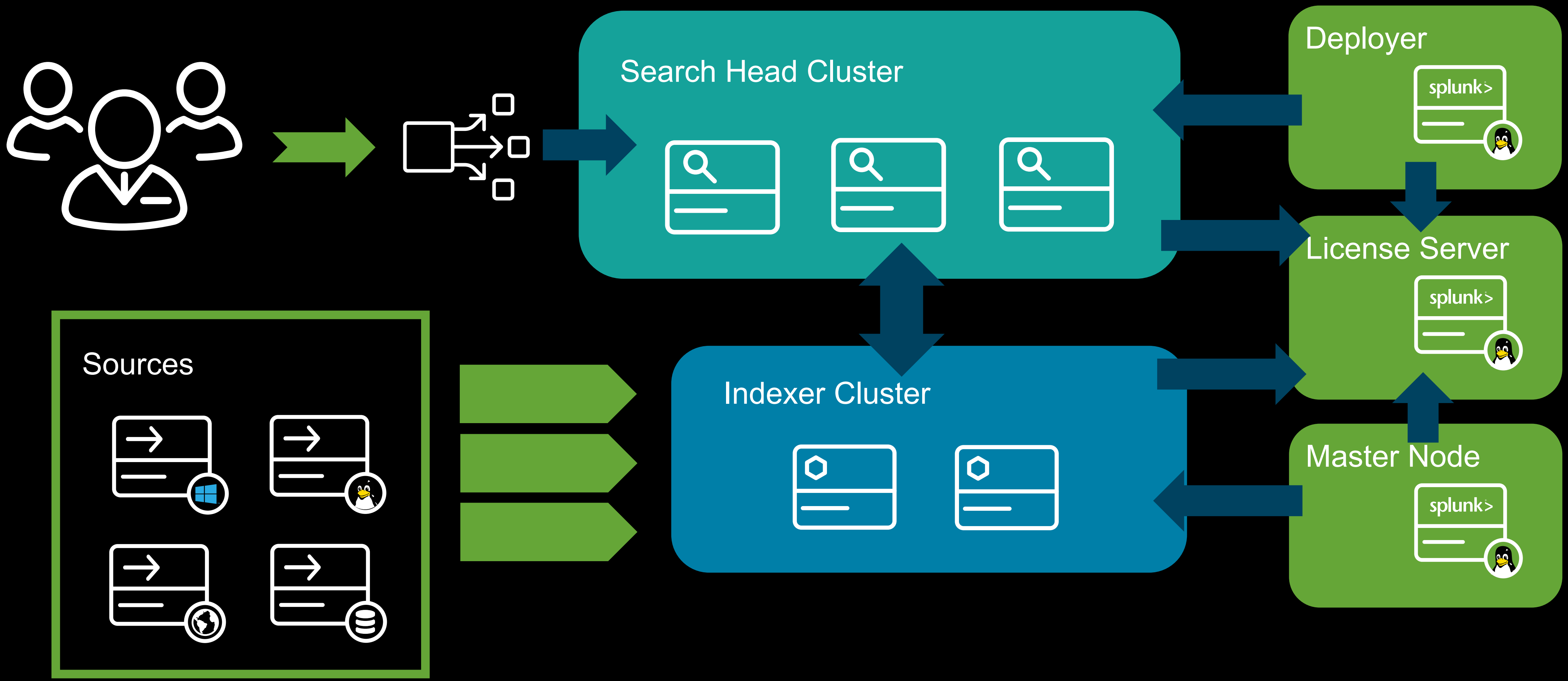
Single instance



Single instance

- Easy installation
- Minimum administration
- Everything works out of the box
- Small business

Cluster Environment



Cluster Environment

- Complex setup
- Large amount of data
- Supported by specialist team
- Continuous increase by client’s demand
- Administration of different servers and services
- Minimal outage accepted

- Not everyone working with Splunk has to be a Splunk administration specialist
- So, how can we support cluster environment when not every Splunk administrator has the same know-how?
- How can we deploy new Splunk nodes with the same configuration and always following the same recipe?

Orchestration

- Is the ability to execute and coordinate several automation workflows to reach higher goals

- Can be achieved with a lot of different tools (Ansible, SaltStack, Puppet, Chef)

- Deploying a new node or a new service doesn't have to be a heavy task. After creating a template, all work should be the automation of this workflow

Orchestration (Cont.)

- Create a unique role for every node of your environment
- Everyone should be able to execute the preset roles
- Changes have to be applied only at the workflows, and after the certification process, deployed to the target servers

What is Ansible?

- Automated tool released in 2012 by Michael DeHaan
- Works by deploying customized modules (tasks, hosts, roles, playbooks)
- Generates log output for troubleshooting
- Centralized inventory
- Agentless
- Communicates through SSH
- No database required
- Python
- Easy to install and operate

Why Ansible?

	Ansible	Chef	Salt	Puppet
Support	Ansible Works	Opscode	SaltStack	Puppet Labs
Control Interface	Playbook (YAML)	Recipes (DSL)	SLS (YAML)	Manifest (DSL)
Agent	Agentless	Server-Client or Standalone	Master-Agent or Standalone	Master-Agent or Standalone
Language	Python	Ruby	Python	Ruby
Communication	SSH	SSL	ZeroMQ	HTTP/ SSH / SSL
Remote Execution	Built-in	Challenging	Built-in	Challenging
In Operation Since	2012	2009	2011	2005

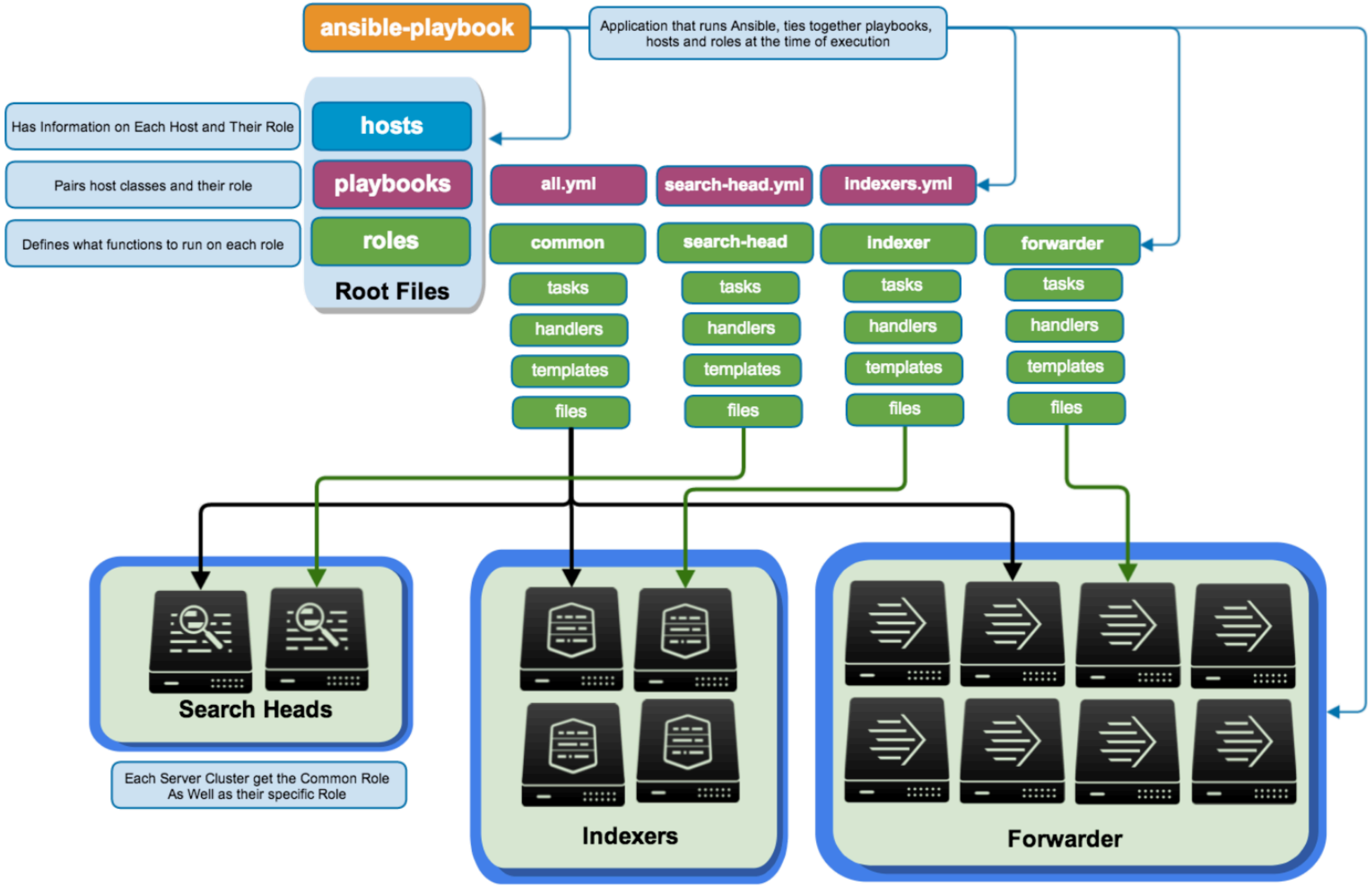
http://zigispace.net/m/839

Playbook

- Playbooks are Ansible’s configuration, deployment, and orchestration language. They can describe a policy that you want your remote systems to enforce, or a set of steps in a general IT process.

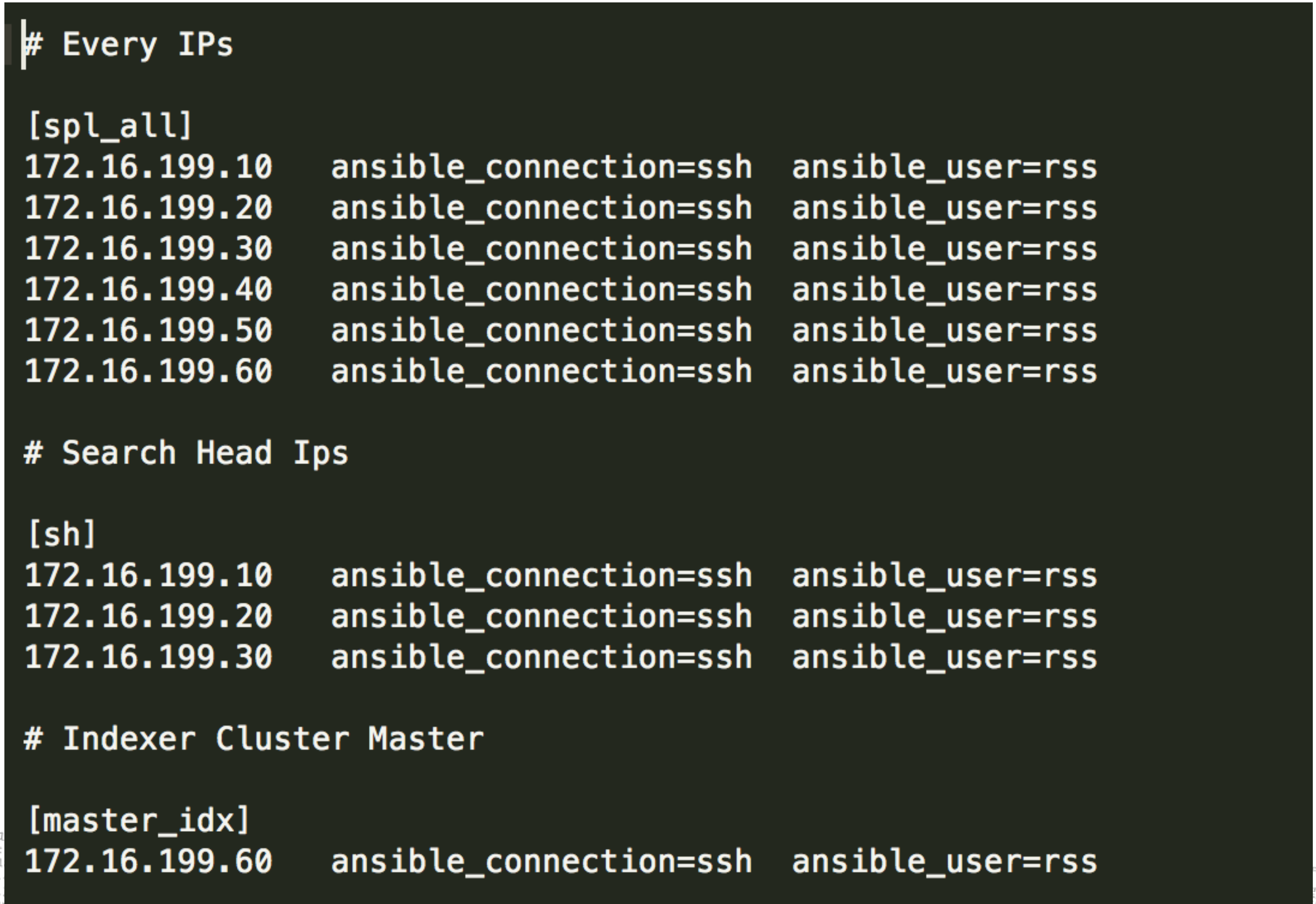
- At a basic level, playbooks can be used to manage configurations and deployments to remote machines. At a more advanced level, they can sequence multi-tier rollouts involving rolling updates, and can delegate actions to other hosts, interacting with monitoring servers and load balancers along the way.

Ansible Structure


ansible-playbook
Application that runs Ansible, ties together playbooks, hosts and roles at the time of execution
Has Information on Each Host and Their Role
hosts
Pairs host classes and their role
playbooks
Defines what functions to run on each role
roles
Root Files
all.yml
search-head.yml
indexers.yml
common
search-head
indexer
forwarder
tasks
handlers
templates
files
Search Heads
Indexers
Forwarder
Each Server Cluster get the Common Role As Well as their specific Role

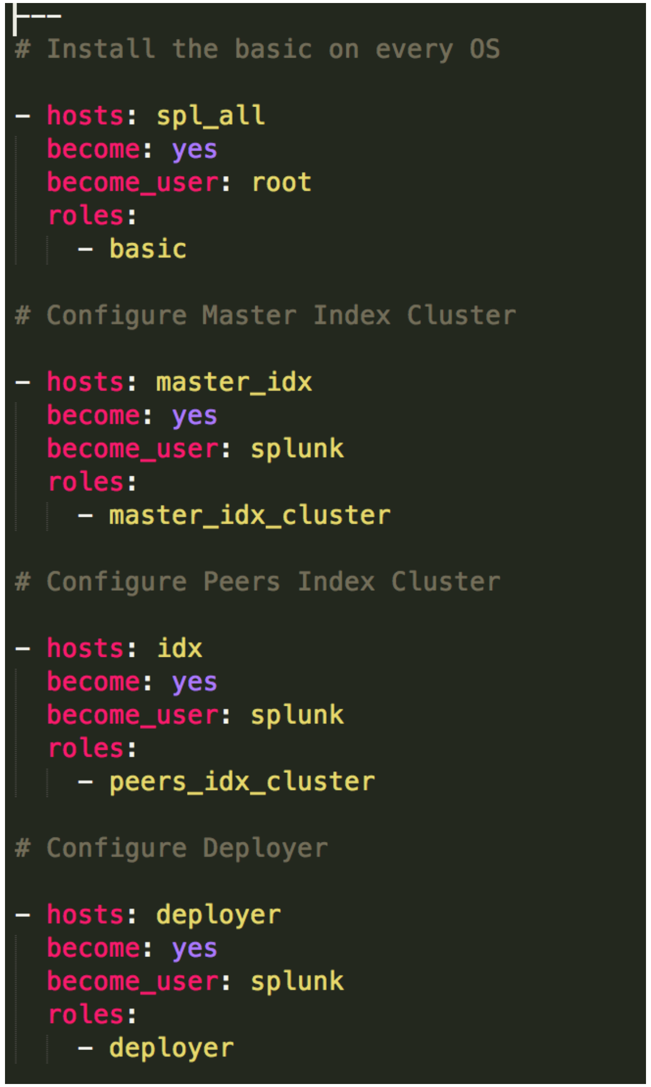
https://www.splunk.com/blog/2014/07/12/deploying-splunk-securely-with-ansible-config-management-part-1.html

Host File

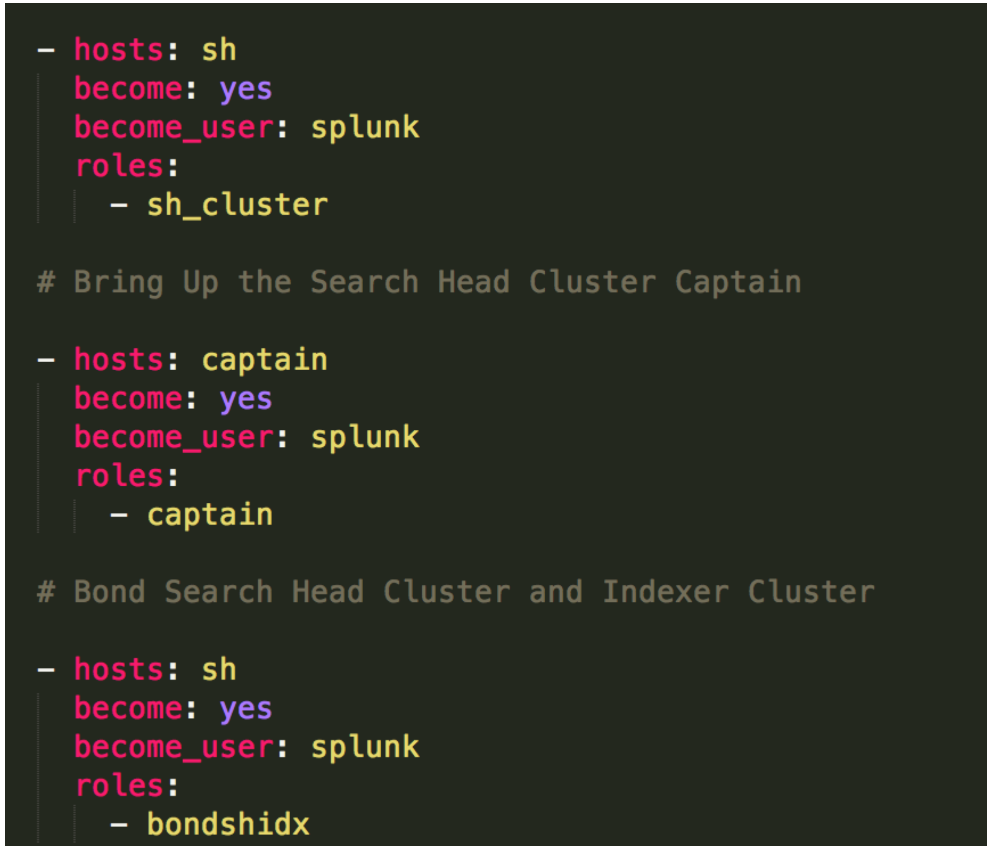


```
# Every IPs

[spl_all]
172.16.199.10   ansible_connection=ssh  ansible_user=rss
172.16.199.20   ansible_connection=ssh  ansible_user=rss
172.16.199.30   ansible_connection=ssh  ansible_user=rss
172.16.199.40   ansible_connection=ssh  ansible_user=rss
172.16.199.50   ansible_connection=ssh  ansible_user=rss
172.16.199.60   ansible_connection=ssh  ansible_user=rss

# Search Head Ips

[sh]
172.16.199.10   ansible_connection=ssh  ansible_user=rss
172.16.199.20   ansible_connection=ssh  ansible_user=rss
172.16.199.30   ansible_connection=ssh  ansible_user=rss

# Indexer Cluster Master

[master_idx]
172.16.199.60   ansible_connection=ssh  ansible_user=rss
```

Playbook

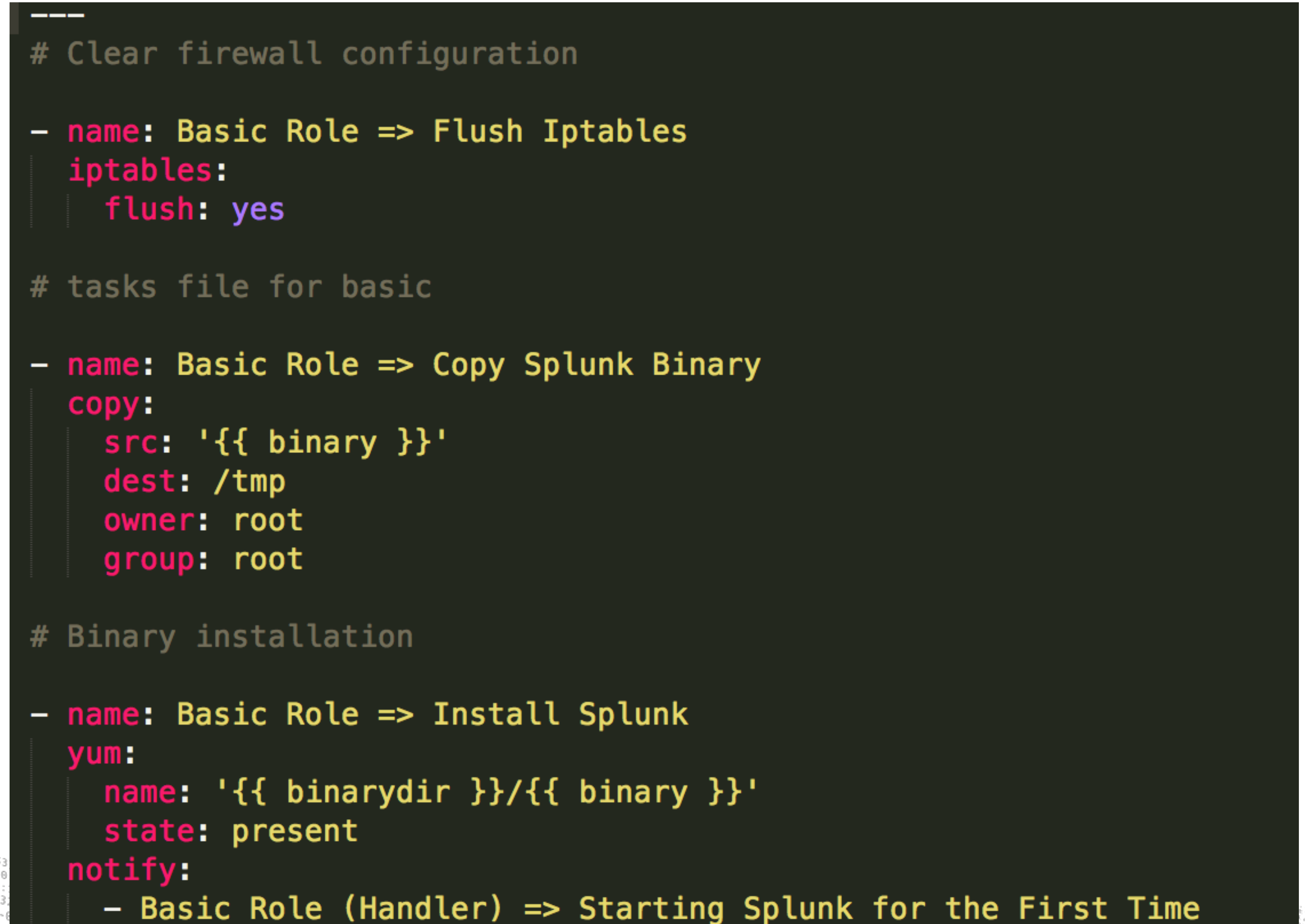


```
---
# Install the basic on every OS

- hosts: spl_all
  become: yes
  become_user: root
  roles:
    - basic

# Configure Master Index Cluster

- hosts: master_idx
  become: yes
  become_user: splunk
  roles:
    - master_idx_cluster

# Configure Peers Index Cluster

- hosts: idx
  become: yes
  become_user: splunk
  roles:
    - peers_idx_cluster

# Configure Deployer

- hosts: deployer
  become: yes
  become_user: splunk
  roles:
    - deployer
```



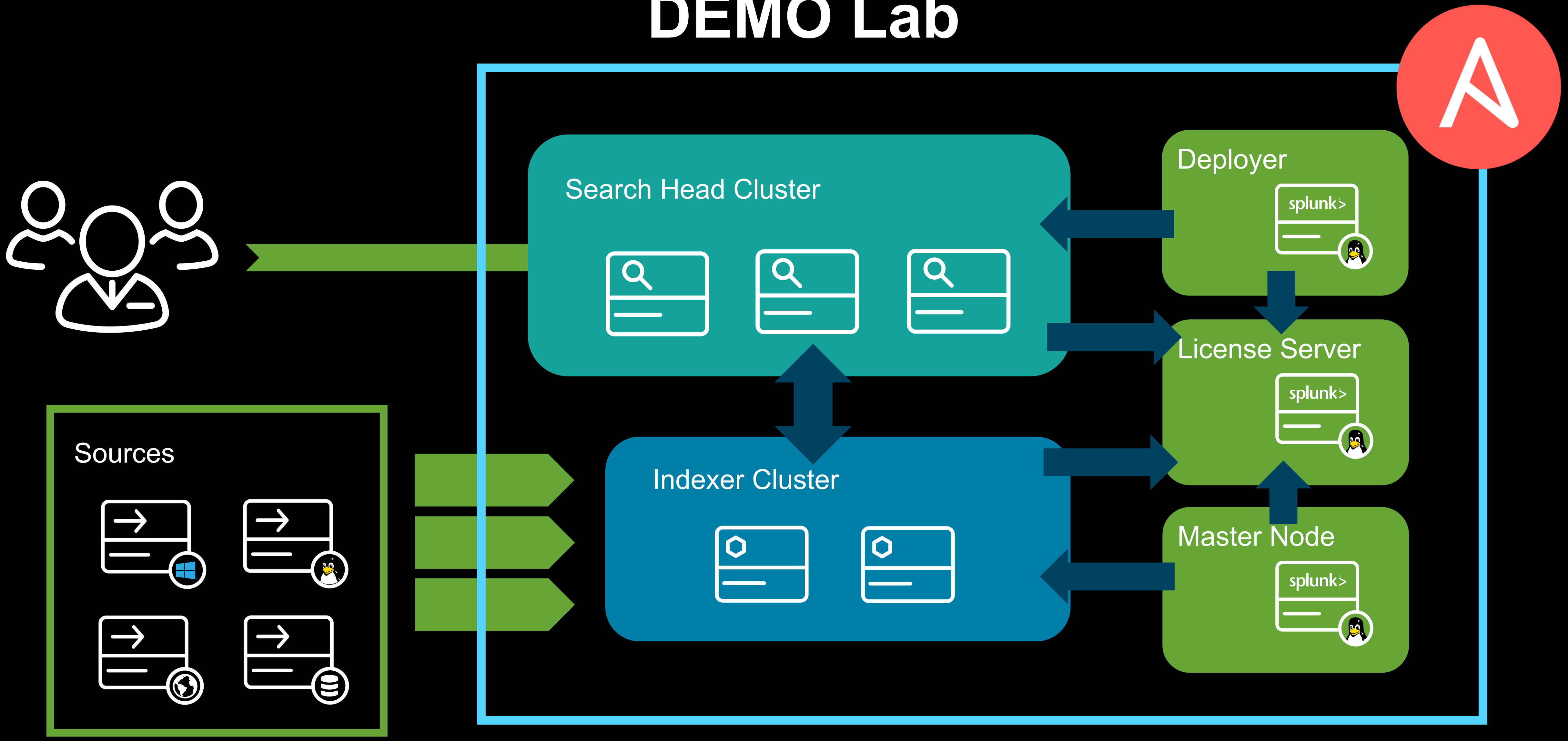
```
- hosts: sh
  become: yes
  become_user: splunk
  roles:
    - sh_cluster

# Bring Up the Search Head Cluster Captain

- hosts: captain
  become: yes
  become_user: splunk
  roles:
    - captain

# Bond Search Head Cluster and Indexer Cluster

- hosts: sh
  become: yes
  become_user: splunk
  roles:
    - bondshidx
```

Roles



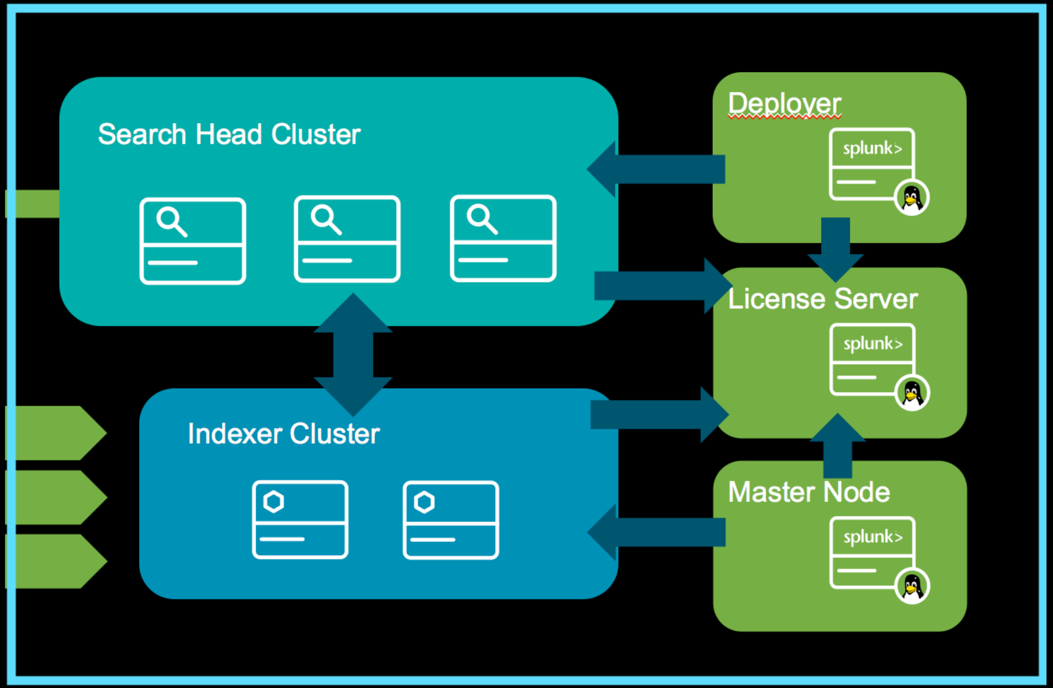
```
---
# Clear firewall configuration

- name: Basic Role => Flush Iptables
  iptables:
    flush: yes

# tasks file for basic

- name: Basic Role => Copy Splunk Binary
  copy:
    src: '{{ binary }}'
    dest: /tmp
    owner: root
    group: root

# Binary installation

- name: Basic Role => Install Splunk
  yum:
    name: '{{ binarydir }}/{{ binary }}'
    state: present
  notify:
    - Basic Role (Handler) => Starting Splunk for the First Time
```

DEMO Lab


Search Head Cluster
Deployer
splunk>
License Server
splunk>
Sources
Indexer Cluster
Master Node
splunk>

DEMO Walkthrough

- Deploy Splunk binary
- Install Splunk on every node
- Configure Index cluster
- Configure Search Head cluster
- Configure Deployer and Master Node
- Connect everything!! (:



Splunk Cluster Implementation Demo

Ansible Playbooks

Lessons Learned

1. Using an automation tool reduces the efforts of implementation and support while deploying a Splunk Cluster environment

2. Anyone could be able to execute advanced task, even without the right knowledge.

3. Every task will be executed using always the same steps

Github

- All playbooks used in this talk will be available at the link below:

https://github.com/rodsansil/ansible_splunk_cluster

References

- https://github.com/divious1/splunk-ansible-advance/blob/master/README.md
- https://www.splunk.com/blog/2014/07/12/deploying-splunk-securely-with-ansible-config-management-part-1.html
- *"Ansible for DevOps"*, Jeff Geerling
- https://docs.ansible.com
- https://www.splunk.com
- http://www.devopsbookmarks.com/orchestration
- http://zigispace.net/m/839

Q&A

Rodrigo Silva | Tempest Security Intelligence

Thank You

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