



Dr. Jenkins, M.D., at Your Service:

An overview of Jenkins at
Cerner Corporation

Robert Langenfeld – Software Engineer
Cerner Corporation
www.cerner.com

Oct. 23, 2014

#jenkinsconf

Robert Langenfeld – Cerner Corporation

- Software Engineer
- Automation Development
- Developed for Jenkins for 3 years



Agenda

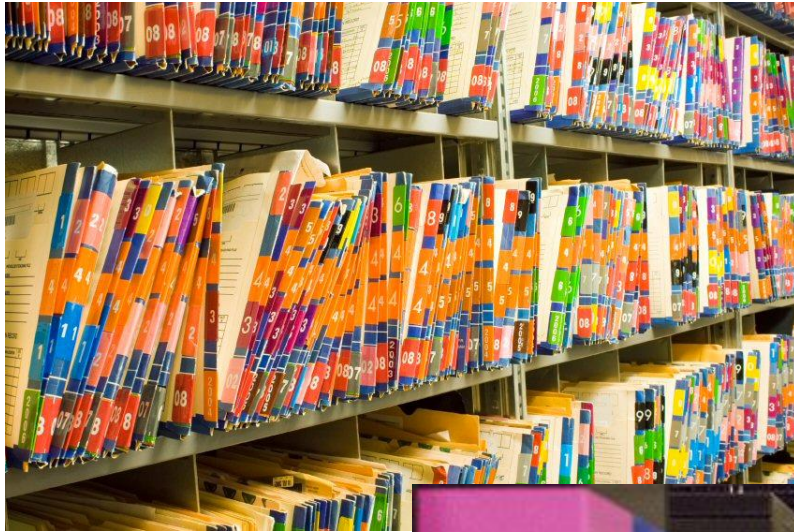
- Who is Cerner?
- Jenkins at Cerner
- Automation Efforts with Jenkins
- Jenkins and the Cloud
- Mobile Development with Jenkins
- Review/Success Stories
- Questions



About Cerner

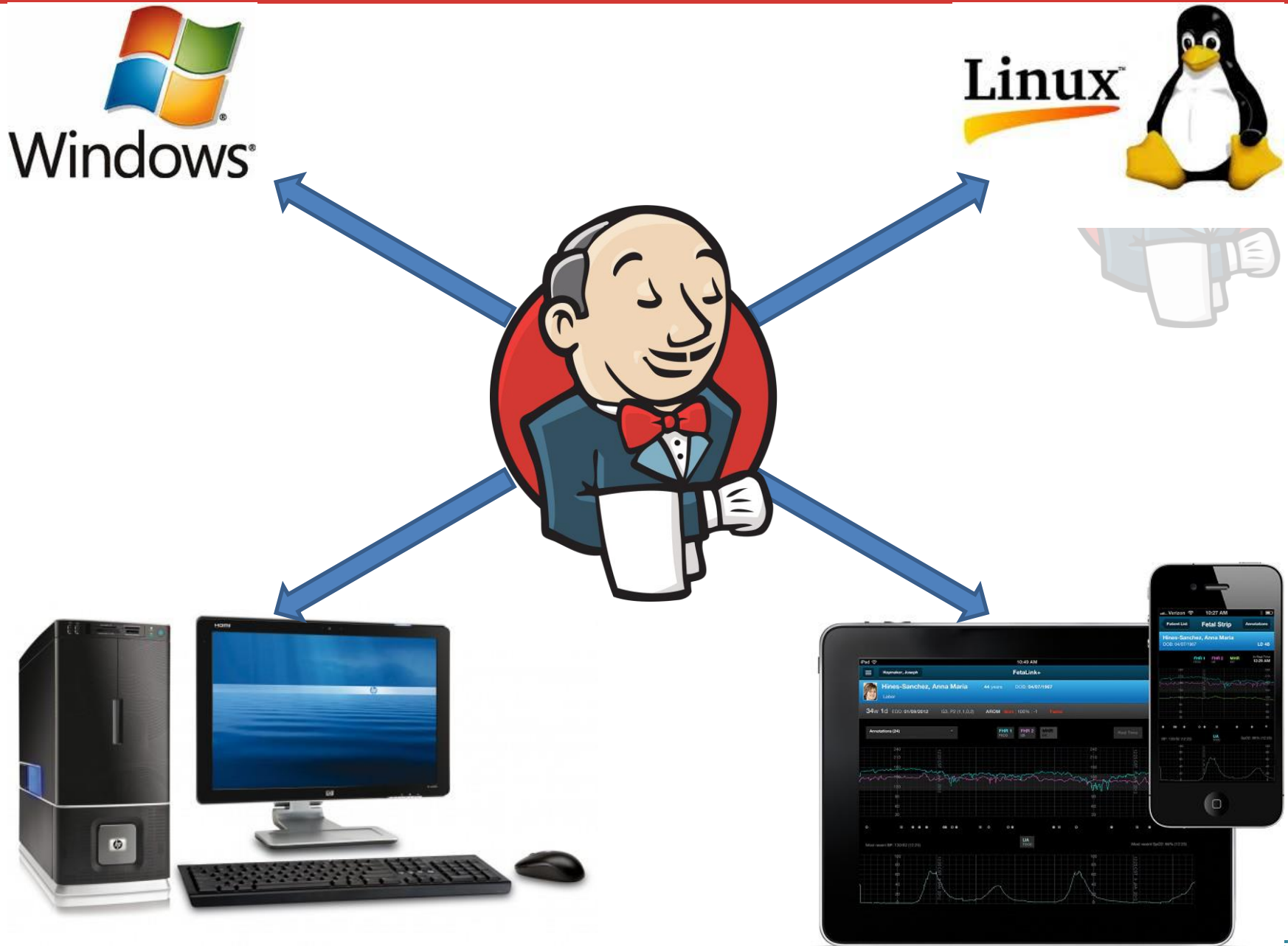
- Healthcare IT
- Founded in 1979
- 14000 Clients
 - 24 Countries
- 2013 Revenue: \$2.9 Billion
- 15000 associates





**Traditional
paper records
vs
EMR**



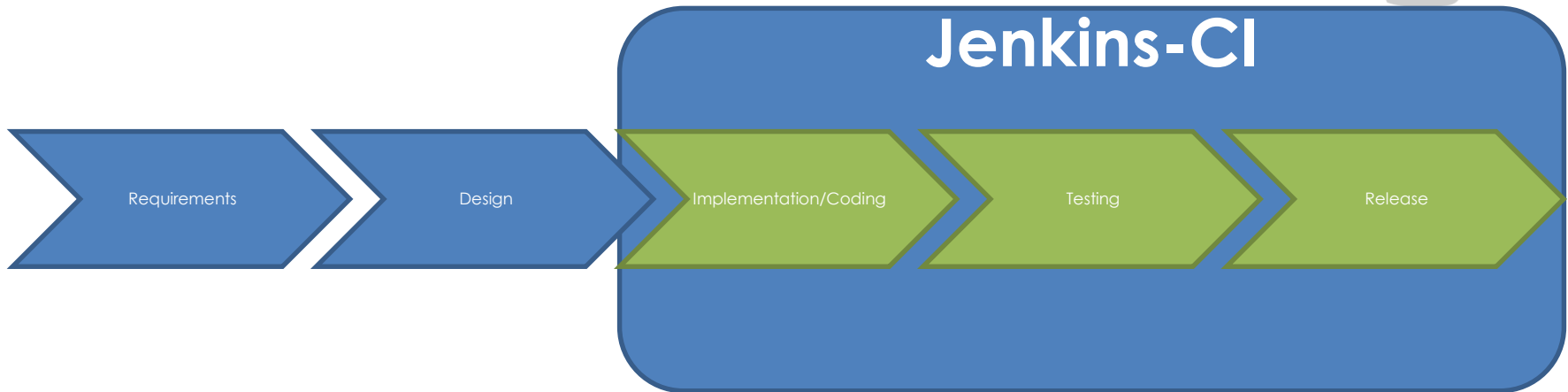


Jenkins at Cerner

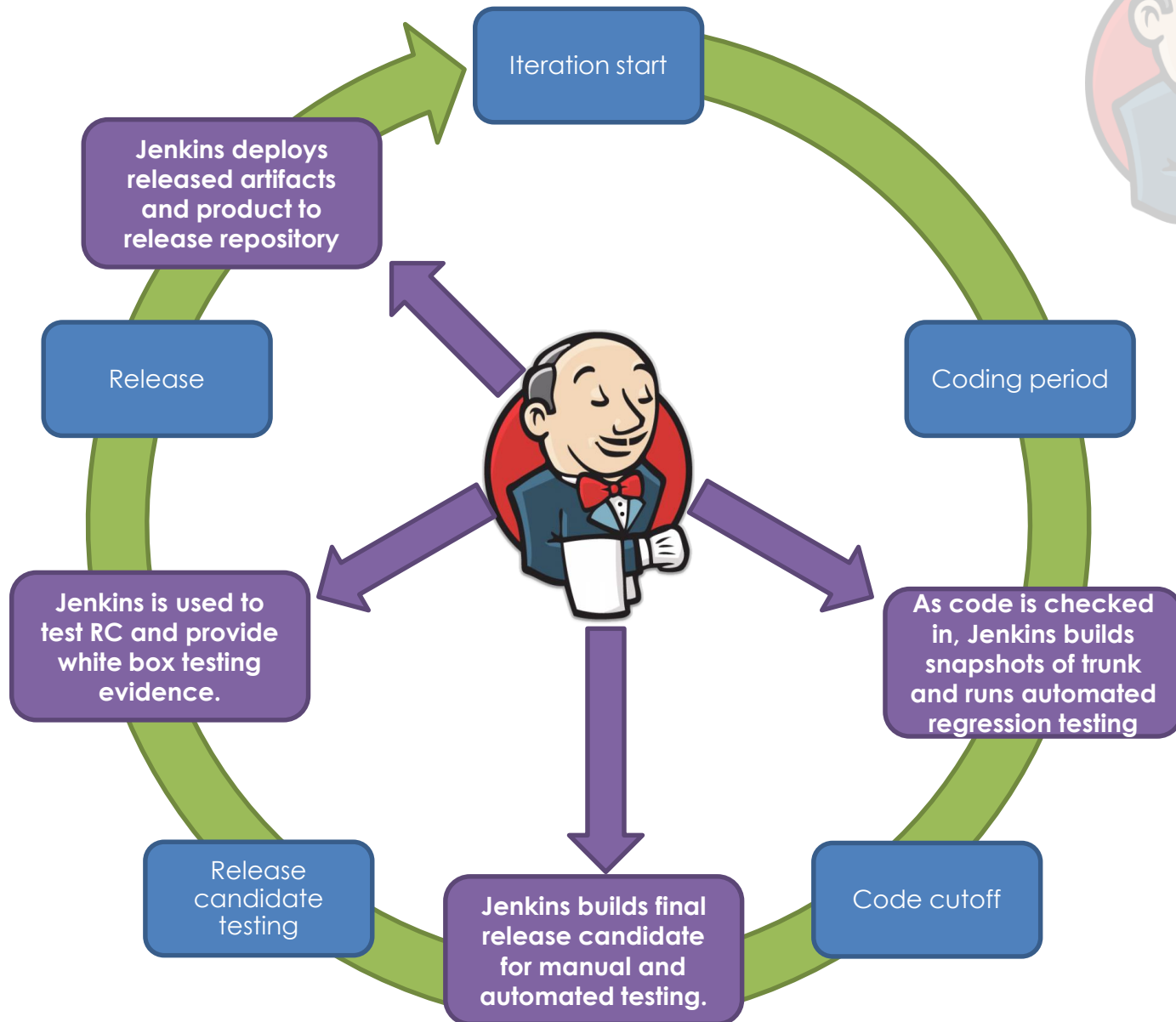


- Started with Hudson
- Switched from Hudson to Jenkins, starting in 2012
- Integral part of development process

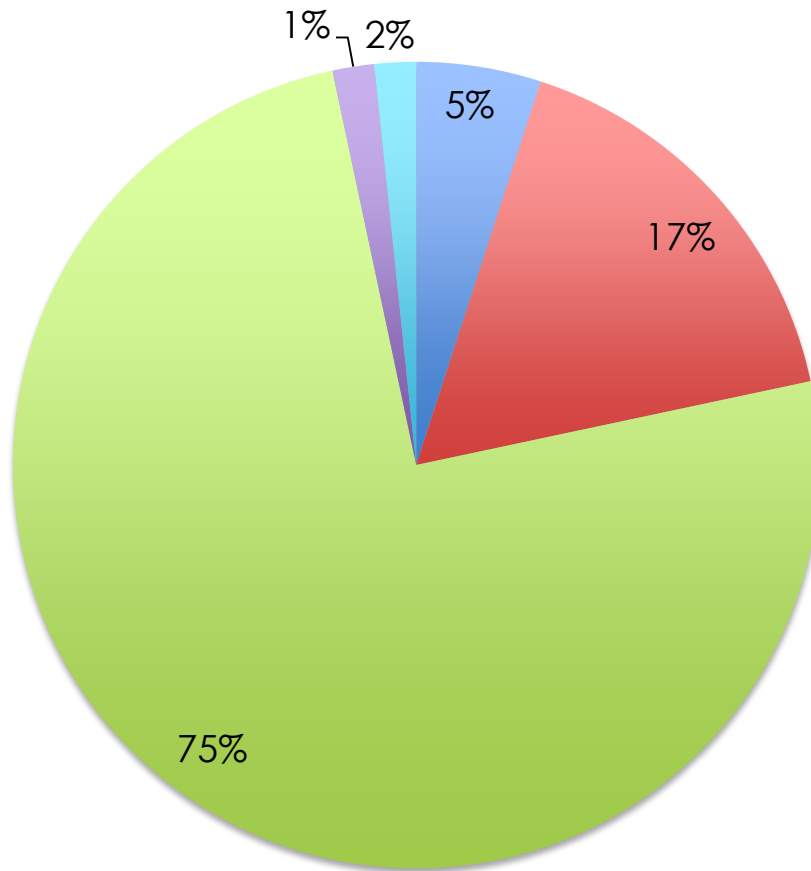
Standard Development Process



Jenkins in Cerner's Agile Process



Jenkins at Cerner



- Solution Designers
- Test Analysts
- Developers
- System Engineers
- Delivery Consultants

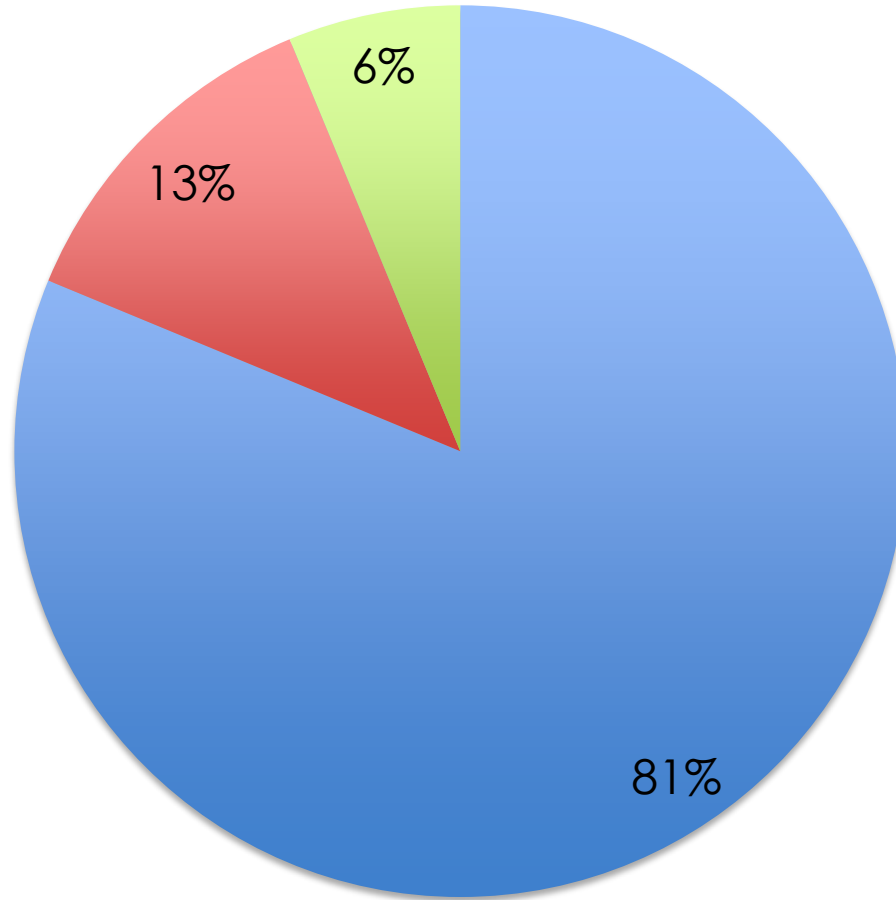


Usage by Role



- Solution Designer
 - Helps shape the look, feel, and functionality
- System Engineer
 - Ensures domains and servers are running and functional
- Delivery Consultant
 - Works directly with client to implement solutions

Frequency of Use of Jenkins

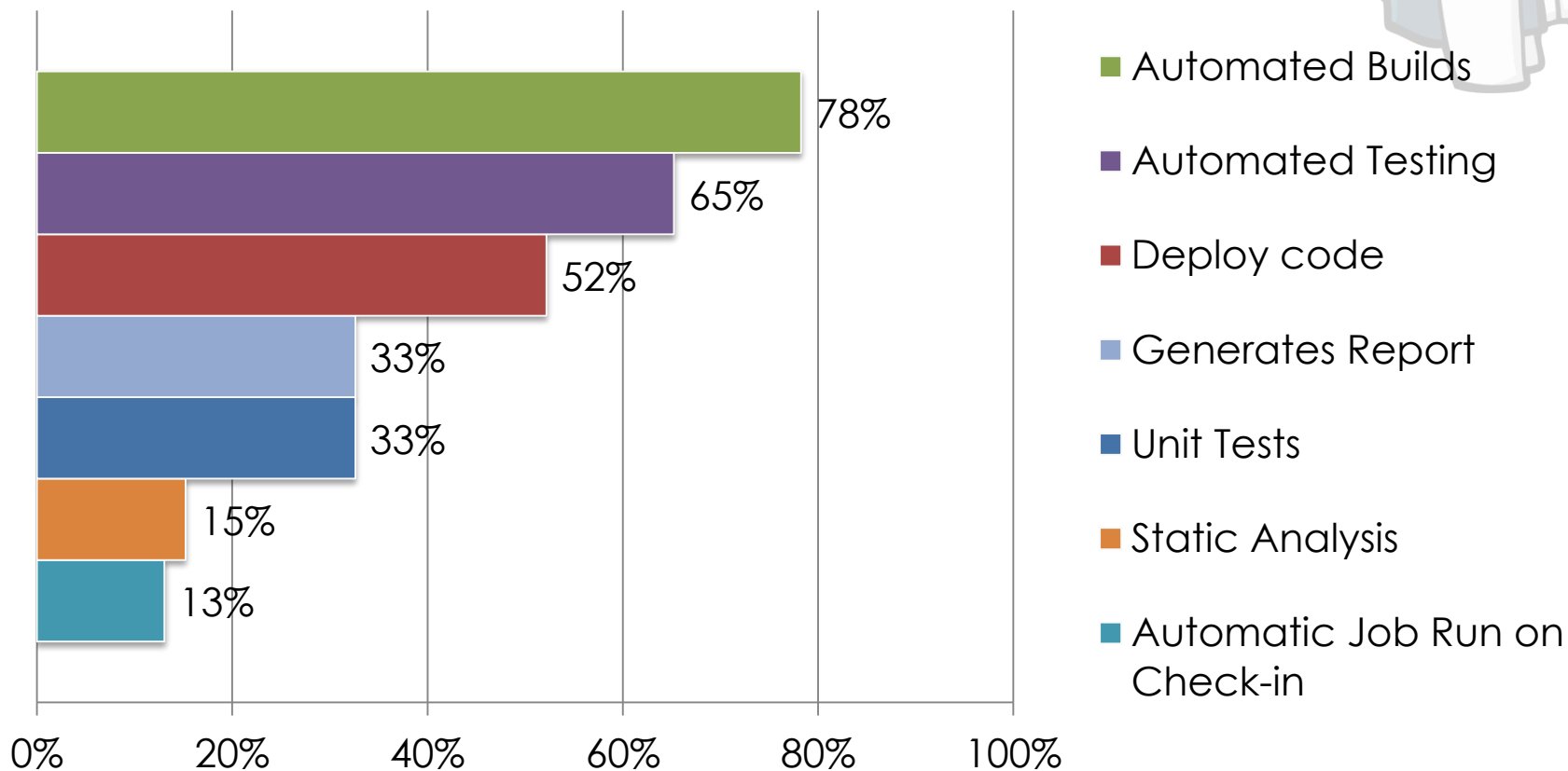


- Daily
- Weekly
- Monthly

Detailed Jenkins Usage Breakdown



Detailed Jenkins Usage Breakdown



Automation Efforts with Jenkins



Cardiovascular

Procedures (4) AutoRefresh Enabled (30 sec)

My Groups: All My Filters: CV Images

Drag a column header here to group by that column.

Last Name	First Name	Type	Status	Priority	Gender	MRN	Encounter Type	Scheduled Start Date	Scheduled Stop Date	Requested Date	Perf
Kukuk	Kyle	LH Cath with Coronaries - CV	In Process	Stat	Male	8263	Outpatient	Tue, 8/25/2009 2:24 PM	Tue, 8/25/2009 2:24 PM	Tue, 8/25/2009 2:24 PM	
Schwede	Bob	LH Cath with Coronaries - CV	In Process	Stat	Male	7893	Outpatient	Tue, 8/25/2009 2:24 PM	Tue, 8/25/2009 2:24 PM	Tue, 8/25/2009 2:24 PM	
Devers	Devon	Echo Transthoracic (TTE)	In Process		Female	8402	Outpatient	Wed, 12/10/2008 5:43 PM	Wed, 12/10/2008 5:43 PM	Wed, 12/10/2008 5:43 PM	
Forth	Frankie	Echo Transthoracic (TTE)	In Process		Female	8403	Outpatient	Wed, 12/10/2008 5:44 PM	Wed, 12/10/2008 5:44 PM	Wed, 12/10/2008 5:44 PM	
Gabrick	Greer	LH Cath with Coronaries - CV	In Process	Emergency	Male	8297	Emergency	Thu, 12/11/2008 3:21 PM	Thu, 12/11/2008 3:21 PM	Thu, 12/11/2008 3:21 PM	
Ebert	Ellie	LH Cath with Coronaries - CV	In Process		Male	8440	Outpatient	Wed, 12/10/2008 3:20 PM	Wed, 12/10/2008 3:20 PM	Wed, 12/10/2008 3:20 PM	
Abbott	Avery	Echo Transthoracic (TTE)	In Process		Male	8401	Outpatient	Wed, 8/26/2009 2:41 PM	Wed, 8/26/2009 2:41 PM	Wed, 8/26/2009 2:41 PM	
Williams	Ethan	LH Cath with Coronaries - CV	Completed		Male	9408	Inpatient	Wed, 1/6/2010 3:45 PM	Wed, 1/6/2010 3:45 PM	Wed, 1/6/2010 3:45 PM	

Current Orders (2)

Cardiovascular (2)

Historical Orders (0)

Task: Create, Stop

Status: Not Started, In Process

Description: LH Cath w/ Coronaries Final Report, LH Cath with Coronaries Procedure

Performed Location: Pataski, Cal

Performed Start Date: Tue, 8/25/2009 2:27 PM

Performed Stop Date:

Performed By:

Review

PathNet HLA: HRA Haplotype Chart [Clarke, Julie]

Task: Edit, View, Help

Demographics

Clarke, Julie

000100601.BWMC 007-887.BEMC 0001-66.BWMC 007-530

11/30/1974

35 years

Female

Baseline East Medical Center / Discharged

Barwick, Debra R

Caucasian

Kidney1(Rejected)Kidney2(Active)

O POS

Phenotypes:

Name	MRN	Relationship	ABO/Rh	Collect Date	A	A ₂	B	B ₂	Bw	Bw ₂	Cw	Cw ₂	DR	DR ₁	DR ₂	DR ₃	DQ	DQ ₂	A*
Clarke, Julie	000100601.BWMC	Patient	O POS	2/11/2006	A2	A24	B44	B55	Bw4	Bw6	Cw4	Cw7	DR103	DR11	DR52	DR53	DQ4	DQ6	A*020
Clarke, Tommy	BWMC 007-531	Brother	O POS	5/1/2009	A24	A3	B55	B8	Bw6	Bw6	Cw4	Cw7							
Clarke, Elaine	BWMC 007-527	Mother	O POS	5/1/2009	A24	A32	B55	B7	Bw6	Bw6	Cw4	Cw7							
Clarke, George	BWMC 007-528	Father	O POS	5/1/2009	A2	A3	B44	B8	Bw6	Bw6	Cw4	Cw7							

Haplotypes:

Name	MRN	Relationship	C	ID 1	Haplotype 1	ID 2	Haplotype 2
Clarke, Julie	000100601.BWMC	Patient	a	A2, B44, Bw4, Cw4, DRB1*0103, DRB3*0101, DQB1*0402	c	A24, B55, Bw6, Cw4, DRB1*1107, DRB4*0105, DQB1*0609	
Clarke, Tommy	BWMC 007-531	Brother	b	A3, B8, Bw6, Cw7, DRB1*0301, DRB3*0202, DQB1*0201	d	A24, B55, Bw6, Cw4, DRB1*1107, DRB4*0105, DQB1*0609	
Clarke, Elaine	BWMC 007-527	Mother	c	A24, B55, Bw6, Cw4, DRB1*1107, DRB4*0105, DQB1*0609	d	A32, B7, Bw6, Cw7, DRB1*0301, DRB3*0202, DQB1*0201	
Clarke, George	BWMC 007-528	Father	a	A2, B44, Bw4, Cw4, DRB1*0103, DRB3*0101, DQB1*0402	b	A3, B8, Bw6, Cw7, DRB1*0301, DRB3*0202, DQB1*0201	

Comments:

1. 5/02/2009-Julie is a 1 haplotype match with brother Tommy Clark (MRN BWMC 007-531)

Tim Kelly CHS

2. 5/15/2009-Positive Class I Flow XM with Tommy Clark (MRN BWMC 007-531) on 5/15/2009 due to anti-A3 antibody. Recommend additional plasmapheresis to remove residual anti-A3 activity.

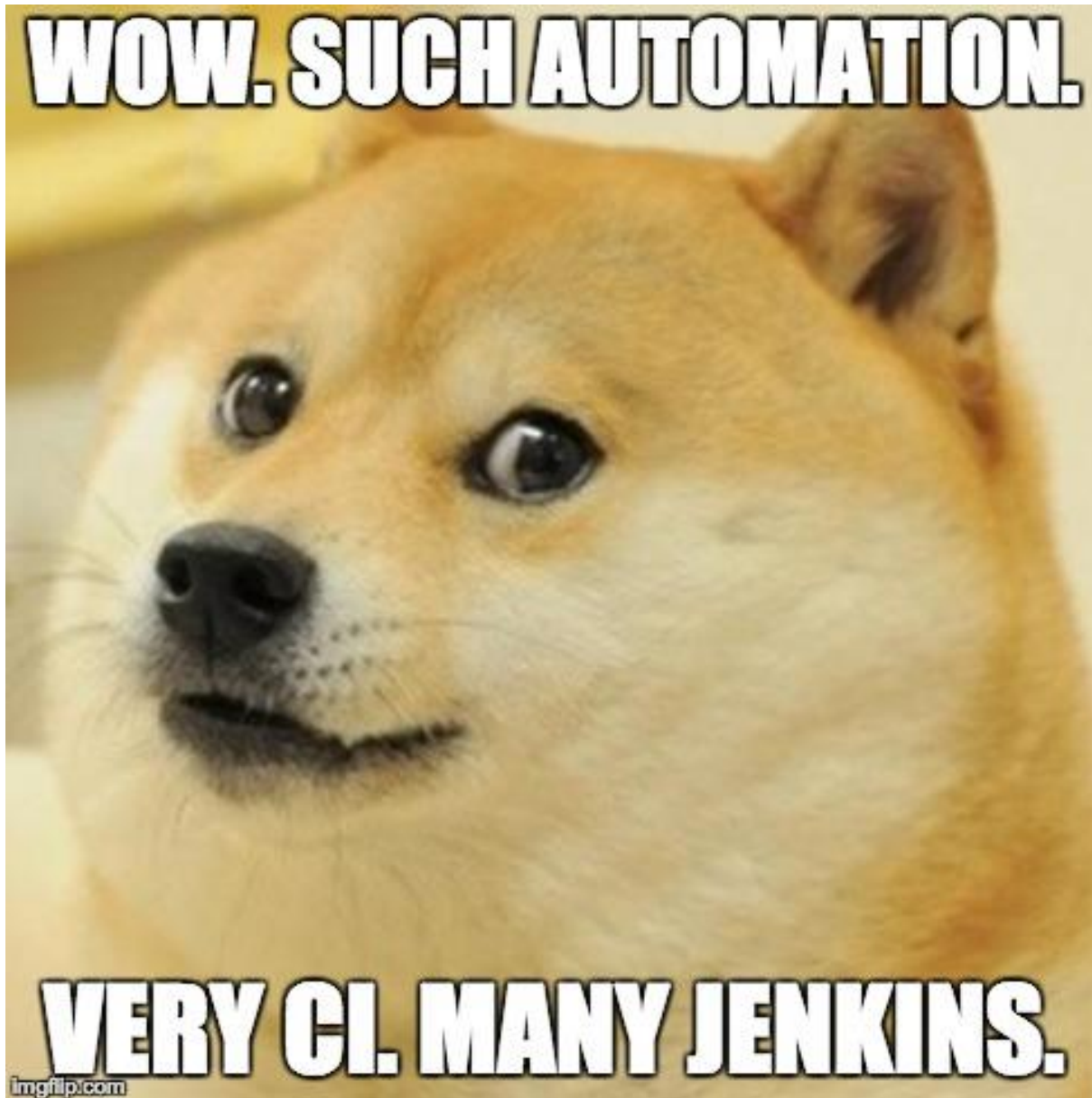
John Wood, PhD (ABHI)



Automated Testing with Jenkins



- Job based plugin
- Pass/fail status based on the results of the test
- Easily retrieve test results from job history
- Nightly automated testing
- Always runs against latest build



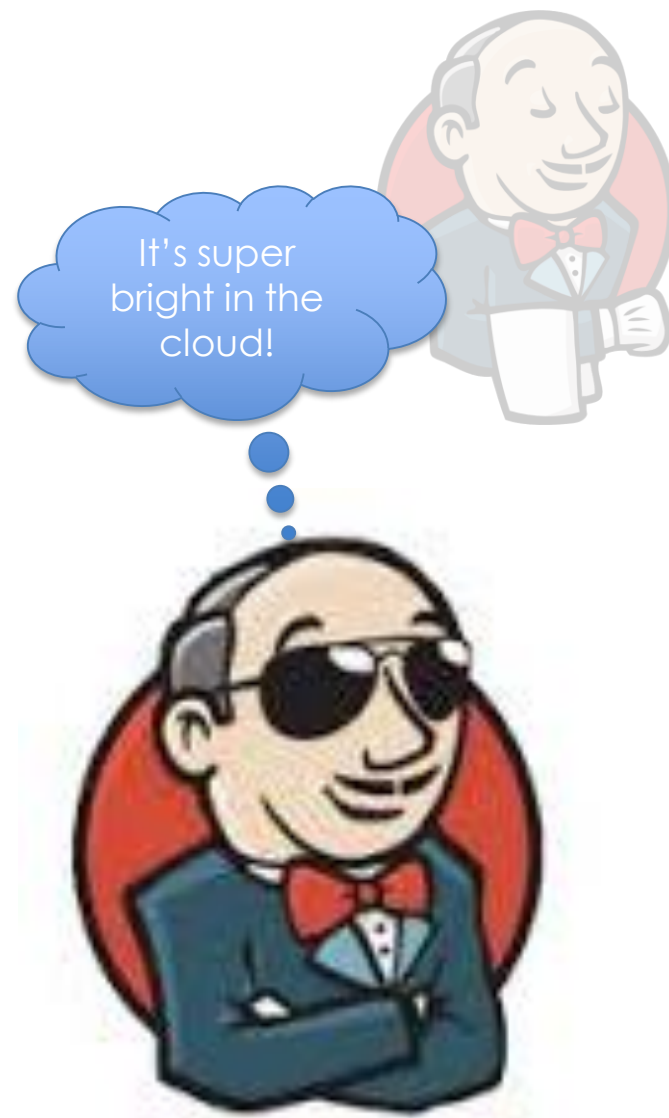
Jenkins and the Cloud

- Run tests in multiple environments
- Dependably and quickly setup environments
- Clean up environments when done.



To the “cloud”!

- Virtualization farm
- Easily configurable machines
- Sandboxed



There's a plugin for that!



- Environment setup in Jenkins
- Associate VM configurations with job labels
- VM environments are 100% maintained by Jenkins



Job gets added to the queue
Jenkins looks for slave with label

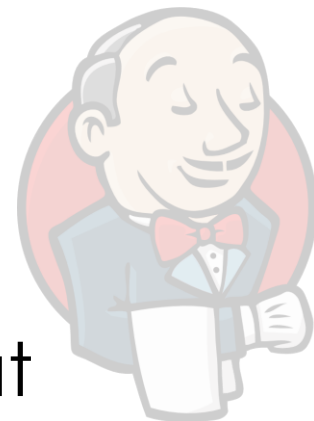
No slave with label is found
Jenkins sends out request for slave

Plugin deploys VM
New Jenkins slave is created while VM deploys

When VM is fully deployed, the slave is tied to that VM
Slave is assigned label

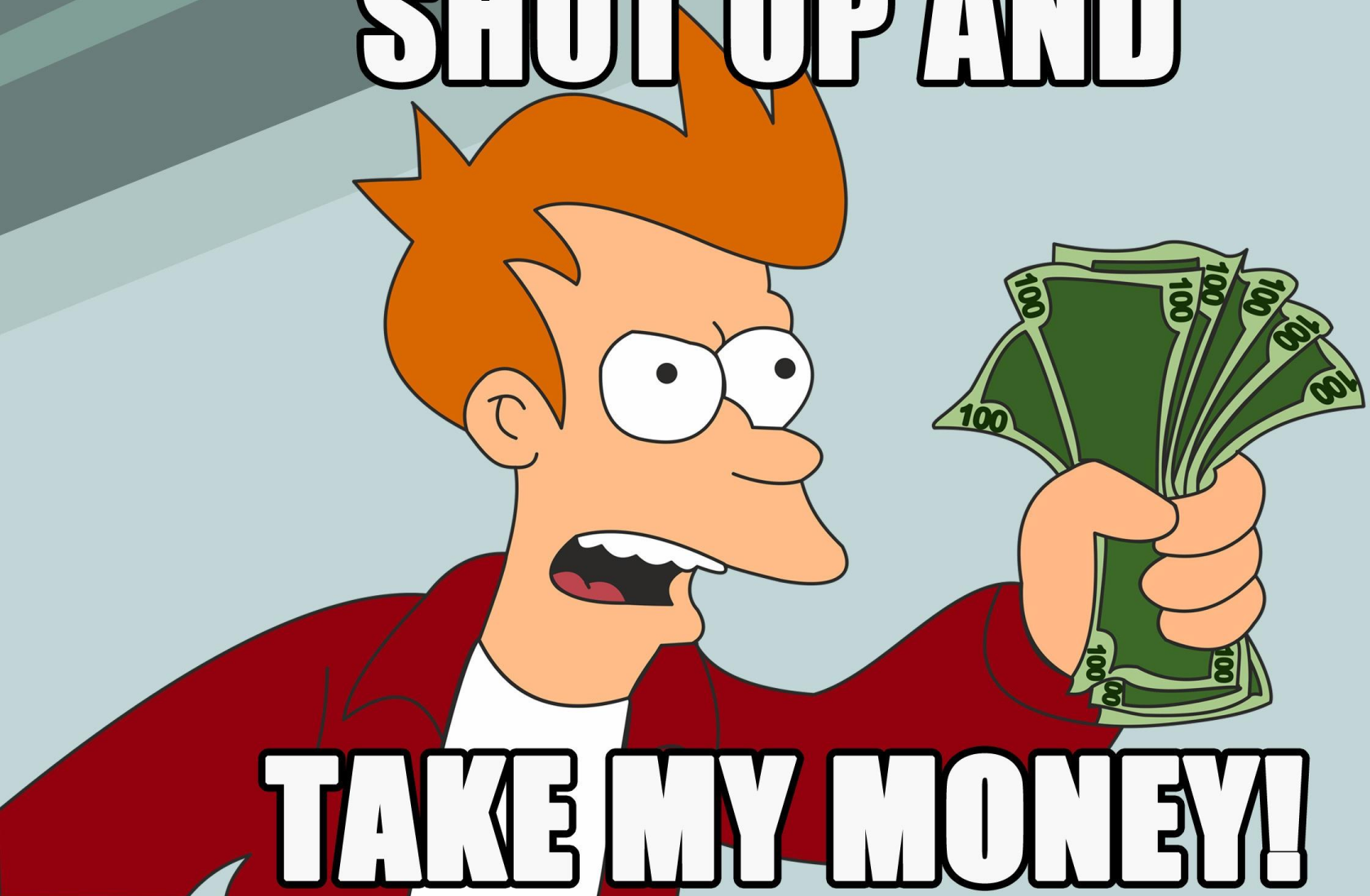
Jobs start running on slave
Other jobs with same label also run on that slave

A match made in the cloud



- Jobs are limited to run on the VM's that have appropriate label
- Teams could easily expand environment testing
- Runs easily with our automated testing plugin

SHUT UP AND



TAKE MY MONEY!

The mobile revolution

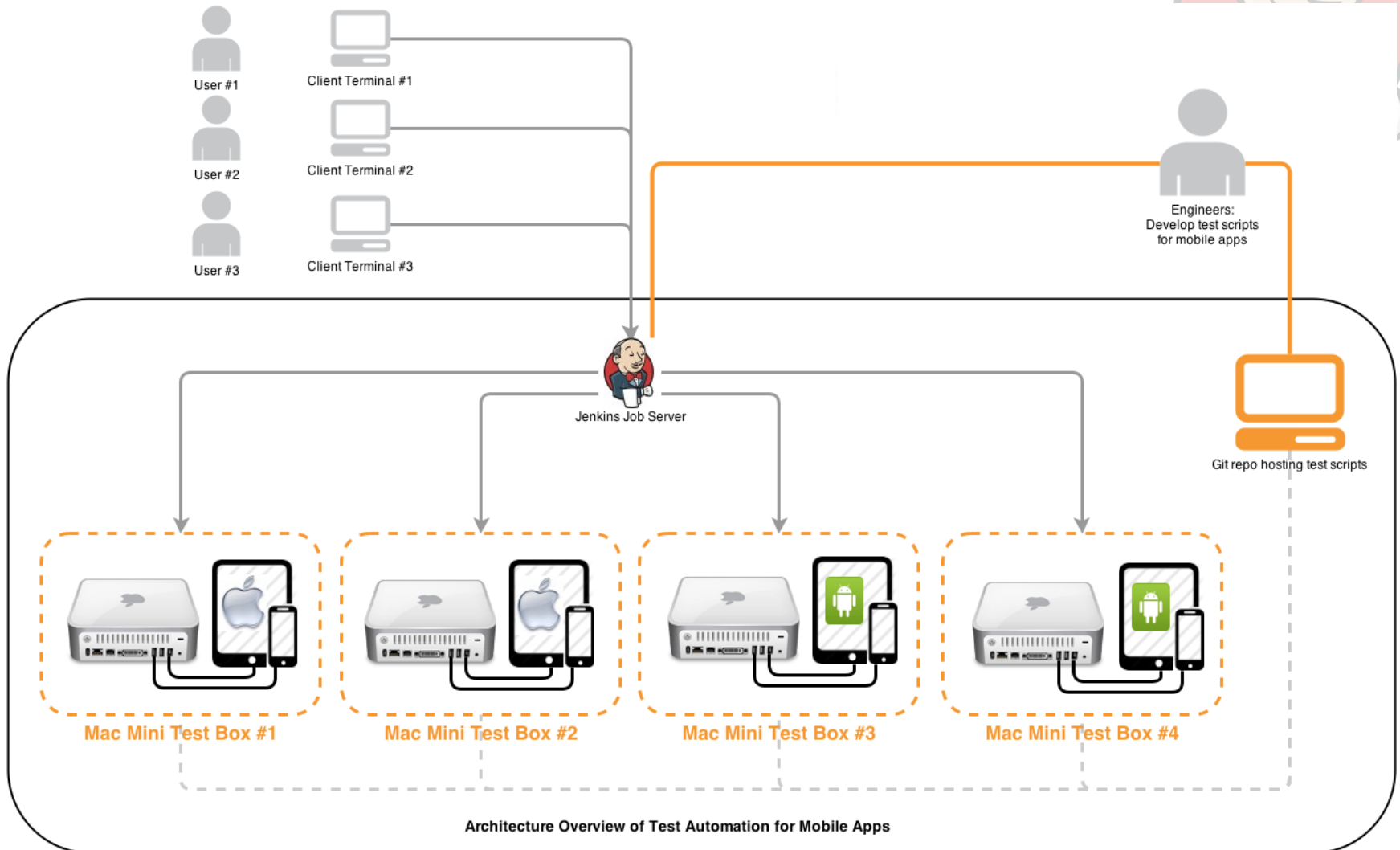
- Create iOS and Android versions of our popular desktop apps
- Challenges came up during developing



Automating Building and Testing Mobile



Jenkins Mobile Testing Setup



The Benefits of Jenkins Mobile Testing



- Testers need less technical knowledge to test mobile apps
- Jenkins helps manage devices
- Higher quality testing
- Less people time testing

More frequent app releases!

Want your app to be released sooner? Don't worry I got this.





Jenkins Adoption



- Areas of concern:
 - Don't have the time to setup the server
 - Developers/Testers never used Jenkins before
 - They don't see a benefit in having to maintain the jobs and tests.

Jenkins Adoption Strategy



- Explain benefits of CI and automated testing
- Layout a timetable for Jenkins adoption
- Work with them through the process.

Multi-Team Adoption



- Pros
 - All for one, and one for all
 - If one team changes development practices, others will usually follow suit.
 - Strength in numbers
- Cons
 - All-or-none mindset
 - Many teams could lead to many problems

Summary

- Helped increase our automation efforts
- Better and more stable builds
- Higher turn around time in development
- Easier mobile development



Conclusion



Cerner™

Questions?

Thank You To Our Sponsors

Platinum



Gold



Silver



Corporate

