

Constructing Really Good Infrastructure as Code



Nick Russo

NETWORK ENGINEER

@nickrusso42518 www.njrsmc.net



Agenda



Set theory refresher

Custom filter to help with infra as code

... with unit tests!

The grand finale demo

A new challenge



```
>>> letters = {'a', 'b', 'c', 'd'}
```

```
>>> numbers = {0, 1, 2, 3, 4}
```

```
>>> ps_courses = {'icmp deep dive', 'igmp/mld deep dive'}
```

```
>>> type(letters)
```

```
<class 'set'>
```

What Is a Set?

An unsorted collection of unique elements



```
>>> A = {1, 2, 3, 4, 5}
```

```
>>> B = {1, 3, 5, 7, 9}
```

```
>>> A - B
```

```
{2, 4}
```

```
>>> B - A
```

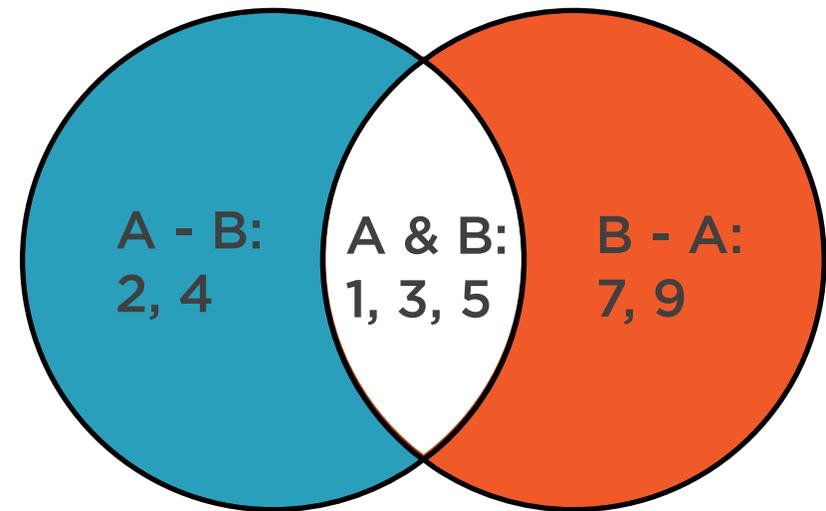
```
{9, 7}
```

```
>>> A & B
```

```
{1, 3, 5}
```

A = {1, 2, 3, 4, 5}

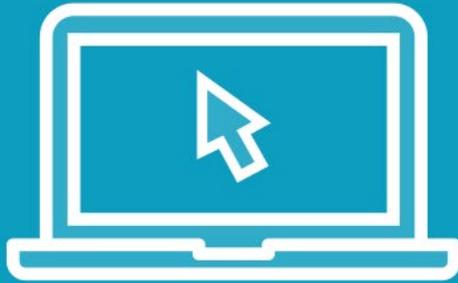
B = {1, 3, 5, 7, 9}



◀ Set intersection for verification



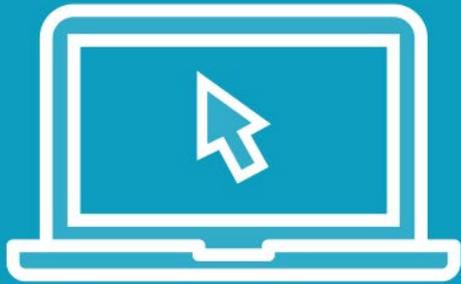
Demo



Set theory to the rescue



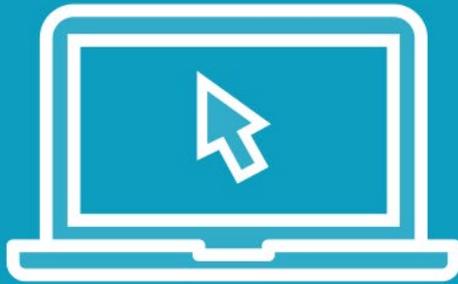
Demo



Rolling it into a filter



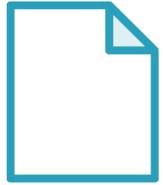
Demo



Don't forget the unit tests



Solution Overview



Config file



Inventory



Variables

Play 1

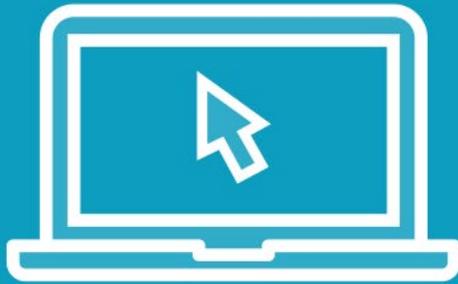
- Get config
- Parse RTs*
- Set diff*
- Push change
- Log change



```
{% for each vrf %}  
  {% Add RT im %}  
  {% Del RT im %}  
  {% Add RT ex %}  
  {% Del RT ex %}
```



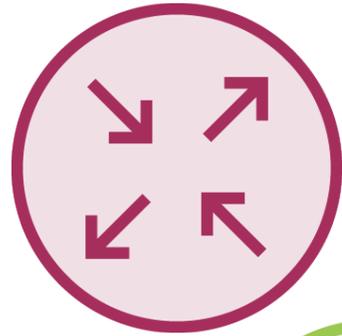
Demo



The grand finale



Challenge: Multi-vendor Support



CLI-based IAC in Review

**Set theory and
custom filters**

**Many components
to integrate**

**Can we simplify
our design?**

