



KubeCon



CloudNativeCon

Europe 2019

Kops Deep Dive

Unconference for kops
devs/maintainers

Justin Santa Barbara & Mike Splain

Introductions



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justinsb@

kops maintainer
Now @google

mikesplain@

kops maintainer
Now @sonos

Goals



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Get through slides fairly quickly to cover the questions that everyone will have

Topics:

- Fast-forward Releases

- Etcd3

- CRDs

- Cluster-API

- Addons: Bundles & Operators

- Conformance

- More Clouds

Lots of time for Q & A - dig in deeper!

kops release - philosophy



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Try to do the best thing for users:
A kops .0 release should be safe for production

kops releases **after** kubernetes releases

Make sure kops works with new k8s!

Make sure k8s release stable: likely .2 or .3

Make sure the ecosystem is working (CNI providers etc)

kops release - reality



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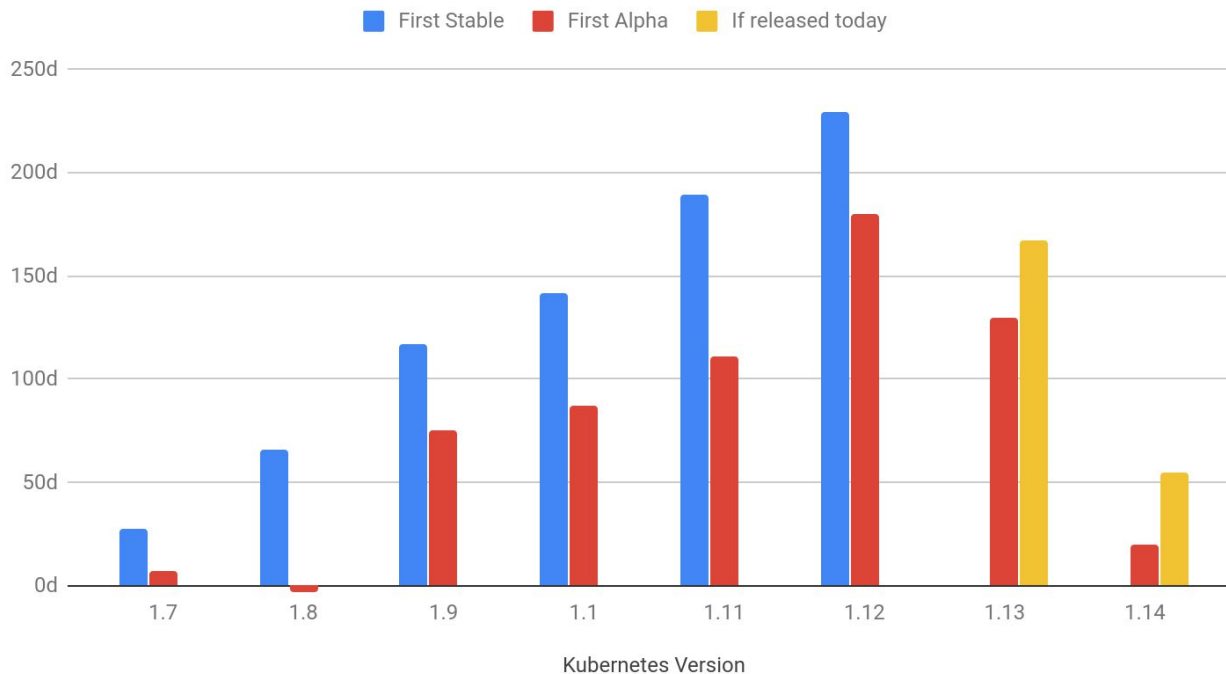


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Thanks to: @peterr

Kops Release Delays



kops release - the fast-forward



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Revised philosophy:

Users like that .0 is production-ready

But ... release alphas & betas earlier to give users a choice

The fast-forward:

Don't put a lot of features into kops 1.12, 1.13, 1.14.

(Lots) of features will land in 1.15

Cut the branches and start the alpha & beta train rolling!

kops release - the fast-forward



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	A	B	C	D	E	F	G	H	I	J	K
1			1.11	1.12	1.13	1.14					
37	6748	3e81a3f47f Merge pull request #6748 from justinsb/release_process_push_over_ssh	-	-				docs			
38	6753	d1fc04d59e Merge pull request #6753 from granular-ryanbonham/fix_6751	-	#6755				LaunchTemplate fixes			
39	6762	a8e140db0d Merge pull request #6762 from bksteiny/iss6754	-	#6765				Fix AWS VPC IAM permissions			
40	6357	1ff341450b Merge pull request #6357 from sp-jose Luis-ledesma/kubelet/registry_qps	-	#6923				registry-qps kubelet flag		CP AFTER MERGE #6918	
41	6759	9661c57d2d Merge pull request #6759 from Vlatombe/patch-1	-	-				docs			
42	6706	b91db4f360 Merge pull request #6706 from granular-ryanbonham/apiserver_cpurequest	-	#6912				cpuRequest for API Server			
43	6772	3f8241ea1b Merge pull request #6772 from justinsb/release_1_14_0_alpha_1	-	-	-	-		docs			
44	6781	713ae16dcd Merge pull request #6781 from justinsb/channels_for_113_and_114	-	-	-	-		meta			
45	6780	2e6c19157f Merge pull request #6780 from justinsb/relnotes_1_12	-	-	-	-		docs			
46	6776	0b3db247ec Merge pull request #6776 from MathieuMailhos/fix_6770	-	#6919	#6793	#6812		Fix: set provisioned iops in terraform templates			
47	6768	ad2d9546b3 Merge pull request #6768 from adrianlyjak/pin-nvidia/6767	-	-	-	-		examples			
48	6769	ca7563d719 Merge pull request #6769 from alrs/pkg-dropped-errors	-	#6911	#6805	#6813		Fix: don't ignore error			
49	6789	fff5dd733 Merge pull request #6789 from xichengliudui/update-go-const-part1	-	?	-	-		Code cleanup			
50	6791	d517e0c58e Merge pull request #6791 from xichengliudui/update-go-const-part3	-	?	-	-		Code cleanup			
51	6766	f5dd4d8ece Merge pull request #6766 from mikesplain/rules_go_0.18.2	-	?	#6806	#6794		Updates bazel			
52	6774	c8163379c7 Merge pull request #6774 from bksteiny/etcd3-doc	-	-	-	-		docs			
53	6787	24edaf8bf1 Merge pull request #6787 from gambol99/http2_param	-	#6913	#6807	#6814		Maps http2 parameters			
54	6420	4d7df29ca5 Merge pull request #6420 from justinsb/rename_urls	-	?	#6816	#6980		Code refactor			
55	6802	5ba001f353 Merge pull request #6802 from xichengliudui/update-docker-README	-	-	-	-		docs			
56	6798	732121d226 Merge pull request #6798 from justinsb/golang_1_11_5	-	-	#6808	-		Update to go 1.11.5 for 1.13			
57	6799	f94d499920 Merge pull request #6799 from justinsb/golang_1_12_1	-	-	-	#6815		Update to go 1.12.1 for 1.14			
58	6809	e497f33104 Merge pull request #6809 from xichengliudui/update-go-const-part5	-	?				Code cleanup			
59	6810	bea86cb4d9 Merge pull request #6810 from xichengliudui/update-go-const-part6	-	?				Code cleanup			
60	6278	00782fd90 Merge pull request #6278 from elithrar/docs/state-store-easier	-	-	-	-		docs			
61	6820	a2ee29c75 Merge pull request #6820 from wangxy518/patch-5	-	-	-	-		docs			
62	6833	ab2413135 Merge pull request #6833 from chrisz100/master	-	-	-	-		channels			
63	6823	3208373d4 Merge pull request #6823 from appvia/canal-3.6.1	-	#6926	#6838	#6839		updates canal, allows setting mtu			
64	6836	0efdd22b8 Merge pull request #6836 from mikesplain/update_readme_chart	-	-	-	-		docs			
65	6840	0709200c3 Merge pull request #6840 from rifelpet/aws-iam-authenticator-api-typo	-	#6922	#6843	#6842		Fix typo in aws-iam-authenticator image field name			
66	6841	8b72574b1 Merge pull request #6841 from mikesplain/remove_verify_bazel_from_travis	-	-	Merged	#6846		bazel fix causing problems			
67	6837	78f5b2c06 Merge pull request #6837 from mikesplain/add_t3a_family	-	#6905	#6838	#6839		Adds t3a family			
68	6835	85293df09 Merge pull request #6835 from wxdao/master	-	#6914	#6929	#6930		AWS ap-east-1			

kops & etcd3



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Moving to etcd3

Handled by etcd-manager

Some bug reports, not clear if addressed by very-latest versions

Known bugs: handling of restore

Otherwise we are on track for 1.14

API aggregation -> CRDs



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Moving to kubebuilder & CRDs

Simpler code, fewer dependencies, stable dependencies

ahmet's [doc generation tooling](#) much easier than full api machinery

kops-server with only CRDs

Cluster API



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Starting to adopt cluster-api

Machine / MachineSet / MachineDeployment

InstanceGroups ↔ MachineDeployments

Starting with just additional, non-master nodes in an existing cluster

Cluster API

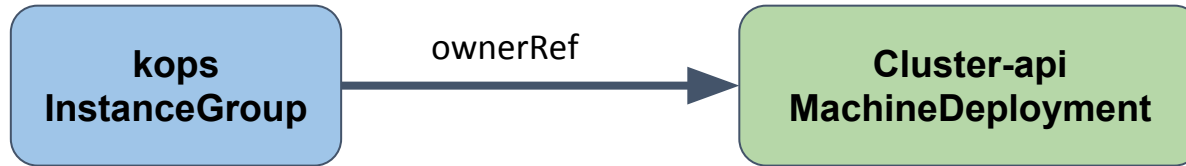


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We can “shim” InstanceGroups to MachineDeployments

When an kops InstanceGroup is created, “kops-controller” creates an owned MachineDeployment

Lets users choose: use either InstanceGroups or MachineDeployments directly

cluster-api still early, we’ll see if wrapping MachineDeployments becomes common

CRDs + “kops-controller” + cluster-api = kops-server

Addons - Bundles & Operators



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Bundles

Currently kops addon manifests & versions are baked into a kops release

Bundles: controlled releases of addons without doing a kops release

Operators

Bundles = what, operators = how

Operators are code, allow for health checks, complex sequencing etc

Developing as subproject of sig-cluster-lifecycle

kops as components



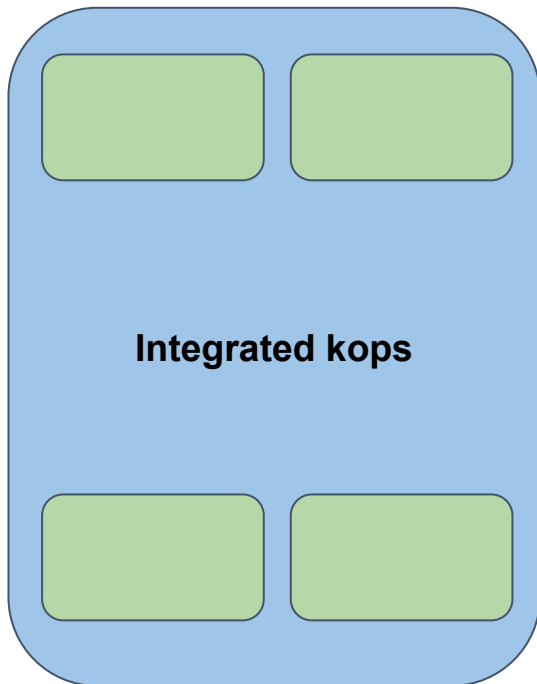
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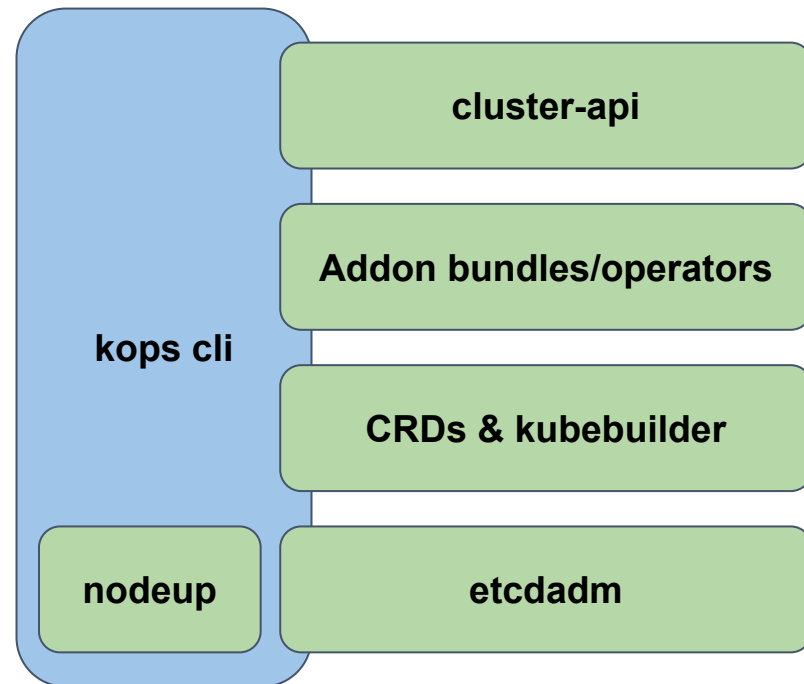
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PAST



FUTURE



Kubernetes Conformance



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We always passed e2e, which includes conformance tests

Kops is now certified conformant on 1.10,1.11,1.12

Pretty simple process involving Sonobuoy and a PR

Runs Kubernetes e2e tests tagged as conformance



<https://github.com/cncf/k8s-conformance/blob/master/instructions.md>

More clouds!



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Working:

AWS stable

Bringing **GCE** support to stable

Active work (& great progress):

Openstack (special thanks: drekle, zetaab)

Alicloud (special thanks: LilyFaFa, xh4n3)

Help wanted:

DigitalOcean
vSphere } *(Maybe use cluster-api?)*

Thank you / Join us!



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Thank you to all our contributors, in github, slack or elsewhere!

Join us on Slack:

#kops-users

Or for development:

#kops-dev

Office hours:

Odd weeks

Friday 12 noon EDT / 9 AM PDT / 18:00 CEST





Q & A

Please share:

- Where do you want to get involved?
- Do you have any immediate questions or feedback?
- What features are we missing?



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