

2014



# THE RETURN OF THE ...





~~2014~~ 2018



# THE RETURN OF THE ...





# WARNING

This talk may contain comments or opinions that at times may differ with those of cisco systems.

The views expressed here do not necessarily reflect those of cisco systems. Audience discretion is advised.

WHY



# THE ARMY

DOUBLE-CLICK TO EDIT

# INFOSEC PANIC





“It is not necessary to change. Survival is not mandatory.”

- W. EDWARDS DEMING







#>./WHOAMI

MOSES FROST  
WWW.RENEGADE.BLOG  
I WORK [@] CISCO

\*THIS IS WHAT I GOT FOR CHRISTMAS





The industry today.



Software deployment is all of the activities that make a software system available for use.

[HTTP://EN.WIKIPEDIA.ORG/WIKI/SOFTWARE\\_DEPLOYMENT](http://en.wikipedia.org/wiki/Software_Deployment)



DEPLOYS

10M+ tests.

Google



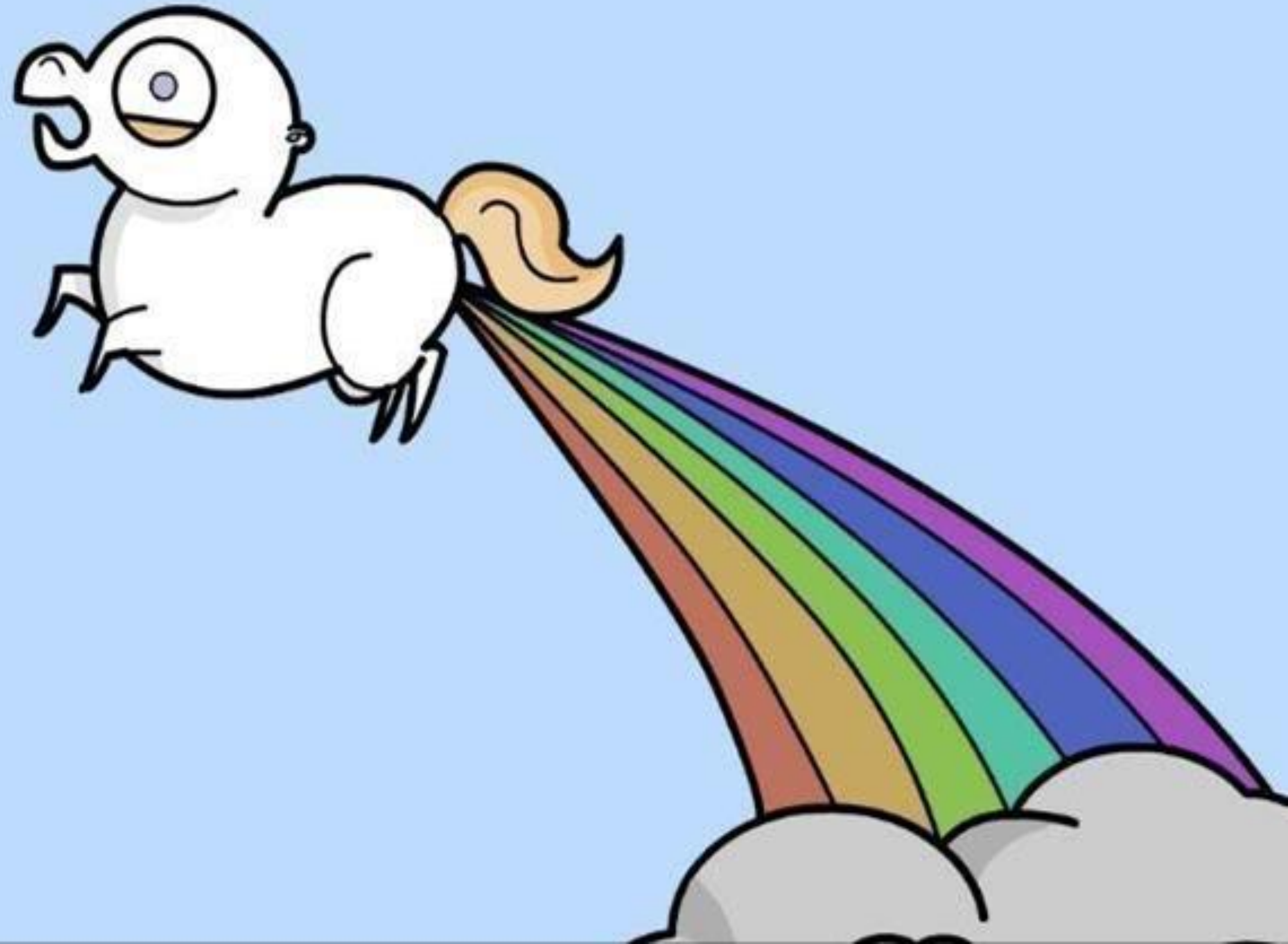


How



DEV + OPS : 2014

# WORKING TOGETHER





The Journey: 2018

# NetDevOps





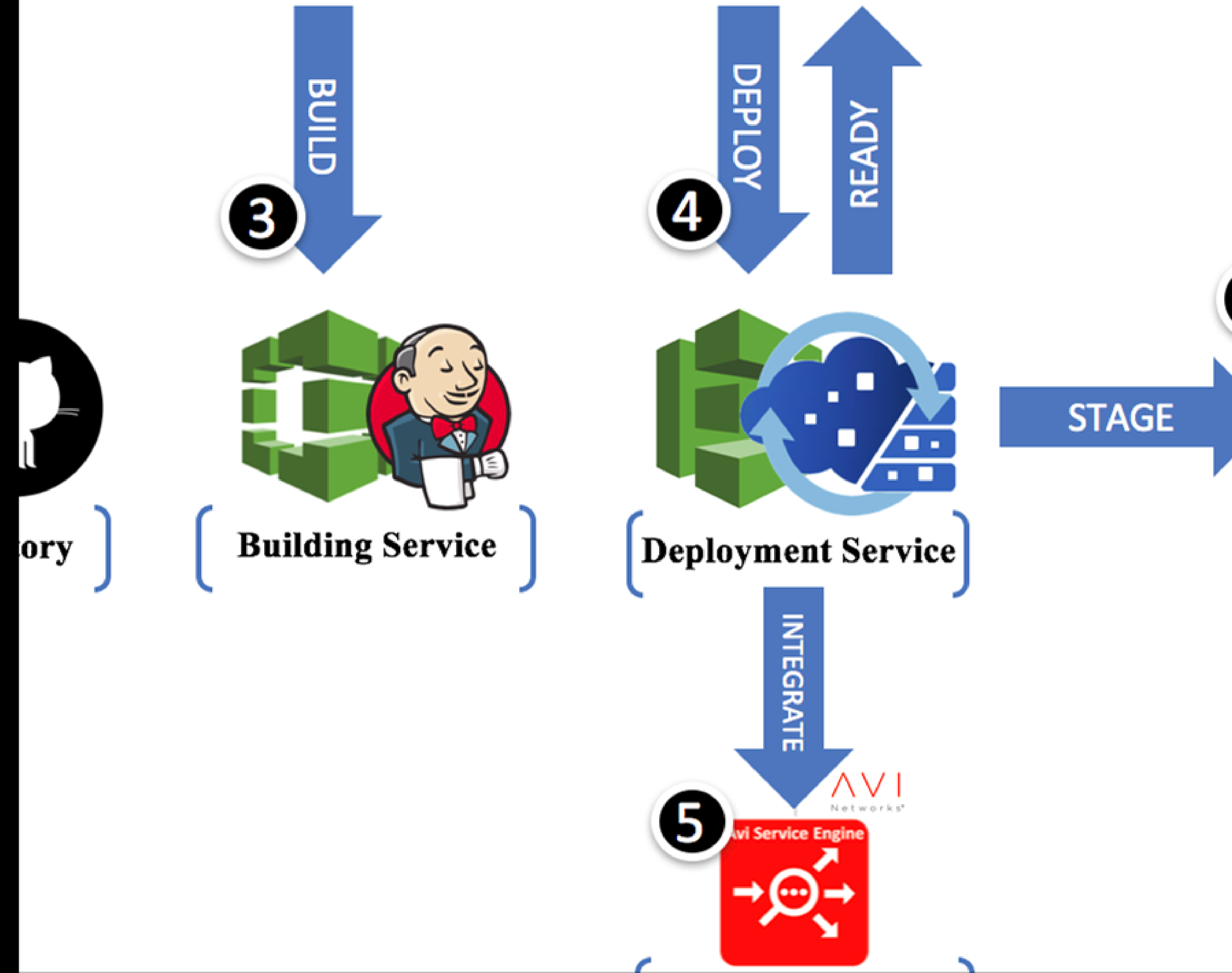


# CI/CD BluePrint Steps

AWS Code Pipeline #CICD Ser

CI/CD/CD

Continuously Continuous





HOW

## Does NetDevOps Work?

- ❑ Stop Using the CLI.
- ❑ Use a CI/CD tool
- ❑ Use a Source Code Repo
- ❑ Automate Deployments
- ❑ Automate Testing
- ❑ Automate Teardowns
- ❑ Stop using the CLI.



Our tools used to suck.



User Access Verification

Username: root

Password:

Switch60#

Switch60#

Switch60#

Switch60#

Switch60#

Switch60#

Switch60#



User Access Verification

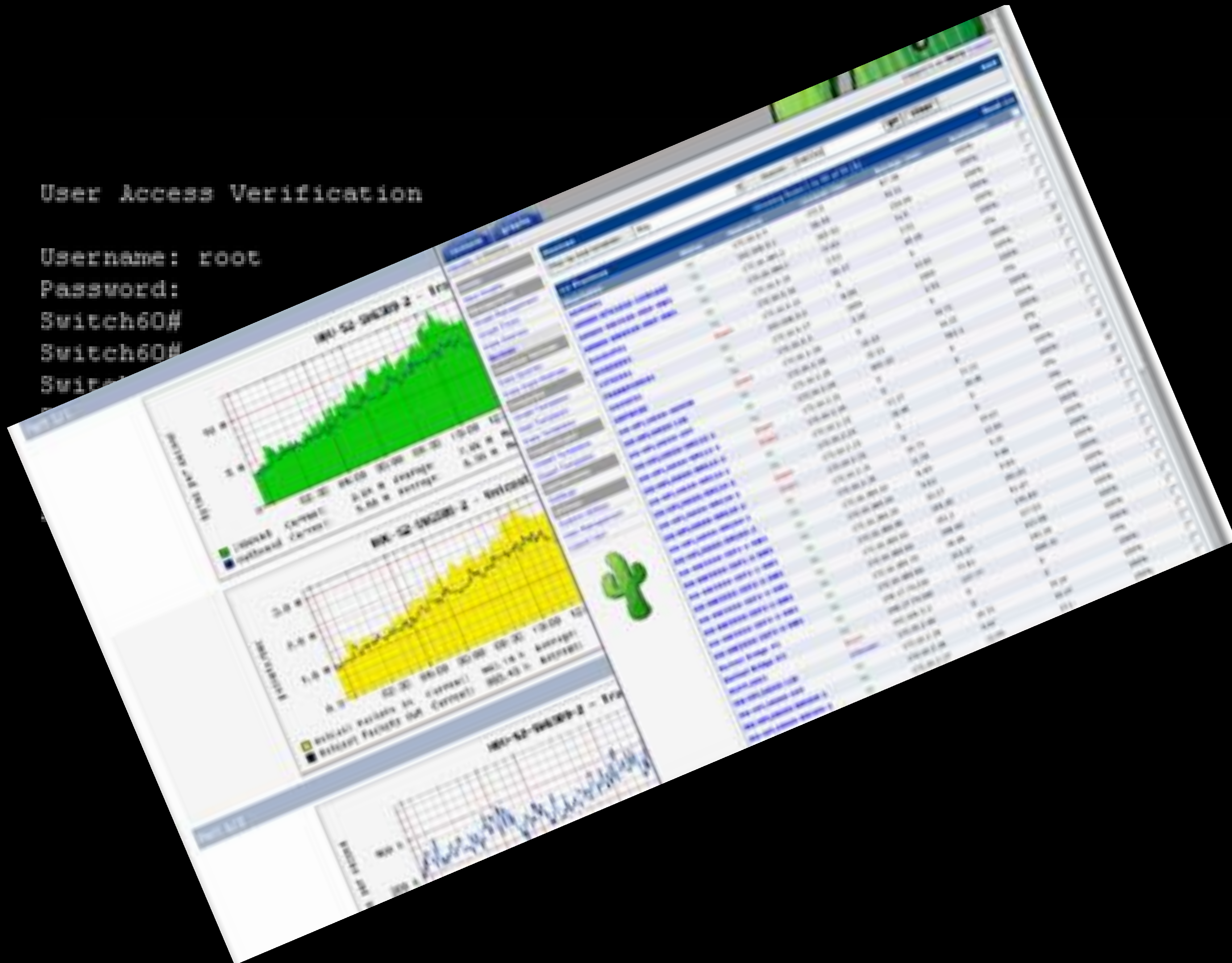
Username: root

Password:

Switch60#

Switch60#

Switch60#





Scale







# Tools getting better

## Primitive:

Notepad / Config Archive

## Advancing:

Python Libraries

Source Code Repo's

## Advanced:

Ansible, Puppet, Chef

CI/CD Pipelines for Deployments

Network as Code

Regressions and Roll back



What kind of magic is this?



**It took Ralph six minutes to realize the balloon wasn't going to come back.**



Security

**WHERE ARE THEY?!?!**



# The story



# The story





# The story

Software Deployments





# The story

Deployment Tools

Software Deployments



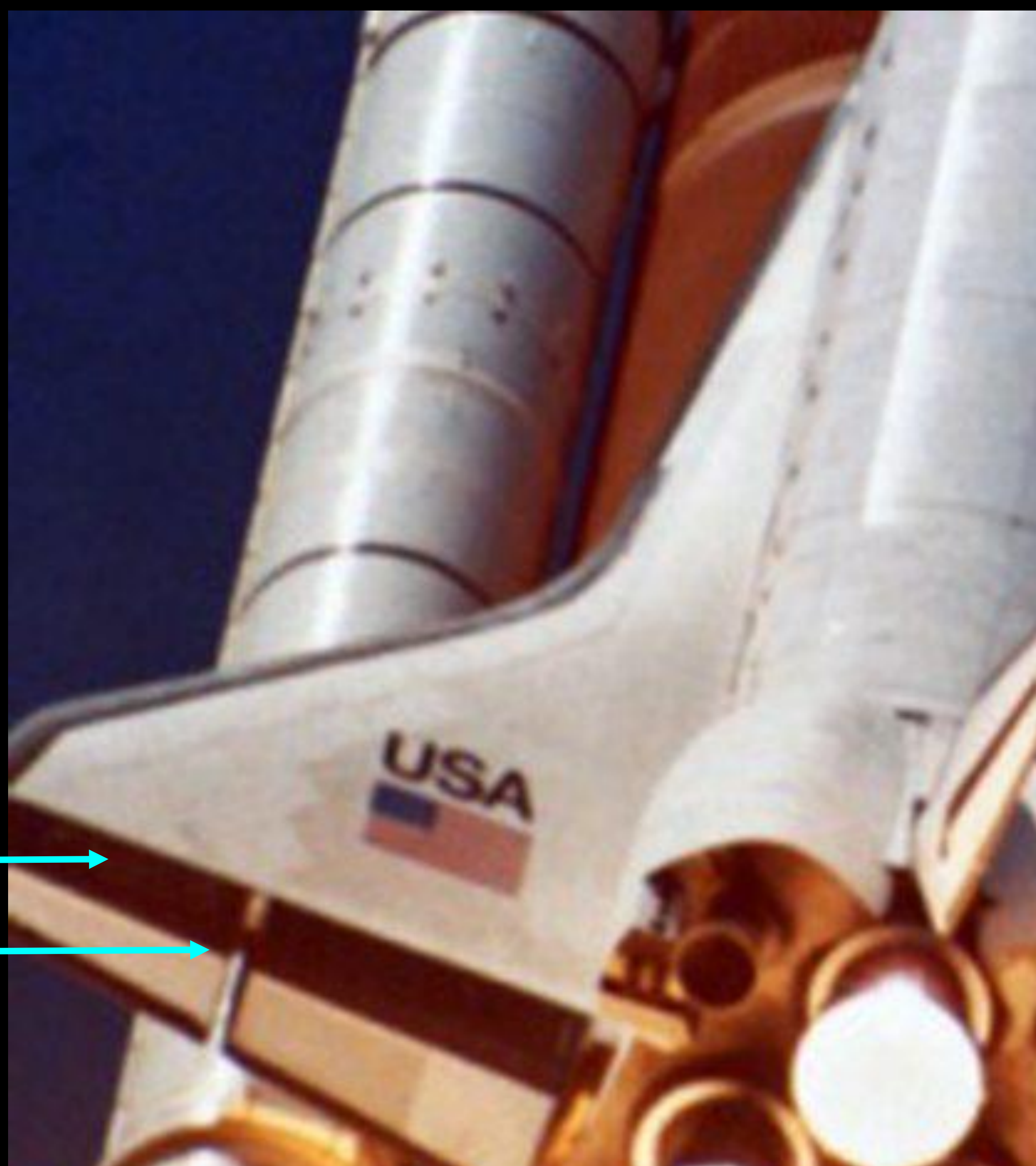


# The story

Server Builds

Deployment Tools

Software Deployments





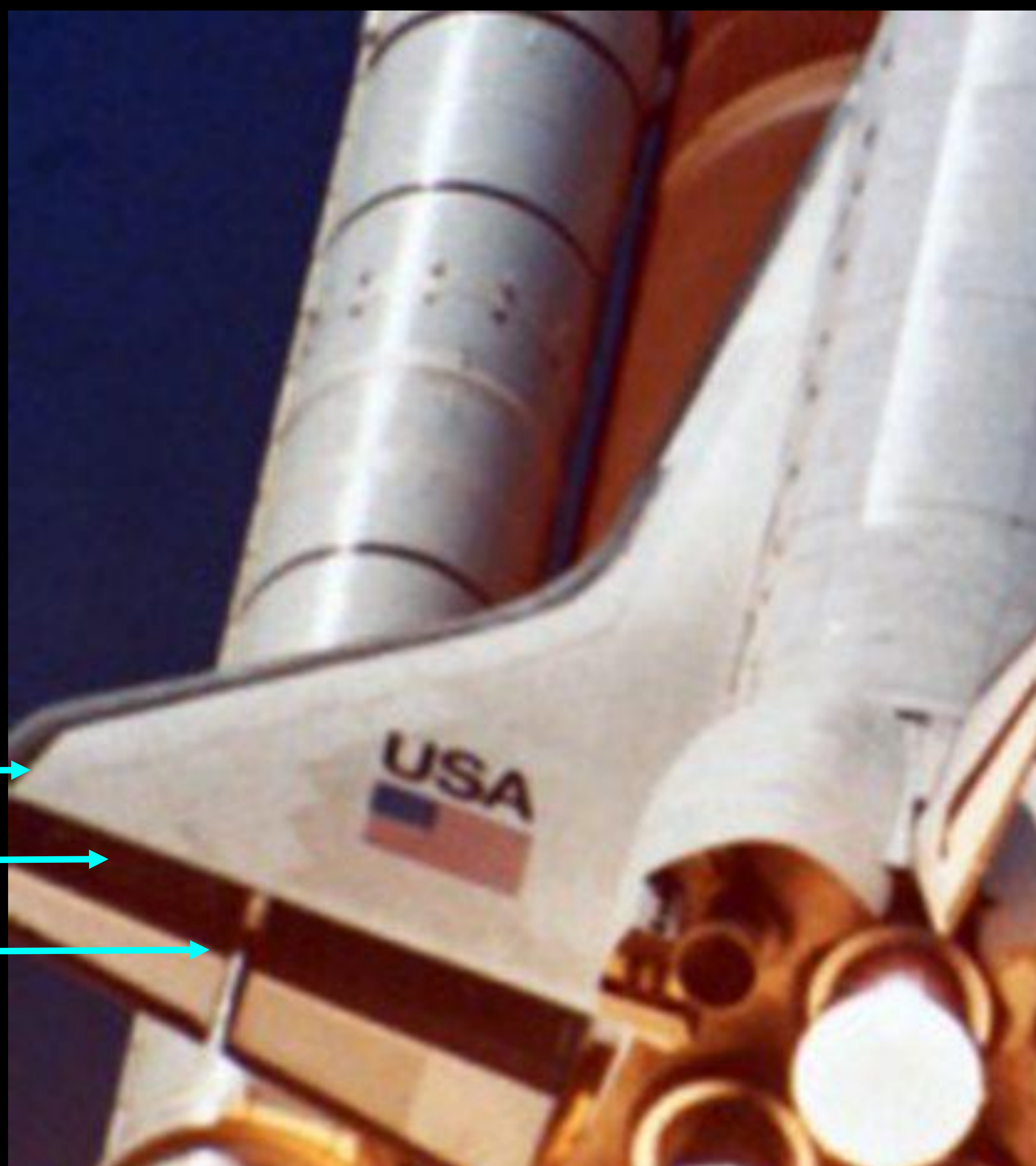
# The story

Server as Code Tools

Server Builds

Deployment Tools

Software Deployments





# The story

Network Builds?

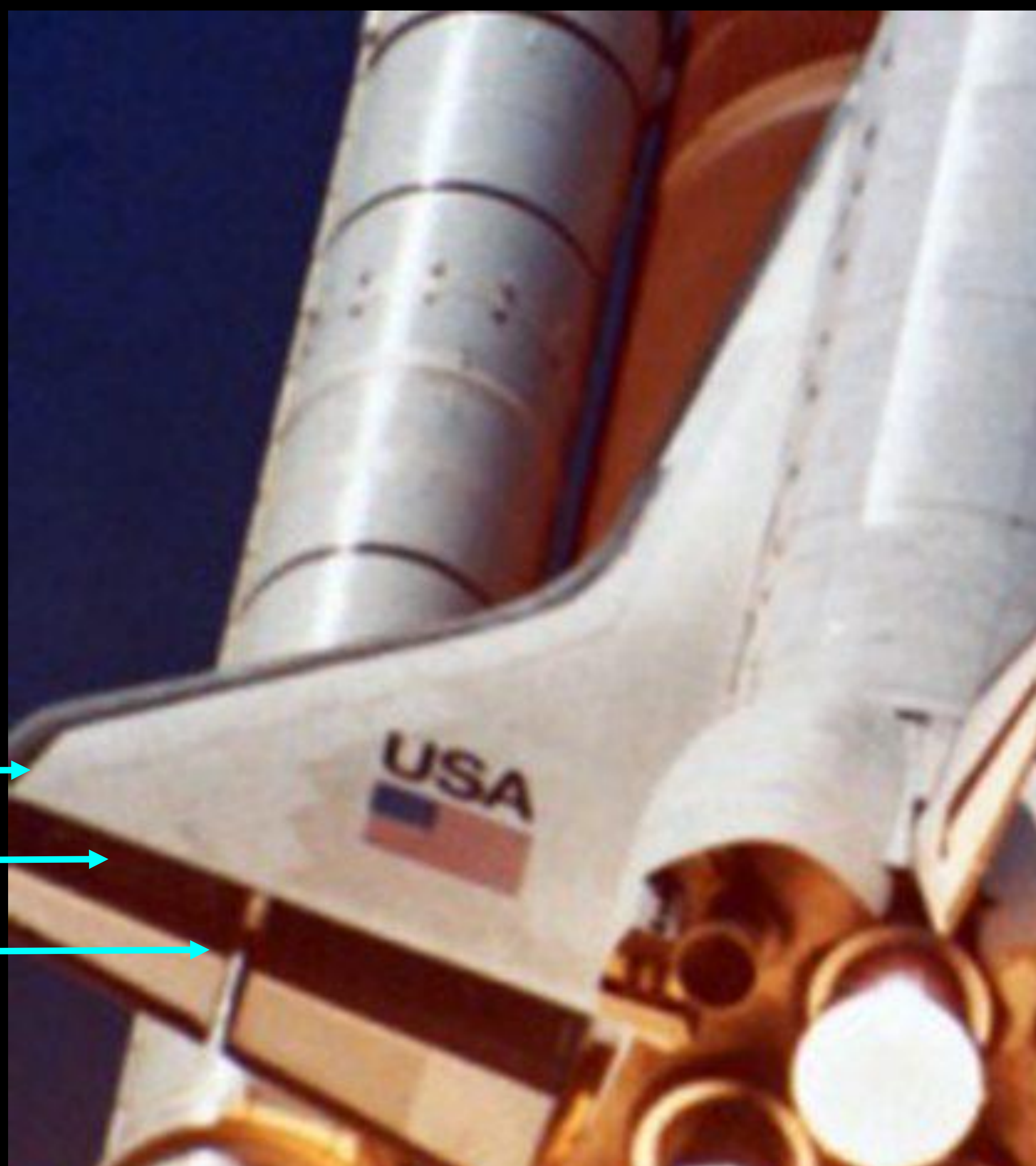
...

Server as Code Tools

Server Builds

Deployment Tools

Software Deployments





# THE ARMS RACE

Culture

People > Tools

Velocity

Time to Market





# Culture



## Working culture:

- We all use one tool
- We all deploy in one way
- We are all a tribe

## Potentially Broken Culture:

- We may or may not use many tools
- We all deploy and do things differently
- We are multiple factions doing things as we like.



# CULTURE IN THE FAILURE DOMAIN



Fight Club

# Security Lives in the Failure Domain





# QUESTIONS WE SHOULD BE ASKING

- If we all use different tools how can we provide the 'same' security levels?
- If we are all doing different things how many of us need to support how many of them?
- How can we not fail at what we are doing?

# BURN THE WITCH

“As soon as we try to simplify down failure to the miscues and mistakes of a few individuals in this system  
...”

“...We deny ourselves an immense amount of learning and understanding.”

-SIDNEY DEKKER, DEVOPS CAFE





“In these complex systems managing complex system, We are just actors more than people in control.”

-ME

THE FIRST LESSON TO GO HOME WITH:

“Failure is, **in a sense**, a good thing.”

- SIDNEY DEKKER





How does this apply

Actual insertion points.

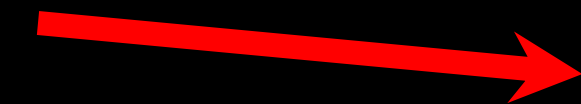
Am I managing an individual device?



# How does this apply

Actual insertion points.

No, we are managing  
Configuration as Code



Am I managing an  
individual device?





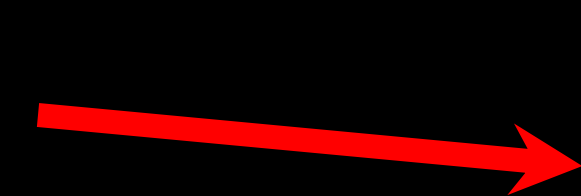
# How does this apply

Where do I apply Security?



Actual insertion points.

No, we are managing Configuration as Code



Am I managing an individual device?



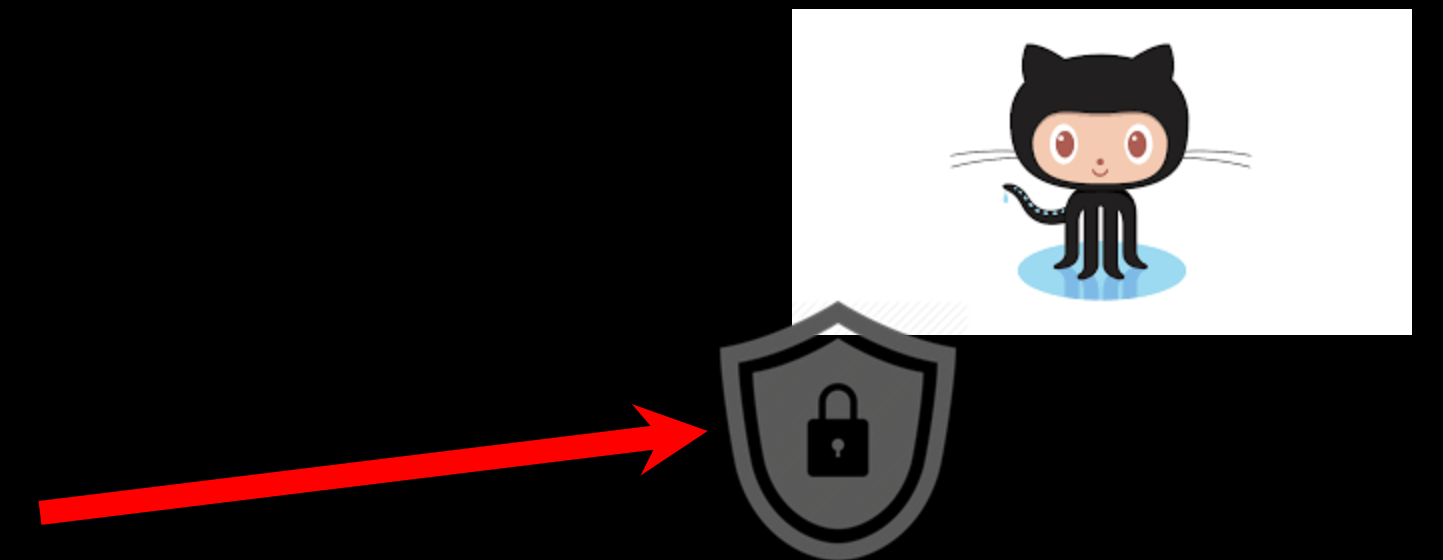
# How does this apply

Where do I apply Security?

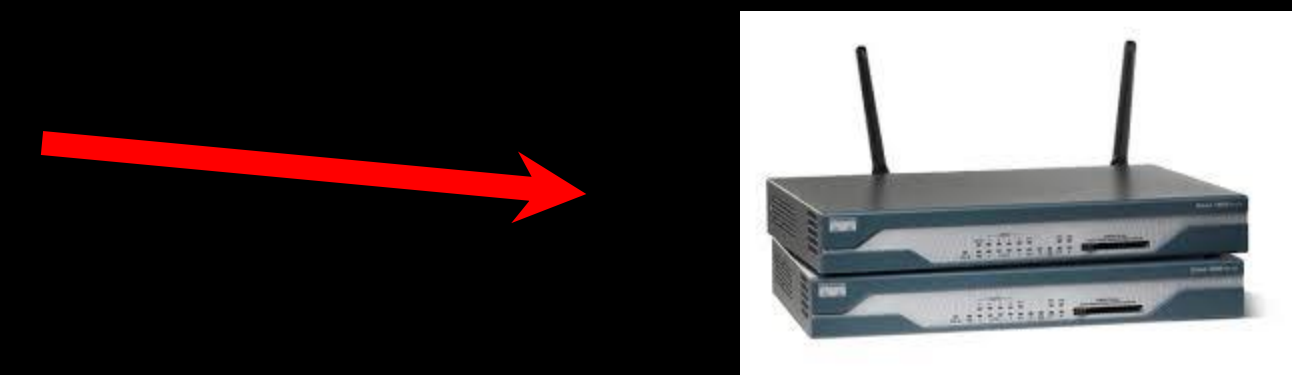


Actual insertion points.

Audit and change configurations



Am I managing an individual device?





# How does this apply

Where do I apply Security?



Actual insertion points.

Audit and change configurations  
Have the same set of security standards cross company



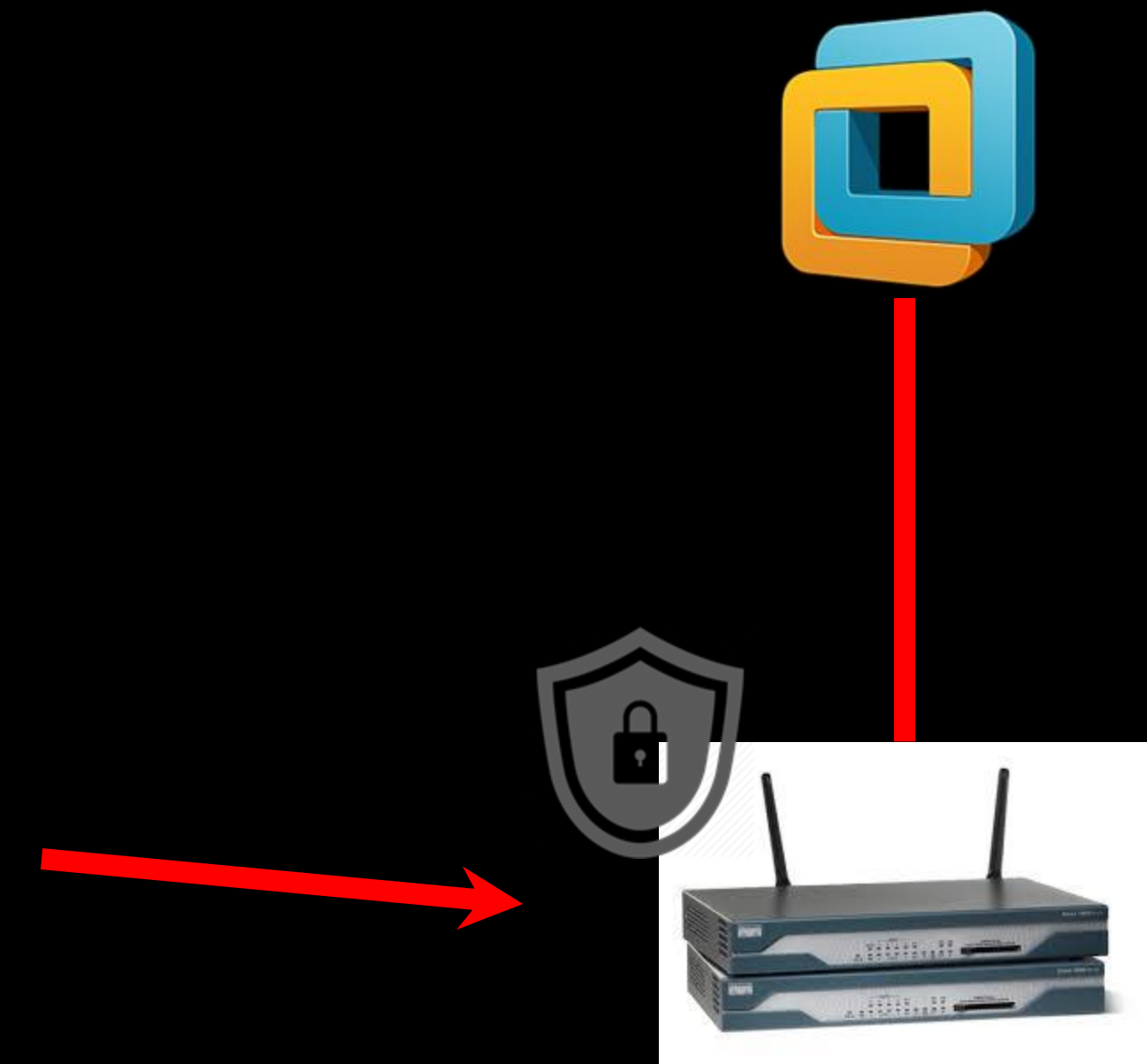
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Actual insertion points.

Have the same set of security standards cross company





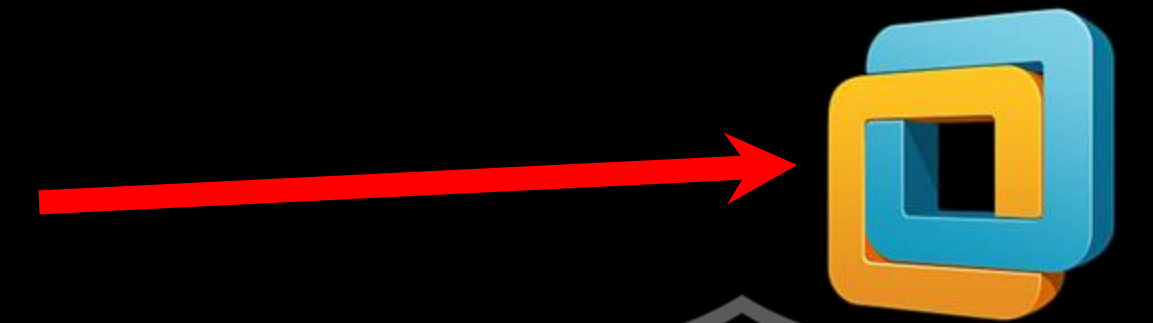
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Where do I apply Security?

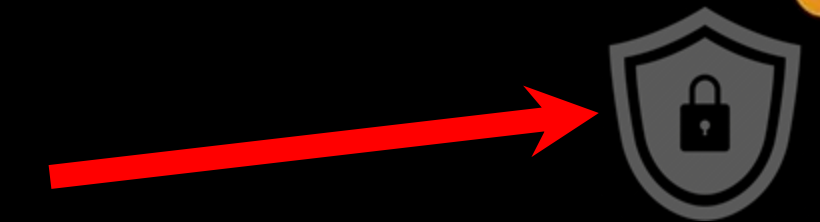


Actual insertion points.

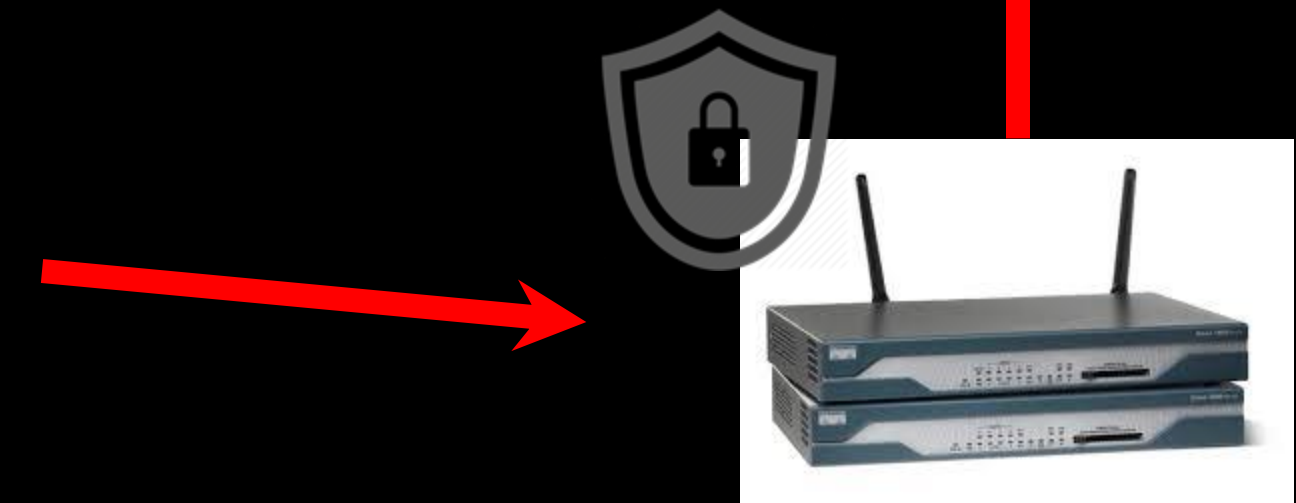
OS Level, App Level



Is this in the code repo?



Have the same set of security standards cross company



Now we can roll back “one-off” changes



Stop using the CLI





Everyone vs SECURITY

First was software at scale







Everyone vs SECURITY

First was software at scale  
Then was servers







Everyone vs SECURITY

First was software at scale  
Then was servers  
Now the network





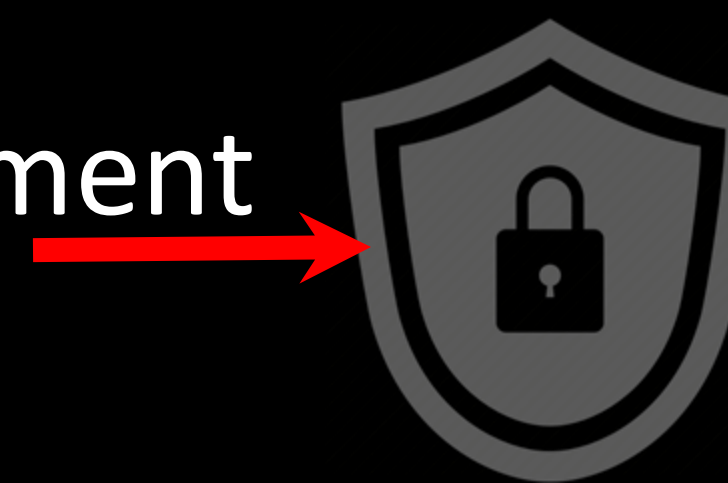
Security individuals may assume they are next

They are wrong



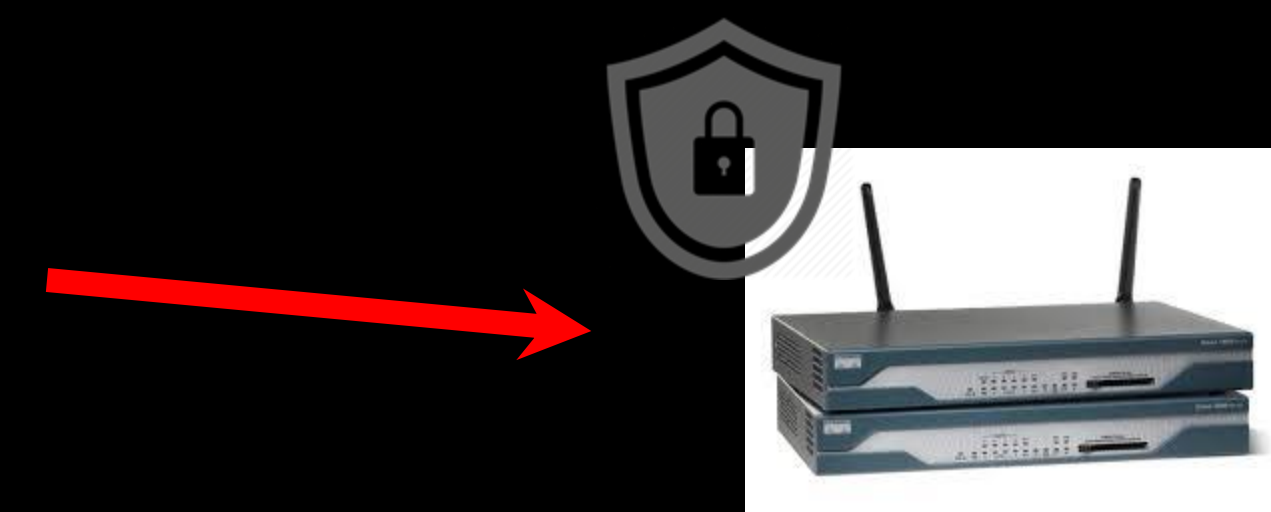
How does this apply

I work on the deployment  
team



Who does the insertion?

Network Level



# How does this apply

I work on the deployment team



Who does the insertion?

OS Level, App Level



Network Level





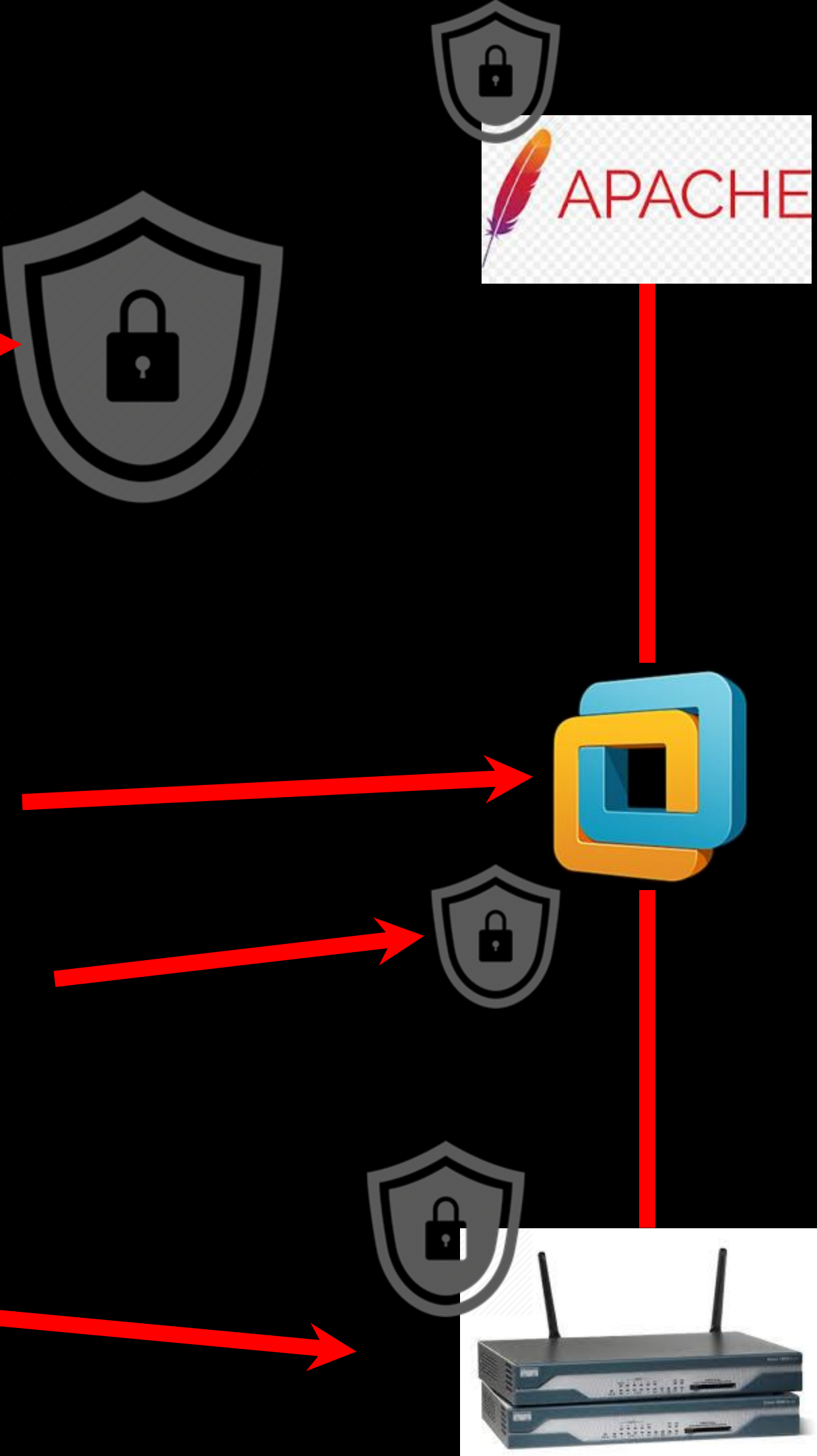
# How does this apply

Who does the insertion?

I work on the deployment team

OS Level, App Level  
I work on the Server  
DevOps team

Network Level





SILOS



BEAUTIFUL AREN'T THEY.





“We actually trust people” \*

- CHAD DICKERSON, CTO ETSY

Auditors are trained NOT to trust people.





CALL TO ACTION

So what does this mean for us?







25 years ago

Everything was a black box

API

```
#_  
>_  
C:\>_
```





25 years ago

Everything was a black box

Tools

```
>parse config.txt
```

```
#####
```

```
#####
```

```
#####
```

```
#####
```

```
snmp-community string ....
```



Today

Everything is moving to API  
first

“CLI”

development:

snmp:

string: “superstrongstring”

productoin:

snmp:

strings: [SECRET\_STRING]





Today

Flexibility  
Speed  
Scale

“Tools”

[Insert novel idea here]

# Thanks

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[devnet.cisco.com](https://devnet.cisco.com) 