

- [v1.6.13](#)
 - [Downloads for v1.6.13](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.12](#)
 - [Other notable changes](#)
- [v1.6.12](#)
 - [Downloads for v1.6.12](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.11](#)
 - [Other notable changes](#)
- [v1.6.11](#)
 - [Downloads for v1.6.11](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.10](#)
 - [Other notable changes](#)
- [v1.6.10](#)
 - [Downloads for v1.6.10](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.9](#)
 - [Other notable changes](#)
- [v1.6.9](#)
 - [Downloads for v1.6.9](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.8](#)
 - [Other notable changes](#)
- [v1.6.8](#)
 - [Downloads for v1.6.8](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.7](#)
 - [Other notable changes](#)
- [v1.6.7](#)
 - [Downloads for v1.6.7](#)
 - [Client Binaries](#)

- [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.6](#)
 - [Other notable changes](#)
- [v1.6.6](#)
 - [Downloads for v1.6.6](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.5](#)
 - [Action Required](#)
 - [Other notable changes](#)
- [v1.6.5](#)
 - [Known Issues for v1.6.5](#)
 - [Downloads for v1.6.5](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.4](#)
 - [Other notable changes](#)
- [v1.6.4](#)
 - [Known Issues for v1.6.4](#)
 - [Downloads for v1.6.4](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.3](#)
 - [Other notable changes](#)
- [v1.6.3](#)
 - [Known Issues for v1.6.3](#)
 - [Downloads for v1.6.3](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Node Binaries](#)
 - [Changelog since v1.6.2](#)
 - [Other notable changes](#)
- [v1.6.2](#)
 - [Downloads for v1.6.2](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Changelog since v1.6.1](#)
 - [Other notable changes](#)
- [v1.6.1](#)
 - [Downloads for v1.6.1](#)
 - [Client Binaries](#)

- [Server Binaries](#)
 - [Changelog since v1.6.0](#)
 - [Other notable changes](#)
- [v1.6.0](#)
 - [Downloads for v1.6.0](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [WARNING: etcd backup strongly recommended](#)
 - [Major updates and release themes](#)
 - [Action Required](#)
 - [Certificates API](#)
 - [Cluster Autoscaler](#)
 - [Deployment](#)
 - [Federation](#)
 - [Internal Storage Layer](#)
 - [Node Components](#)
 - [kubect!](#)
 - [RBAC](#)
 - [Scheduling](#)
 - [Service](#)
 - [StatefulSet](#)
 - [Volumes](#)
 - [Notable Features](#)
 - [Autoscaling](#)
 - [DaemonSet](#)
 - [Deployment](#)
 - [Federation](#)
 - [Internal Storage Layer](#)
 - [kubeadm](#)
 - [Node Components](#)
 - [RBAC](#)
 - [Scheduling](#)
 - [Service Catalog](#)
 - [Volumes](#)
 - [Deprecations](#)
 - [Cluster Provisioning Scripts](#)
 - [kubeadm](#)
 - [Other Deprecations](#)
 - [Changes to API Resources](#)
 - [ABAC](#)
 - [Admission Control](#)
 - [Authentication](#)
 - [Authorization](#)
 - [Autoscaling](#)
 - [Certificates](#)
 - [ConfigMap](#)
 - [CronJob](#)
 - [DaemonSet](#)

- [Deployment](#)
- [Node](#)
- [Pod](#)
- [Pod Security Policy](#)
- [RBAC](#)
- [ReplicaSet](#)
- [Secrets](#)
- [Service](#)
- [StatefulSet](#)
- [Taints and Tolerations](#)
- [Volumes](#)
- [Changes to Major Components](#)
 - [API Server](#)
 - [API Server Aggregator](#)
 - [Generic API Server](#)
 - [Client](#)
 - [client-go](#)
 - [Cloud Provider](#)
 - [AWS](#)
 - [Azure](#)
 - [GCE](#)
 - [GKE](#)
 - [vSphere](#)
 - [Federation](#)
 - [kubefed](#)
 - [Other Notable Changes](#)
 - [Garbage Collector](#)
 - [kubeadm](#)
 - [kubectl](#)
 - [New Commands](#)
 - [Create subcommands](#)
 - [Updates to existing commands](#)
 - [Updates to apply](#)
 - [Updates to edit](#)
 - [Bug fixes](#)
 - [Other Notable Changes](#)
 - [Node Components](#)
 - [Bug fixes](#)
 - [kube-controller-manager](#)
 - [kube-dns](#)
 - [kube-proxy](#)
 - [Scheduler](#)
 - [Volume Plugins](#)
 - [Azure Disk](#)
 - [GlusterFS](#)
 - [Photon](#)
 - [rbd](#)
 - [vSphere](#)

- [Other Notable Changes](#)
- [Changes to Cluster Provisioning Scripts](#)
 - [AWS](#)
 - [Juju](#)
 - [libvirt CoreOS](#)
 - [GCE](#)
 - [OpenStack](#)
 - [Container Images](#)
 - [Other Notable Changes](#)
- [Changes to Addons](#)
 - [Dashboard](#)
 - [DNS](#)
 - [DNS Autoscaler](#)
 - [Cluster Autoscaler](#)
 - [Cluster Load Balancing](#)
 - [etcd Empty Dir Cleanup](#)
 - [Fluentd](#)
 - [Heapster](#)
 - [Registry](#)
- [External Dependency Version Information](#)
- [Changelog since v1.6.0-rc.1](#)
 - [Previous Releases Included in v1.6.0](#)
- [v1.6.0-rc.1](#)
 - [Downloads for v1.6.0-rc.1](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Changelog since v1.6.0-beta.4](#)
 - [Other notable changes](#)
- [v1.6.0-beta.4](#)
 - [Downloads for v1.6.0-beta.4](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Changelog since v1.6.0-beta.3](#)
 - [Other notable changes](#)
- [v1.6.0-beta.3](#)
 - [Downloads for v1.6.0-beta.3](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Changelog since v1.6.0-beta.2](#)
 - [Other notable changes](#)
- [v1.6.0-beta.2](#)
 - [Downloads for v1.6.0-beta.2](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Changelog since v1.6.0-beta.1](#)

- [Action Required](#)
 - [Other notable changes](#)
- [v1.6.0-beta.1](#)
 - [Downloads for v1.6.0-beta.1](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Changelog since v1.6.0-alpha.3](#)
 - [Action Required](#)
 - [Other notable changes](#)
- [v1.6.0-alpha.3](#)
 - [Downloads for v1.6.0-alpha.3](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Changelog since v1.6.0-alpha.2](#)
 - [Other notable changes](#)
- [v1.6.0-alpha.2](#)
 - [Downloads for v1.6.0-alpha.2](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Changelog since v1.6.0-alpha.1](#)
 - [Other notable changes](#)
- [v1.6.0-alpha.1](#)
 - [Downloads for v1.6.0-alpha.1](#)
 - [Client Binaries](#)
 - [Server Binaries](#)
 - [Changelog since v1.5.0](#)
 - [Action Required](#)
 - [Other notable changes](#)

v1.6.13

[Documentation](#) & [Examples](#)

Downloads for v1.6.13

filename	sha256 hash
kubernetes.tar.gz	effda17f63d149f1082e85cf5e5bc41b1f5f9bf64e082020c4455ce2e4525e26
kubernetes-src.tar.gz	0552eb170d276c8dc33a66629da9641fd333813c353a2e741593c9acf81d39fd

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	91cf455f8271e781de76517d2ba31740f8d8a2c9a9f900a59bae8ff639b1f2fc

kubernetes-client-darwin-amd64.tar.gz	5e1aa9357eb027d4c4ab21ee1bbc54a3c9bf3a60265a168ab7a02ae32f1800c1
kubernetes-client-linux-386.tar.gz	a2fb4f6a68581ef5aaf4dc2e0d4bc10c432007f88c82c97e236e27b482fc77fa
kubernetes-client-linux-amd64.tar.gz	d94f999c6a7bcda4e0901399d7613eba237c2f0632df9317a59d87097ba59cda
kubernetes-client-linux-arm64.tar.gz	b80f2ecb7c6e5f3315b129a69efe7d01317fada4a739a6a890225d24c50a35d
kubernetes-client-linux-arm.tar.gz	270396ec50d523706387d1270c717d1d3c00112c6e92399726620086643025f5
kubernetes-client-linux-ppc64le.tar.gz	117d5d73529306c2b43e7db7692fa651d7a715c61ca31866af87aee8c81bd8e2
kubernetes-client-linux-s390x.tar.gz	48e812aa64e484f10a5083c2198b48b75d203489084271a259ba55b6138f616c
kubernetes-client-windows-386.tar.gz	e3425bf16e66250f6cb358efb908b4922d82258772259829ac6fb43a6e8c5f5a
kubernetes-client-windows-amd64.tar.gz	04514ad6957011da3e26e5bcf23ffad4078a42a0286dfd66da8a46aee3132acb

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	08854f22684fe3dcf00c90ed841ab0c40566175a7611fc6111943da0beb8aed8
kubernetes-server-linux-arm64.tar.gz	01cae48b032fab674aad7c350c8e04b4f5bcc77f98601817cb9177843bb24f4b
kubernetes-server-linux-arm.tar.gz	e0ce0f75442e48ea495c36071818345c9302204f933acb86c8ad357da8924fa2
kubernetes-server-linux-ppc64le.tar.gz	5bba326c1a95030ba559627589107875932ef9d41610888a4ee89785f022f9b1
kubernetes-server-linux-s390x.tar.gz	8e21336a027ad71c382d2d0ecac777b32441b90dad948b67a490782886460370

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	c2062b4d2c00db35b5d159651d50fbdcc826fc4f866d4add483650da58b4cdfa1
kubernetes-node-linux-arm64.tar.gz	9b865d9be4ecde441ed959e240b4e7df1718e1fd38861084ae6f4b14e3b2f8df
kubernetes-node-linux-arm.tar.gz	9d0433621021bca490e8a04eb96e47402d3f8e3d47762590b83be6a595d29b16
kubernetes-node-linux-ppc64le.tar.gz	438f0e05d29e371c028e73b28c31e3b13dc1dec0780557e0231d96de871b419
kubernetes-node-linux-s390x.tar.gz	aabf03fd85b75d57cc27548e74585e3926383a82b3f8201800b34ca483d31bcf
kubernetes-node-windows-amd64.tar.gz	b02148bfdc9c0937841cced51a436afcc81a70d10be2edcf3b55f045e4ee3b2f

Changelog since v1.6.12

Other notable changes

- Bump cAdvisor to v0.25.1, which adds support for the Docker overlay2 storage driver. ([#55744](#), [@dashpole](#))
- GCE: provide an option to disable docker's live-restore on COS/ubuntu ([#55260](#), [@yujuhong](#))
- Fix kube-proxy hang due to panic when requesting a closed healthcheck. ([#46450](#), [@MrHohn](#))
- Fix Flexvolume/FC/ISCSI volumes not being mounted after Node reboot. ([#51985](#), [@chakri-nelluri](#))

v1.6.12

[Documentation](#) & [Examples](#)

Downloads for v1.6.12

filename	sha256 hash
kubernetes.tar.gz	d57a05942f581959bc31778def4df4b526df80adaa75942214e9439fdecbe74f
kubernetes-src.tar.gz	c1781161d1b0fa0c8dbd3a644ee42e65968a0a4bb5bec47f2c70796edbc1d396

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	85956c72c8fc1a1c4768e95fb403ddb1740db1f2d6dec8263d74a67cfce429b9
kubernetes-client-darwin-amd64.tar.gz	bcea37dc2852ee83bdcac505600e724ae391e3a5879232d47ddd763cb2253c14
kubernetes-client-linux-386.tar.gz	8e0f3d0a6807b050070717efacd25db9f96ad3f0ef59d9095aae71ab20734212
kubernetes-client-linux-amd64.tar.gz	5f324e91dce59e05acdc0d6c0a8a6a56d5a5d1a3144e58b6de5c22a9b9020f8b
kubernetes-client-linux-arm64.tar.gz	442fadf05af70826231e03b0146c0f9283ec474d6a1ba390eac7204888db5dc7
kubernetes-client-linux-arm.tar.gz	2e8073e626ba6a6f6148ccca3d5bbfd20f051f9992de676446d2ae25955a75a
kubernetes-client-linux-ppc64le.tar.gz	f6af1ea1762e9fe889e10da670f61ce0bd2c1bc8fd5c1bd9fc3d1eacabe820a1
kubernetes-client-linux-s390x.tar.gz	77aee845c290b5637d2560586e9065220aa433d6e15be03c6bbb6dfc75292564
kubernetes-client-windows-386.tar.gz	6a47f85d4e01595bb7e58469a4cab09053e5e11819440c630ae47008aa0b000d
kubernetes-client-windows-amd64.tar.gz	6b4f1ae4bed0523a0c5b2b1d6dc9cb1ac54399a2a78b548acd876b8029a2dd6c

Server Binaries

filename	sha256 hash
kubernetes-server-linux-	0970f6da85acd1bb61e92a77c7dbfa3f059da409db68c3d940781708795a0204

amd64.tar.gz	
kubernetes-server-linux-arm64.tar.gz	d598d846882744e724e65156807a3b2fa5bb92e1c389ff2e08984455346a7305
kubernetes-server-linux-arm.tar.gz	6c02ade45ba8495917f0a7fe0542369ba482bc98f2dc008f7f69a21fd2e653d2
kubernetes-server-linux-ppc64le.tar.gz	5479030e4ff21afcd638f4dd22bd0f6fb221dc3b27731954c0a5e53877ed1131
kubernetes-server-linux-s390x.tar.gz	6407d6c580acc2fafeb2d87b309e60c6d16624403308e41a8a973d772bf26e3b

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	9cb5a28417cbc34165eaa2eb412488738b0e190e9128bb68b16d68d2a942b4c9
kubernetes-node-linux-arm64.tar.gz	e4c1d1994b7595f2ac9c7ffeabaeffc0737c1fbbcc4d2a9a9097d52d060236ad8
kubernetes-node-linux-arm.tar.gz	77879441f3b5e753959b32103ef6a49fbc9ccea16cac1b1fb83446b5d573901d
kubernetes-node-linux-ppc64le.tar.gz	c6866605adf86d5bc91acb670c5d8bba00c989a8758014a17322c041289e472d
kubernetes-node-linux-s390x.tar.gz	8a280b31c7118728660ac4b7010ed0af9bc3b058e98964c04b47f58c5fd84671
kubernetes-node-windows-amd64.tar.gz	bc3d39ed8f23e59692bcfffc23eaae7f575bef01e3c7c1510528662f984283a9c

Changelog since v1.6.11

Other notable changes

- Azure cloudprovider: Fix controller manager crash issue on a manually created k8s cluster. ([#53694](#), [@andyzhangx](#))
- Fix kubelet reset liveness probe failure count across pod restart boundaries. ([#46371](#), [@sjenning](#))

v1.6.11

[Documentation](#) & [Examples](#)

Downloads for v1.6.11

filename	sha256 hash
kubernetes.tar.gz	0dacad1c3da0397b6234e474979c4095844733315a853feba5690dbdf8db15dc
kubernetes-src.tar.gz	818fdffc41d7b6d90b9dc37ca12c2fbeb1b6fb20f998ee04fddce4a9bb8610351e

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	c9a24250d68ddde25a09955c5f944812a9aeb5e0f3fd61313dbd166348aa5954

kubernetes-client-darwin-amd64.tar.gz	f51e83ff2e026856cae7e365b17c20d94fe59d4a2749daa7bc4dbfb184f14a36
kubernetes-client-linux-386.tar.gz	16afc423b6f68cc5b24c322ee383e3f7c0fc5c3c98dd4cc90f93cfbd820964a4
kubernetes-client-linux-amd64.tar.gz	fca4eaae3bd6b9482ec130146b5ee24159effd66ea70d3c4ce174a45c770fcdd
kubernetes-client-linux-arm64.tar.gz	6d7d777357c1920b2ef4060f7f55de7c92655c99aa7caf71fbb6311ddbba4578
kubernetes-client-linux-arm.tar.gz	15bbfadbd4ce4b46d1473cb662396f1ac0372c9134ebd597de91565b59ddb200
kubernetes-client-linux-ppc64le.tar.gz	961a942875daf30aad3fdebdb3796eb6311f46eb31fe8558ffde086c5424alc2d
kubernetes-client-linux-s390x.tar.gz	3874548181ac06feb280f1cf6f7ae851599f68d0abc96d3af17264889ff9d992
kubernetes-client-windows-386.tar.gz	7c305dd4d00e877843efa187948c93907d440cf3fccccd31cc18e243c319eec7d
kubernetes-client-windows-amd64.tar.gz	ee27b50a82d845d4e2ddecb401f36e1e47dd0fb8f67c60465e99e8947b740149

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	daea028d6777597aaee33ea7c9e3f1210b46ce895faac9ca85c7b1553923ce82
kubernetes-server-linux-arm64.tar.gz	1f098c7bc06aeb7d532d270538f3aa3a029e3f6460b26e9449b361ed7de93704
kubernetes-server-linux-arm.tar.gz	c5d6ae53fa95eb0e3b02e046e99144b8604dba7a16f373a2a02ae2fa88818ee2
kubernetes-server-linux-ppc64le.tar.gz	06bba3736754cc7650b45c6a832b14d0539e63c5cec59f8ecd763803ea4397b6
kubernetes-server-linux-s390x.tar.gz	632fb6bb0a1144d91b1f559967731223a2bf53423539317e015dcf73aef6cb53

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	c8a38711db9625dd4b1e55923961c22276a0a07c976d371dd91b638b6d0a6757
kubernetes-node-linux-arm64.tar.gz	9bd3c3cf6e98e882b397708f3fab0fd5f4476e97bd3a897598a7ded822bd5314
kubernetes-node-linux-arm.tar.gz	563d22c94513d287e4f01dbc40b2f300dbdf9c9dbaf8394bf18c2604796dce5b
kubernetes-node-linux-ppc64le.tar.gz	4d249236a64414ad5b201c994ae867458a49a4dea53c4c7eb5ba1d0af07433c2
kubernetes-node-linux-s390x.tar.gz	35c2132ef07dedc4d64d72fc194aa0824d427a3780733508493d9d87538cedd1
kubernetes-node-windows-amd64.tar.gz	b4279e7e38d1777354b557e17419ec3ab8399addb0e535669d485fb9416fb76b

Changelog since v1.6.10

Other notable changes

- Update kube-dns to 1.14.5 ([#53112](#), [@bowei](#))
- Fix panic in ControllerManager on GCE when it has a problem with creating external loadbalancer healthcheck ([#52646](#), [@gmarek](#))
- When performing a GET then PUT, the kube-apiserver must write the canonical representation of the object to etcd if the current value does not match. That allows external agents to migrate content in etcd from one API version to another, across different storage types, or across varying encryption levels. This fixes a bug introduced in 1.5 where we unintentionally stopped writing the newest data. ([#48394](#), [@smarterclayton](#))
- StatefulSet will now fill the `hostname` and `subdomain` fields if they're empty on existing Pods it owns. This allows it to self-correct the issue where StatefulSet Pod DNS entries disappear after upgrading to v1.7.x ([#48327](#)). ([#51199](#), [@kow3ns](#))
- Make logdump support kubemark and support gke with 'use_custom_instance_list' ([#51834](#), [@shyamjvs](#))
- Fix credentials providers for docker sandbox image. ([#51870](#), [@feiskyer](#))

v1.6.10

[Documentation](#) & [Examples](#)

Downloads for v1.6.10

filename	sha256 hash
kubernetes.tar.gz	8877359b78950b12a48ea68483f4e4ba2d2521f7e8620efca6f84275cb023428
kubernetes-src.tar.gz	560d1441b72c670c3d21f838f8d0a94bc75628b1bdd322b18e91df2578a0f84b

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	087799af2856decf438dbd896260cfdec3c02c6a42e2e2f90b608f21d61a8fb6
kubernetes-client-darwin-amd64.tar.gz	8d9dbbee46a26fcf7f50af145b888881a428d62a3ee929b75e0a6833553de4ab
kubernetes-client-linux-386.tar.gz	d69bd343613bd3f57799d05de5f56ec159ddb6f38cbec1d914b5c2e7a2945f6e
kubernetes-client-linux-amd64.tar.gz	b0e2420e66257e67c9f53c996feebff20bebbbe5c9bc12b85b973a165ee436ec
kubernetes-client-linux-arm64.tar.gz	4d9b6064fd409789c7bc07b7a3746798f94a19bf811021f727fcf8afdbd432aa
kubernetes-client-linux-arm.tar.gz	7a02002aa3c4f6c5c2ff662fe023da3cd32a687967bb42a76e2014fe12a349f4
kubernetes-client-linux-ppc64le.tar.gz	f0b26ad0bdf578a8c98e870a276ad7b8d77ef13f423476b21b78f18077b83893
kubernetes-client-linux-s390x.tar.gz	da4125aff73b1d397b2917d4397690686d44f426471fd12eed080947c0de03e5
kubernetes-client-windows-	0bd8aeb66a1d5235da85a71150e10838c0d8d67ecb8b368262d52ac86ff10dbd

386.tar.gz	
kubernetes-client-windows-amd64.tar.gz	3a89271b4554e56c37038f797ad31f357107257d80fed9ab5ca80832e33cf00e

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	ae897c9db3a0b89be6ff66ca8e35b41165be620614f60aab424d76deffa45bcc
kubernetes-server-linux-arm64.tar.gz	f6ce8a89f2ce9b380789828ba2723ac834d2dd40dd20403f22040ee08a390b07
kubernetes-server-linux-arm.tar.gz	085a3166785ab4fe17cc153fa6306df55af6fa90d5a3a4670923cf4515323f70
kubernetes-server-linux-ppc64le.tar.gz	c55f6741370471a2caac8b844865d908c8b327f2aea6685e193d54f4b14a5a63
kubernetes-server-linux-s390x.tar.gz	e36bd6f3bd7493f4ba12ceeebc9a6102778d20d203054d74cd69e929b7abcc84

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	e083f7bc8028a2eb03bbcc6be93a95377e74906ae49970af034d36b3409f72de
kubernetes-node-linux-arm64.tar.gz	95895aab99979aca8cb713f53b2be0f11b16c3a76e97c206a70969a3cc3e003d
kubernetes-node-linux-arm.tar.gz	a1e2dee888f4ef9affd1c2b747602f4d53971911b93ea69174d7301a5f7e1ccc
kubernetes-node-linux-ppc64le.tar.gz	1cbaa1f6116c862acaef7a3e1ad6c27bcf5f87eb4ce01f6f9164c58caa2e0009
kubernetes-node-linux-s390x.tar.gz	178a53d8193464a6062b3ebdea6c8dbb3dcb9f7c0ab1f40e386e555939c0be51
kubernetes-node-windows-amd64.tar.gz	1c044217184bcbe7e11c9fe0c511bbc6353935fc850b2c6b0f6ca0f2cbe31a8e

Changelog since v1.6.9

Other notable changes

- Add `--request-timeout` to kube-apiserver to make global request timeout configurable. ([#51415](#), [@jpbetz](#))
- Fix for Nodes in vSphere lacking an InternalIP. ([#48760](#)) ([#49202](#), [@cbonte](#))
- GCE: Bump GLBC version to [0.9.6](#). ([#50096](#), [@nicksardo](#))
- In GCE with COS, increase TasksMax for Docker service to raise cap on number of threads/processes used by containers. ([#51986](#), [@yujuhong](#))
- Fixed an issue ([#47800](#)) where `kubectl logs -f` failed with `unexpected stream type ""`. ([#51872](#), [@feiskyer](#))
- Fix for Pod stuck in ContainerCreating with error "Volume is not yet attached according to node". ([#50806](#), [@verult](#))
- Fix initial exec terminal dimensions. ([#51126](#), [@chen-anders](#))
- vSphere: Fix attach volume failing on the first try. ([#51218](#), [@BaluDontu](#))

v1.6.9

[Documentation](#) & [Examples](#)

Downloads for v1.6.9

filename	sha256 hash
kubernetes.tar.gz	08be94c252e7fbdd7c14811ec021818e687c1259e557b70db10aac64c0e8e4b2
kubernetes-src.tar.gz	519501e26afc341b236c5b46602f010a33fc190e3d1bfb7802969b2e979faaeb

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	864f2307dd22c055063d1a55354596754a94d03f023e7278c24d5978bba00b3e
kubernetes-client-darwin-amd64.tar.gz	0a107e0a1d7e6865ddd9241f1e8357405f476889a6f1a16989ba01f6cffd3be7
kubernetes-client-linux-386.tar.gz	b20599e266248e7e176383e0318acd855c1aad8014396cc4018adde11a33d0c8
kubernetes-client-linux-amd64.tar.gz	0690a8c9858f91cc000b3acd602799bf2320756b7471e463df2e3a36fbdde886
kubernetes-client-linux-arm64.tar.gz	354897ffc6382b8eb27f434d8e7aa3cbfae4b819da3160a43db8ccb8cae1275b
kubernetes-client-linux-arm.tar.gz	6897408bf8d65d1281555c21ae978a4ccd69482a7ad2549bcec381416e312d7a
kubernetes-client-linux-ppc64le.tar.gz	2afae0c211eb415829446f90a0bf9d48b9f8311ac4566fa74a08415ed9a31e75
kubernetes-client-linux-s390x.tar.gz	abde354528cc9c8ced49bb767ffcd8bfae47a0b4b5501502f560cf663a0c4a05
kubernetes-client-windows-386.tar.gz	83083c0d78e9468c7be395282a4697d2c703d3310593e7b70cd09fa9e7791d80
kubernetes-client-windows-amd64.tar.gz	3471db3463d60d22d82edb34fbe3ca301cc583ebddffc2664569255302e7d304

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	598e49c8a22e4e8db1e1c0ed9d8955c991425cd4e06c072ac36fd5ed693b1c61
kubernetes-server-linux-arm64.tar.gz	5ce75f57636d537b4bf3ca00c4a1322e9c1aaf273bd94530433b558af3c081b
kubernetes-server-linux-arm.tar.gz	afea9780049c5e6548f64973bd8679aae60672ab05027f8c36784ccf2a83a1b2
kubernetes-server-linux-ppc64le.tar.gz	cd131b3e39e4160cd9920fe2635b4f6da4679cce12cb2483cfe28197e366bceb

kubernetes-server-linux-s390x.tar.gz	93ee43f33cbe061ac088acf62099be1abd0d9c0b4a8a79be4069904c3780c76d
--	--

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	f8f13233b168c4833af685817f9591c73658d1377ceb9d550cbea929c6e27c2e
kubernetes-node-linux-arm64.tar.gz	1ed434f9e6469c8cc7a3bb15404e918cf242ef92ef075e7cf479b7e951269b5c
kubernetes-node-linux-arm.tar.gz	3fd8e089184f83bd9ed2cf5f193253e1f7b9b853876a08a2babf91647d6d0ac8
kubernetes-node-linux-ppc64le.tar.gz	9673547a32f83498bb28f02212d419b28cc50a0a4d7b866396994b5ea9313e79
kubernetes-node-linux-s390x.tar.gz	80044cdeb4260e807660c166ed15bb2a9db03d59d8c186b1d4f9a53841cea327
kubernetes-node-windows-amd64.tar.gz	b1dd678ee2974dc83ea7cfe8516557c9360ed55e40cad1b68803b71786f8d16f

Changelog since v1.6.8

Other notable changes

- StatefulSet: Set hostname/subdomain fields on new Pods in addition to the deprecated annotations, to allow mitigation of Pod DNS issues upon upgrading to Kubernetes v1.7.x. ([#50942](#), [@enisoc](#))
- Azure: Allow VNet to be in a separate Resource Group. ([#49725](#), [@sylr](#))
- In GCE, add measures to prevent corruption of known_tokens.csv. ([#49897](#), [@mikedanese](#))
- Fixed a bug in the API server watch cache, which could cause a missing watch event immediately after cache initialization. ([#49992](#), [@liggitt](#))

v1.6.8

[Documentation](#) & [Examples](#)

Downloads for v1.6.8

filename	sha256 hash
kubernetes.tar.gz	c87f7826f0b7cf91baddd97ebafb33e99d91dcf6b9019a50bee0689527541ef7
kubernetes-src.tar.gz	591c43f9624dac351745da35444302cd694ad4953275b8f09016b4654d37b793

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	3f6cda6ca2cf3e8f038649f1021ca23c35f4da12d66cefaa4339c9613ca9bbd6
kubernetes-client-darwin-amd64.tar.gz	147bf5124e44a1557b95e7daa76717992b7890e79910c446dc682103f62325eb
kubernetes-client-linux-386.tar.gz	cd7238c19f9d4a4ce0b14c2d954f6ead2235caa2d74b319524a0d2f7eea0ca37

kubernetes-client-linux-amd64.tar.gz	34042be9607ca75702384552b31514f594af22d3c1d88549b0cd4ce36ee8fd6b
kubernetes-client-linux-arm64.tar.gz	3a7d4be76dda07fac50a257275369b3f4c48848e2963b55b46fa9df44477bfc8
kubernetes-client-linux-arm.tar.gz	0a060b8745b3c0e8173827af3d91a4748eb191a9c15538625eee108f6024fcd
kubernetes-client-linux-ppc64le.tar.gz	bbc7be082d20082179de5efb85c0da9d0f3811c2119d3928bf89edc8f59e8cd0
kubernetes-client-linux-s390x.tar.gz	5e93d7ed4797f6b8742925d13f791e862bdb410bdd2b33737882132aabcc0bfd
kubernetes-client-windows-386.tar.gz	22a0a80fa5ed5f0745371cc9fd68eeeb0671242cf7c476fb4e635ccd9ef8c2b1
kubernetes-client-windows-amd64.tar.gz	ce42d7e826aa07bd98a424332926b04e75effbe926b098565781de3c3b6d244c

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	9bf31375917ffdf9a9437ed562e96a1e2b43e23dcb4a42204032bb289ff12b6d
kubernetes-server-linux-arm64.tar.gz	51d84e7b1ace983b13639f1fe4bf1b11212d178e6a75b769de9bdac97d1fa7ae
kubernetes-server-linux-arm.tar.gz	b704de70774c6c0feb13a7b47d8d757e9a0438406b7fd1d33d0c5cb991d179b0
kubernetes-server-linux-ppc64le.tar.gz	f36f086481656fcb659a456ca832d62274e40defc1a3ed1dcc1e5ea7a696729b
kubernetes-server-linux-s390x.tar.gz	348f8a733556fcceaaa27d316c3e2ea01039c860988a434d7c9a850bc2412546

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	e38255961c73e021bcc08890918f23cce39831536bf74496aa369049a1eb165
kubernetes-node-linux-arm64.tar.gz	be06c10320f3f996a48845eef9572353f9a0bd56330338c4cad6aca1fcc4fac4
kubernetes-node-linux-arm.tar.gz	06c6ecd885fbb4889791e78f50cdcb9920ee8f1e866d4fa921bc2096dbfbbd4b
kubernetes-node-linux-ppc64le.tar.gz	74e88435549cc46f3fc082300bf373c7d824921bd01eabf789a1b09e1a17a04a
kubernetes-node-linux-s390x.tar.gz	7ebe22e74653650ac0cedbfc482f5ff08713c40747018dac7506b36bb78ee8fc
kubernetes-node-windows-amd64.tar.gz	66b66655976647f50db3eda61849cbb26bcb06ad20a866328f24aef862758bb4

Changelog since v1.6.7

Other notable changes

- Revert deprecation of vCenter port in vSphere Cloud Provider. ([#49689](#), [@divyenpatel](#))
- kubeadm: Add preflight check for localhost resolution. ([#48875](#), [@craigtracey](#))
- Fix panic when using `kubeadm init` with vsphere cloud-provider. ([#44661](#), [@xiangpengzhao](#))
- kubectl: Fix bug that showed terminated/evicted pods even without `--show-all`. ([#48786](#), [@janetkuo](#))
- Never prevent deletion of resources as part of namespace lifecycle ([#48733](#), [@liggitt](#))
- AWS cloudprovider plugin: Fix for large clusters (200+ nodes). Also fix bug with volumes not getting detached from a node after reboot. ([#48312](#), [@gnufied](#))
- Fix Pods using Portworx volumes getting stuck in ContainerCreating phase. ([#48898](#), [@harsh-px](#))
- RBAC role and role-binding reconciliation now ensures namespaces exist when reconciling on startup. ([#48480](#), [@liggitt](#))

v1.6.7

[Documentation](#) & [Examples](#)

Downloads for v1.6.7

filename	sha256 hash
kubernetes.tar.gz	6522086d9666543ed4e88a791626953acd1ea843eb024f16f4a4a2390dcbb2b2
kubernetes-src.tar.gz	b2a73f140966ba0080ce16e3b9a67d5fd9849b36942f3490e9f8daa0fe4511c4

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	ffa06a16a3091b2697ef14f8e28bb08000455bd9b719cf0f510f011b864cd1e0
kubernetes-client-darwin-amd64.tar.gz	32de3e38f7a60c9171a63f43a2c7f0b2d8f8ba55d51468d8dbf7847dbd943b45
kubernetes-client-linux-386.tar.gz	d9c27321007607cc5afb2ff5b3cac210471d55dd1c3a478c6703ab72d187211e
kubernetes-client-linux-amd64.tar.gz	54947ef84181e89f9dbacedd54717cbcd5cc7f9c36cb37bc8afc9097648e2c91
kubernetes-client-linux-arm64.tar.gz	e96d300eb6526705b1c1bedaa3f4746f3e5d6b49ccc7e60650eb9ee022fba0e
kubernetes-client-linux-arm.tar.gz	e4605dca3948264fba603dc8f95b202528eb8ad4ca99c7f3a61f77031e7ba756
kubernetes-client-linux-ppc64le.tar.gz	8b77793aea5abf1c17b73f7e11476b9d387f3dc89e5d8405ffadd1a395258483
kubernetes-client-linux-s390x.tar.gz	ff3ddec930a0ffdc83fe324d544d4657d57a64a3973fb9df4ddaa7a98228d7fb
kubernetes-client-windows-386.tar.gz	ce09e4b071bb06039ad9bdf6a1059d59cf129dce942600fcd9d320ff0c07a7a
kubernetes-client-windows-amd64.tar.gz	e985644f582945274e82764742f02bd175f05128c1945e987d06973dd5f5a56d

Server Binaries

--	--

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	1287bb85f1057eae53f8bb4e4475c990783e43d2f57ealc551fdf2da7ca5345d
kubernetes-server-linux-arm64.tar.gz	51623850475669be59f6428922ba316d4dd60d977f892adfaf0ca0845c38506c
kubernetes-server-linux-arm.tar.gz	a5331022d29f085e6b7fc4ae064af64024eba6a02ae54e78c2e84b40d0aec598
kubernetes-server-linux-ppc64le.tar.gz	93d52e84d0fea5bdf3ede6784b8da6c501e0430c74430da3a125bd45c557e10a
kubernetes-server-linux-s390x.tar.gz	baccbb6fc497f433c2bd93146c31fbca1da427e0d6ac8483df26dd42ccb79c6e

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	0cfdd51de879869e7ef40a17dfa1a303a596833fb567c3b7e4f82ba0cf863839
kubernetes-node-linux-arm64.tar.gz	d07ef669d94ea20a4a9e3a38868ac389dab4d3f2bdf8b27280724fe63f4de3c3
kubernetes-node-linux-arm.tar.gz	1cc9b6a8aee4e59967421cbded21c0a20f02c39288781f504e55ad6ca71d1037
kubernetes-node-linux-ppc64le.tar.gz	3f412096d8b249d671f924c3ee4aecf3656186fde4509ce9f560f67a9a166b6d
kubernetes-node-linux-s390x.tar.gz	2cca7629c1236b3435e6e31498c1f8216d7cca4236d8ad0ae10c83a422519a34
kubernetes-node-windows-amd64.tar.gz	4f859fba52c044a9ce703528760967e1efa47a359603b5466c0dc0748eb25e36

Changelog since v1.6.6

Other notable changes

- kubectl: Expose only the cluster-info ConfigMap in the kube-public ns ([#48050](#), [@luxas](#))
- Fix kubelet request timeout when stopping a container. ([#46267](#), [@Random-Liu](#))
- Add generic NoSchedule toleration to fluentd in gcp config. ([#48182](#), [@gmarek](#))
- Update cluster-proportional-autoscaler, fluentd-gcp, and kube-addon-manager, and kube-dns addons with refreshed base images containing fixes for CVE-2016-9841, CVE-2016-9843, CVE-2017-2616, and CVE-2017-6512. ([#47454](#), [@ixdy](#))
- Fix fluentd-gcp configuration to facilitate JSON parsing ([#48139](#), [@crassirostris](#))
- Bump runc to v1.0.0-rc2-49-gd223e2a - fixes failed to initialise top level QOS containers kubelet error. ([#48117](#), [@sjenning](#))
- kubefed init correctly checks for RBAC API enablement. ([#48077](#), [@liggitt](#))
- kubectl api-versions now always fetches information about enabled API groups and versions instead of using the local cache. ([#48016](#), [@liggitt](#))
- Fix kubelet event recording for selected events. ([#46246](#), [@derekwayneccarr](#))
- Fix Invalid value: "foregroundDeletion" error when attempting to delete a resource. ([#46500](#), [@tnozicka](#))

v1.6.6

[Documentation](#) & [Examples](#)

Downloads for v1.6.6

filename	sha256 hash
kubernetes.tar.gz	1574d868d43f5d88cfd1af255226e8cd6da72cd65fb9e1285557279c34f8a645
kubernetes-src.tar.gz	305f372320f78855e298b6caea062c8d1f7db117c7b44943ff5ddd0169424033

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	d93ca6f95cd80856b04d9c76a98ca986d6ba183d9fa100619fcd9f157bfd7f6
kubernetes-client-darwin-amd64.tar.gz	facda65133f2893296f64c1067807dd7b354e2a4440afdd1ee62c05c07bcb91a
kubernetes-client-linux-386.tar.gz	5d1bd3ecc96f9e1cb9f20cef88c5aa2ec9c09370e8892557fc8a7cfe3cba595b
kubernetes-client-linux-amd64.tar.gz	94b2c9cd29981a8e150c187193bab0d8c0b6e906260f837367feff99860a6376
kubernetes-client-linux-arm64.tar.gz	a7554e496403b50c12f5dbfaa00f2b887773905894ae5c330e2accd7b7e137c9
kubernetes-client-linux-arm.tar.gz	5a3414f4b47c84b173c879379d90b447af0540730bb86f10baf6d6933b09d41d
kubernetes-client-linux-ppc64le.tar.gz	904bab541dd8f1236d5e47f97cd2509c649f629fdc3af88a3968ca3c5575886d
kubernetes-client-linux-s390x.tar.gz	d4a85694f796e4e1c14e6bddc295d9f776001fd8ac92ed32565606b964a843b0
kubernetes-client-windows-386.tar.gz	47258f6fc7fbd17ac1ddb38387adc5a2ddc2e39c5792cf3d354f9b19d373a6b2
kubernetes-client-windows-amd64.tar.gz	e8c2957688acf19463e28d39cc1b4b1e9a12b3f10101dff179d1d63754b34236

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	7bbf43f81f5dbc3729c1956705d95c218b848591d03789d48f10e58fa865a0ba
kubernetes-server-linux-arm64.tar.gz	f725f491a8998bdf164470029441135336ec0414360d6b57a5d8daf73d09334f
kubernetes-server-linux-arm.tar.gz	9026ca6fdbffef1d02409a86649e4dd0a7667ff6c27df318a3d851c271fb38d0
kubernetes-server-linux-ppc64le.tar.gz	cd3b1b693b4e8225f78751bff533024785b0e20c2c51228956692db2a21d9f60

[kubernetes-server-linux-s390x.tar.gz](#)

9cd42506f4891be4691b7f4a8be7b894109dca54d0e9130651bc869101d7ed1f

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	962f327f9a7b038c3b125a6cd06b690012fa38c827de0dae75955bb2be717126
kubernetes-node-linux-arm64.tar.gz	e09af9f1130f8e1d4f6b45ec79eedb94e98354edb813b635c0dc097437834a1b
kubernetes-node-linux-arm.tar.gz	7647ec0a51308ca73e4c4eb4cbe09f2f9609c809e530d129a718d960a25d339d
kubernetes-node-linux-ppc64le.tar.gz	439b2135b179b699ca951a2d619629583d92dbdfb60b3920a1fa872b4cd65b6d
kubernetes-node-linux-s390x.tar.gz	eed95c80bddad4a67d81c036b0d047dfb7bef8fb13a4e1b4817c1f2a595b993e
kubernetes-node-windows-amd64.tar.gz	611a92f9ab4f6dd48349843eec844b6abf861d76a151cce91b216a56bb6c821f

Changelog since v1.6.5

Action Required

- Azure: Change container permissions to private for provisioned volumes. If you have existing Azure volumes that were created by Kubernetes v1.6.0-v1.6.5, you should change the permissions on them manually. ([#47605](#), [@brendandburns](#))

Other notable changes

- Bump GLBC version to 0.9.5 - fixes [loss of manually modified GCLB health check settings](#) upon upgrade from pre-1.6.4 to either 1.6.4 or 1.6.5. ([#47567](#), [@nicksardo](#))

v1.6.5

[Documentation](#) & [Examples](#)

Known Issues for v1.6.5

- If you use the [GLBC Ingress Controller](#), upgrading an existing pre-v1.6.4 cluster to Kubernetes v1.6.5 will cause an unintentional [overwrite of manual edits to GCP Health Checks](#) managed by the GLBC Ingress Controller. This can cause the health checks to start failing, requiring you to reapply the manual edits.
 - This issue does not affect clusters that were already running Kubernetes v1.6.4 or higher.
 - This issue does not affect Health Checks that were left in the configuration [originally set by the GLBC Ingress Controller](#).

Downloads for v1.6.5

filename	sha256 hash
kubernetes.tar.gz	e497ddd9d0fb03a71babd6c7f879951ba8e2d791c9884613d60794f7df9a5a51
kubernetes-src.tar.gz	3971e41435f6e22914b603ea56bec72f78673fca9f5a5436a4beda7957dc24e1

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	af2290d1c3c923a6f873736739e0fc381328d19eb726419a17f2ae51e3ac2b45
kubernetes-client-darwin-amd64.tar.gz	8a138c2487871807bc8461a5bb0867d75cf9da228ecb6acdc5d22c08b2ed107d
kubernetes-client-linux-386.tar.gz	3f6867dd51e7838f58cf7e95174ef914d8d280ff275ac56cc8b285566ce30996
kubernetes-client-linux-amd64.tar.gz	8f38e71b1c68d69299af86ab4432297ae0d72cdee1d1e1c9975d77e448096c9c
kubernetes-client-linux-arm64.tar.gz	1d01ae4423eb9794d09202ff4f24207c9d62b32a1b8f4906801a66fcd70b8fa5
kubernetes-client-linux-arm.tar.gz	438a8b4388960fe48e87aa7e97954f1cf9f9cc5c957eee108c3cc8040786fdce
kubernetes-client-linux-ppc64le.tar.gz	3b64d6ce09ffb65d3fe8c4101309c3b39fdab3643d89f91e89445c8e3279884e
kubernetes-client-linux-s390x.tar.gz	f5fb3ddc6a6203ae68b0213624bbfa12b114a70a38e85151272273cbd8fd4fbd
kubernetes-client-windows-386.tar.gz	6ddc9b300746eefdc5d71aae193dea171115dab9db00010d416728d3f2035f19
kubernetes-client-windows-amd64.tar.gz	95854266bf64b84b59d1e6a3ca0501cf3c85fbd0258cb540893d5771aca74ace

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	68809d34d3429685eaafedf398f690bba1bcc1f793cd2d8193559b90492c68b1
kubernetes-server-linux-arm64.tar.gz	96bf4da5cbaa8f7b0f8909276005e0766ca4fa30431396ba30b9e77be1abb7f0
kubernetes-server-linux-arm.tar.gz	2f9c5275a6a2b5b10416a3e76f64e996851f486eb6b2dbe0f106b81bb63e63a9
kubernetes-server-linux-ppc64le.tar.gz	f47bc83530dc7448879e7d11c2ba1613adc318fd6c1cbba76e5d7181d850667c
kubernetes-server-linux-s390x.tar.gz	ebbd82df12da7470299e9877185797def86b859a44e72486e7be995c01eae56c

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	f842694701f8966cdfceca5f8f9d2b49bc84baf7446b67f7bf23b7581c245cc3
kubernetes-node-linux-arm64.tar.gz	4efc4c8d9df77ad66763ce5cc39650ea1ebd43dd4f789622c93b0aa872f7a186
kubernetes-node-linux-arm.tar.gz	6f4e2b764aec5c458e8bf28159190c0c725e20ab94cf9ced3279dc75caa3fe21
kubernetes-node-linux-	ba0e8ea11050273dbdf7b6d179251a95021b85000523e539c4940312586fd716

ppc64le.tar.gz	
kubernetes-node-linux-s390x.tar.gz	b6555e9a94a38e8bda502ec3eb951d4d854ebe8c44ba31320882a497703ab2bf
kubernetes-node-windows-amd64.tar.gz	0eaf3789c93996a45c74b30cc8a4d7169a639b7cf3fcf589ec387a0cfd0782d8

Changelog since v1.6.4

Other notable changes

- Fix iSCSI iSER mounting. ([#47281](#), [@mtanino](#))
- Added exponential backoff to Azure cloudprovider ([#46660](#), [@jackfrancis](#))
- Update kube-dns to 1.14.2. ([#45684](#), [@bowei](#))
- Fix log spam due to unnecessary status update when node is deleted. ([#45923](#), [@verult](#))
- Poll all active pods periodically for volumes to fix out of order pod & node addition events. Fixes volumes not getting detached after controller restart. ([#42033](#), [@NickrenREN](#))
- iscsi storage plugin: Fix dangling session when using multiple target portal addresses. ([#46239](#), [@mtanino](#))
- The namespace API object no longer supports the deletecollection operation, which was previously allowed by mistake and did not respect expected namespace lifecycle semantics. ([#47098](#), [@liggitt](#))
- Azure: Fix support for multiple `loadBalancerSourceRanges`, and add support for UDP ports and the Service spec's `sessionAffinity`. ([#45523](#), [@colemickens](#))
- Fix the bug where container cannot run as root when SecurityContext.RunAsNonRoot is false. ([#47009](#), [@yujuhong](#))
- Remove broken getvolumename and pass PV or volume name to attach call ([#46249](#), [@chakri-nelluri](#))
- Portworx volume driver no longer has to run on the master. ([#45518](#), [@harsh-px](#))
- Upgrade golang version to 1.7.6 ([#46405](#), [@cblecker](#))
- kube-proxy handling of services with no endpoints now applies to both INPUT and OUTPUT chains, preventing socket leak. ([#43972](#), [@thockin](#))
- Fix kube-apiserver crash when patching TPR data ([#44612](#), [@nikhita](#))
- vSphere cloud provider: Report same Node IP as both internal and external. ([#45201](#), [@abrarshivani](#))
- Kubelet: Fix image garbage collector attempting to remove in-use images. ([#46121](#), [@Random-Liu](#))
- Add metrics exporter to the fluentd-gcp deployment ([#45096](#), [@crassirostris](#))
- Fix the bug where StartedAt time is not reported for exited containers. ([#45977](#), [@yujuhong](#))
- Enable basic auth username rotation for GCI ([#44590](#), [@ihmccreery](#))
- vSphere cloud provider: Filter out IPV6 node addresses. ([#45181](#), [@BaluDontu](#))
- vSphere cloud provider: Fix volume detach on node failure. ([#45569](#), [@divyenpatel](#))
- Job controller: Retry with rate-limiting if a Pod create/delete operation fails. ([#45870](#), [@tacy](#))
- Ensure that autoscaling/v1 is the preferred version for API discovery when autoscaling/v2alpha1 is enabled. ([#45741](#), [@DirectXMan12](#))
- Add support for Azure internal load balancer. ([#45690](#), [@jdumars](#))
- Fix `kubectl delete --cascade=false` for resources that don't have legacy overrides to orphan by default. ([#45713](#), [@kargakis](#))
- Fix erroneous FailedSync and FailedMount events being periodically and indefinitely posted on Pods after kubelet is restarted ([#44781](#), [@wongma7](#))
- fluentd will tolerate all NoExecute Taints when run in gcp configuration. ([#45715](#), [@gmarek](#))
- Fix [Deployments with Recreate strategy not waiting for Pod termination](#). ([#45639](#), [@ChipmunkV](#))
- vSphere cloud provider: Remove the dependency of login information on worker nodes for vsphere cloud provider. ([#43545](#), [@luomiao](#))
- vSphere cloud provider: Fix fetching of VM UUID on Ubuntu 16.04 and Fedora. ([#45311](#), [@divyenpatel](#))

v1.6.4

[Documentation](#) & [Examples](#)

Known Issues for v1.6.4

- If you use the [GLBC Ingress Controller](#), upgrading an existing cluster to Kubernetes v1.6.4 will cause an unintentional [overwrite of manual edits to GCP Health Checks](#) managed by the GLBC Ingress Controller. This can cause the health checks to start failing, requiring you to reapply the manual edits.
 - This issue does not affect clusters that start out with Kubernetes v1.6.4 or higher.
 - This issue does not affect Health Checks that were left in the configuration [originally set by the GLBC Ingress Controller](#).

Downloads for v1.6.4

filename	sha256 hash
kubernetes.tar.gz	fef6a97be8195fee1108b40acbd7bea61ef5244b8be23e799d2d01ee365907dd
kubernetes-src.tar.gz	2915465e9b389c5af0fa660f6e7cbc36a416d1286094201e2a2da5b084a37cb3

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	e2db37a1cf3dff342e9ba25506c96edba0cbc9b65984dfe985a7ab45df64f93e
kubernetes-client-darwin-amd64.tar.gz	0d49df4b06f76b5a6e168f72ac0088194d4267cc888880f7d0f23e558cd0ee32
kubernetes-client-linux-386.tar.gz	5e218cc7f01d6fa71d0a10a30eea2724ee111db3bbae5a03f0c560cd0d24a5df
kubernetes-client-linux-amd64.tar.gz	4c8dbd03a66d871f03592e84ed98d205d2d0e0c0f6d48c7b60f3e9840ad04df8
kubernetes-client-linux-arm64.tar.gz	9bf29b0f8bdde972d62556bdd14622199f979f7dcf56d3948d429b1d73feca08
kubernetes-client-linux-arm.tar.gz	bbca1efe8fb95c6df7b330054776ce619652ba9d4c5428eabef9c435c61d1d9a
kubernetes-client-linux-ppc64le.tar.gz	7aa02e261f36a816dc1c7c898e16d732d9199d827ac4828f8e120b4a9ce5aa05
kubernetes-client-linux-s390x.tar.gz	531d00c43a49bb72365f2d6c1f31ad99ff09893e41f6b28d21980dbdd3ab0de4
kubernetes-client-windows-386.tar.gz	256fa2ffa77a1107e87a5a232bf8aa245afbc5d383eda18f19f3fedbbad9a69
kubernetes-client-windows-amd64.tar.gz	c8a97087b81defdc513a9fe4aaf317d10ad6fc3368170465dd4ea64c23655939

Server Binaries

filename	sha256 hash

kubernetes-server-linux-amd64.tar.gz	76a1d6dbce630b50fd3a5f566fcea6ef1a04996cf4f4c568338a3db0d3b6a3d5
kubernetes-server-linux-arm64.tar.gz	8b731307138a71ae90e025cb85ec7b4ac9179ebd8923f7abd1c839a2966ff2b0
kubernetes-server-linux-arm.tar.gz	0d3039f22cdc36526257f211c55099552b8d55cda25a05405f2701c869bb4be2
kubernetes-server-linux-ppc64le.tar.gz	6de3a85392ff65c019fd90173f1219a41f56559aebd07b18ed497e46645fcffc
kubernetes-server-linux-s390x.tar.gz	622a137c06a9fda23ec5941dd41607564804eeede0e6d3976cda6cc136e010c6

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	df40c178ffbd92376e98dd258113e35c0a46a8313f188d34d391a834baeb1da8
kubernetes-node-linux-arm64.tar.gz	a27b15a0edcf78470db54181ea2c2c942b5d4489b6f7a4ba78bb1fac34f8fa8
kubernetes-node-linux-arm.tar.gz	2b4dceee70ba7b508a0acc3cc5ce072d92f9c32c1a6961911b93a5da02ace9f7
kubernetes-node-linux-ppc64le.tar.gz	c5e01f9f7de6ae2d73004bbcd288f5c942414b6639099c1bf52a98e592147745
kubernetes-node-linux-s390x.tar.gz	eded4d2b94c9c22ae6c865e32a7965c1228d564aebf90c533607c716ed89b676
kubernetes-node-windows-amd64.tar.gz	da561264f5665fe1ae9a41999731403b147b91c3a5c47439eb828ed688b0738f

Changelog since v1.6.3

Other notable changes

- Fix kubelet panic during disk eviction introduced in 1.6.3. ([#46049](#), [@enisoc](#))
- Fix pods failing to start if they specify a file as a volume subPath to mount. ([#46046](#), [@enisoc](#))

v1.6.3

[Documentation](#) & [Examples](#)

Known Issues for v1.6.3

- This release introduced a regression when using [subPath](#). If the `subPath` is a file rather than a directory, Pods may fail to start ([#45613](#)).

Do not upgrade to v1.6.3 if your cluster may run Pods with such subPaths.

Downloads for v1.6.3

filename	sha256 hash
kubernetes.tar.gz	0af5914fcea36b3c65c8185f31e94b2839eaed52dfdd666d31dfa14534a7d69c

[kubernetes-src.tar.gz](#)

0d3cbc716b0d08bf3be779ddd096df965609b5bcb55c8b9ea084c6bb2d6ef1fd

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	2f2f58e8853eef7df293e579e8c94e1b6e75318b08bd1bf5747685ad8d16ebe2
kubernetes-client-darwin-amd64.tar.gz	122c20e2e92c1ed4a592c8a3851867452acff181ffe5251e8fee0ec8284704ac
kubernetes-client-linux-386.tar.gz	47c970bbe75a41634b9e5d0ae109a01f4823fdb83cf1c6c40a1ad4034b6d2764
kubernetes-client-linux-amd64.tar.gz	ae141e0cd011889c4468b5b8b841d8cd62c1802c4ccba4dfd8c42beaccaf7e75
kubernetes-client-linux-arm64.tar.gz	07a83a7f7df555e859f4f8e143274f9ed1f475d597f01d1c79e95cdfda289c94
kubernetes-client-linux-arm.tar.gz	4a0b89b4985e651a1c29590ae2ea16ea00203d7cbad7ffc8a541b8a13569e1be
kubernetes-client-linux-ppc64le.tar.gz	1c0116942a61580da717845c9b7fc69aa58438aaa176888cd3e57267c9c717c0
kubernetes-client-linux-s390x.tar.gz	94307d778e0819dc5a64e12d794e95a028207d06603204d82610f369e040ce67
kubernetes-client-windows-386.tar.gz	322d2db5dadd4b388c785d1caf651bcc76c566afb6d19e84bdf6abcc40fa19d4
kubernetes-client-windows-amd64.tar.gz	9ef35675f7cd6acb81fa69ded37174e9a55cc0f58a2f8159bfc5512230495763

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	22eadeff9c3a45bf4d490ffca50bd257b6c282a3d16b5b8b40b8c31070a94de1
kubernetes-server-linux-arm64.tar.gz	2f9d976dd6d436a8258a5eb0c4a270329746f4331db607acc6b893f81f25e1c9
kubernetes-server-linux-arm.tar.gz	11f6a859438805250b84b415427df5f07d44a2a2fffb37591b6cdc6c8dc317382
kubernetes-server-linux-ppc64le.tar.gz	670fc921b50cca1c4fc20fbe58be640eeae766d38f6b2053b68c1a1293e88ba0
kubernetes-server-linux-s390x.tar.gz	c5f2358bf81ea34fc01dbe5b639f03a10b5799ad75f8465863bb5c2b797b4f0b

Node Binaries

filename	sha256 hash
kubernetes-node-linux-amd64.tar.gz	428332868f42f77e02f337779a18a6332894b27f2432c5b804a8ff753895b883
kubernetes-node-linux-arm64.tar.gz	a8bdefd9c0ba9a247536a5a1bb7481b7a937cf39951256be774e45b8e40250cc
kubernetes-node-linux-arm.tar.gz	6b5aa71b27c0524b714489de80b2100e66bef99112f452aeaedcde1f890d2916

kubernetes-node-linux-ppc64le.tar.gz	34afa6e39ff8eb8a6f8f29874b6a3e5426fa6b64cc1b0f4466b17ae0f91f71ad
kubernetes-node-linux-s390x.tar.gz	170953b40e70242249c31e32456de73dacbed54e537efa4275d273441df98f7d
kubernetes-node-windows-amd64.tar.gz	410f175a47335b93f212cff5f3921a062ca6e945fa336d3cf0971f9bebbba73e5

Changelog since v1.6.2

Other notable changes

- Bump GLBC version to 0.9.3 ([#45055](#), [@nicksardo](#))
- kubeadm: Fix invalid assign statement so it is possible to register the master kubelet with other initial Taints ([#45376](#), [@luxas](#))
- Fix a bug that caused invalid Tolerations to be applied to Pods created by DaemonSets. ([#45349](#), [@gmarek](#))
- Bump cluster autoscaler to v0.5.4, which fixes scale down issues with pods ignoring SIGTERM. ([#45483](#), [@mwielgus](#))
- Fixes and minor cleanups to pod (anti)affinity predicate ([#45098](#), [@wojtek-t](#))
- StatefulSet: Fix to fully preserve restart and termination order when StatefulSet is rapidly scaled up and down. ([#45113](#), [@kow3ns](#))
- Fix some false negatives in detection of meaningful conflicts during strategic merge patch with maps and lists. ([#43469](#), [@enisoc](#))
- cluster-autoscaler: Fix duplicate writing of logs. ([#45017](#), [@MaciekPytel](#))
- Fixes a bug where pods were evicted even after images are successfully deleted. ([#44986](#), [@dashpole](#))
- CRI: respect container's stopping timeout. ([#44998](#), [@feiskyer](#))
- Fix problems with scaling up the cluster when unschedulable pods have some persistent volume claims. ([#44860](#), [@mwielgus](#))
- Exclude nodes labeled as master from LoadBalancer / NodePort; restores documented behaviour. ([#44745](#), [@justinsb](#))
- Fix for [scaling down remaining good replicas when a failed Deployment is paused](#). ([#44616](#), [@kargakis](#))
- kubectl commands run inside a pod using a kubeconfig file now use the namespace specified in the kubeconfig file, instead of using the pod namespace. If no kubeconfig file is used, or the kubeconfig does not specify a namespace, the pod namespace is still used as a fallback. ([#44570](#), [@liggitt](#))
- Restored the ability of kubectl running inside a pod to consume resource files specifying a different namespace than the one the pod is running in. ([#44862](#), [@liggitt](#))
- Fix false positive "meaningful conflict" detection for strategic merge patch with integer values. ([#44788](#), [@enisoc](#))
- Fix insufficient permissions to read/write volumes when mounting them with a subPath. ([#43775](#), [@wongma7](#))
- vSphere cloud provider: Allow specifying fstype in storage class. ([#41929](#), [@abrashivani](#))
- vSphere cloud provider: Allow specifying VSAN Storage Capabilities during dynamic volume provisioning. ([#42974](#), [@BaluDontu](#))

v1.6.2

[Documentation](#) & [Examples](#)

Downloads for v1.6.2

--	--

filename	sha256 hash
kubernetes.tar.gz	240f66a98bf75246b53ef7c1fa3a2be36a92cbc173bc8626e7bc4427bef9ce6a
kubernetes-src.tar.gz	dbf19a8f2e50b3e691eeba0c418fe057f1ea8527b8c0194ba9749c12c801b24b

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	3b1437cbc9d10e5466c83304c54ab06f5a880e0b047e2b0ea775530ee893b6b6
kubernetes-client-darwin-amd64.tar.gz	e3dad0848b3d6c1737199d0704c692e74bf979e6a81fabea79c5b2499ca3fa73
kubernetes-client-linux-386.tar.gz	962f576e67f13f8f8afc958f89f0371c7496b2540372ef7f8e1bd0e43a67e829
kubernetes-client-linux-amd64.tar.gz	f8ef17b8b4bb8f6974fa2b3faa992af3c39ad318c30bdfef1efab957361d8bdfe
kubernetes-client-linux-arm64.tar.gz	9582e6783e7effa10b0af2f662d1bc4471bbf8205d9df07a543edb099ba7f27c
kubernetes-client-linux-arm.tar.gz	165b642ba6900f7d779bc6a27f89ccdb09eefcbb310a8bc5f6d101db27e2e9cc
kubernetes-client-linux-ppc64le.tar.gz	514a308ccfb978111a74b5bf843cf6862464743f0f4e2aaffada33add4c2bb0f
kubernetes-client-linux-s390x.tar.gz	e030593109a369bc3288c9f47703843248dbe4a9ade496f936d8cc355a874ba6
kubernetes-client-windows-386.tar.gz	a2b0053de6b62d09123d8fcc1927a8cf9ab2a5a312794a858e7b423f4ffdbe3e
kubernetes-client-windows-amd64.tar.gz	ea fd aa29a70d1820be0dc181074c5788127996402bbd5af53b0b765ed244e476

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	016bc4db69a8f90495e82f6e6e5ec9a12e56ecab58a8eb2e5471bf9cab827ad2
kubernetes-server-linux-arm64.tar.gz	1985596d769656d68ec692030dd31bbec8081daf52ddaef6a2a7af7d6b1f7876
kubernetes-server-linux-arm.tar.gz	e0d4c53c55de5c100973379005aabe1441004ed4213b96a6e492c88d5a9b7f49
kubernetes-server-linux-ppc64le.tar.gz	652a8230c4511bc30d8f3a6ae11ebbee8c6d350648d879f8f2e1aa34777323d0
kubernetes-server-linux-s390x.tar.gz	1eab2d36beecf4f74e3b7b74734a75faf43ed6428d312aeb2e940df4cceb5ed

Changelog since v1.6.1

Other notable changes

- Fix for [Windows kubect! sending full path to binary in User Agent](#). (#44622, @monopole)

- kube-apiserver now drops unneeded path information if an older version of Windows kubectI sends it. ([#44421](#), [@mml](#))
- CRI: Fix kubelet failing to start when using rkt. ([#44569](#), [@yujuhong](#))
- CRI: `kubectI logs -f` now stops following when container stops, as it did pre-CRI. ([#44406](#), [@Random-Liu](#))
- Azure cloudprovider: Reduce the polling delay for all azure clients to 5 seconds. This should speed up some operations at the cost of some additional quota. ([#43699](#), [@colemickens](#))
- kubeadm: clean up exited containers and network checkpoints ([#43836](#), [@yujuhong](#))
- Fix corner-case with OnlyLocal Service healthchecks. ([#44313](#), [@thockin](#))
- Fix for [disabling federation controllers through override args](#). ([#44341](#), [@irfanurrehman](#))
- Fix for [federation failing to propagate cascading deletion](#). ([#44108](#), [@csbell](#))
- Fix for [failure to delete federation controllers with finalizers](#). ([#44084](#), [@nikhiljindal](#))
- Fix [transition between NotReady and Unreachable taints](#). ([#44042](#), [@gmarek](#))
- AWS cloud provider: fix support running the master with a different AWS account or even on a different cloud provider than the nodes. ([#44235](#), [@mrIncompetent](#))
- kubeadm: Make `kubeadm reset` tolerant of a disabled docker service. ([#43951](#), [@luxas](#))
- Fix [broken service accounts when using dedicated service account key](#). ([#44169](#), [@mikedanese](#))
- Fix for kube-proxy healthcheck handling an update that simultaneously removes one port and adds another. ([#44246](#), [@thockin](#))
- Fix container hostPid settings when CRI is enabled. ([#44116](#), [@feiskyer](#))
- RBAC role and rolebinding auto-reconciliation is now performed only when the RBAC authorization mode is enabled. ([#43813](#), [@liggitt](#))
- Fix incorrect conflict errors applying strategic merge patches to resources. ([#43871](#), [@liggitt](#))
- Fixed an issue mounting the wrong secret into pods as a service account token. ([#44102](#), [@ncdc](#))
- AWS cloud provider: allow to set KubernetesClusterID or KubernetesClusterTag in combination with VPC. ([#42512](#), [@scheeles](#))
- kubeadm: Remove hard-coded default version when fetching stable version from the web fails. Fixes [kubeadm 1.6.1 deploying 1.6.0 control plane](#). ([#43999](#), [@mikedanese](#))
- Fixed recognition of default storage class in DefaultStorageClass admission plugin. ([#43945](#), [@mikkeloscar](#))
- Fix [Kubelet panic when Docker is not running](#). ([#44047](#), [@yujuhong](#))
- Fix [vSphere volumes in SELinux environment](#). ([#42973](#), [@gnufied](#))
- Fix bug with error "Volume has no class annotation" when deleting a PersistentVolume. ([#43982](#), [@jsafrane](#))

v1.6.1

[Documentation](#) & [Examples](#)

Downloads for v1.6.1

filename	sha256 hash
kubernetes.tar.gz	f1634e22ee3fe8af5c355c3f53d1b93f946490addfab029e19acf5317c51cd38
kubernetes-src.tar.gz	b818f29661dd34db77d1e46c6ba98df6d35906dbc36ac1fdfe45f770b0f695c1

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	6eb7a0749de4c66d66630ac831f9a0aa73af9be856776c428d6adb3e07479d4a

kubernetes-client-darwin-amd64.tar.gz	05715224efdda0da3241960ec6cc71c2b008d3a53d217e5f90b159b5274db240
kubernetes-client-linux-386.tar.gz	7608a4754e48297dac8be9e863c429676f35afb97a9a10897e15038df6499a2e
kubernetes-client-linux-amd64.tar.gz	21e85cd3388b131fd1b63b06ea7ace8eef9555b7c558900b0cf1f9a3f2733e9a
kubernetes-client-linux-arm64.tar.gz	b798e4b440df52e35809310147f8678a1d9b822dce85212fcf382d19ec2bd8c3
kubernetes-client-linux-arm.tar.gz	3227e745db3986a6be9c16c8ffb4f40ce604a400c680e2e6ff92368e72a597c3
kubernetes-client-linux-ppc64le.tar.gz	ab7c9b2516d3cda8b4c236e00a179448e0787670cfd20c66dfb1b0c6c73ef0db
kubernetes-client-linux-s390x.tar.gz	9fbc5f1b092573e5db5188689d7709a03b2bfdae635f61b5dbf72ae9dde2aaf
kubernetes-client-windows-386.tar.gz	306566c6903111769f01b0d05ba66aed63c133501adf49ef8daa38cc6a78097d
kubernetes-client-windows-amd64.tar.gz	5ca89e1672fd29a13a7cb997480216643e98afeba4d19ab081877281d0db8060

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	3e5c7103f44f20a95db29243a43f04aca731c8a4d411c80592ea49f7550d875c
kubernetes-server-linux-arm64.tar.gz	3fad77963f993396786e1777aecb770572b8b06cc3fe985c688916a70ffee2fd
kubernetes-server-linux-arm.tar.gz	4b981751da6a0bf471e52e55b548d62c038f7e6d8ed628b8177389f24cfd0434
kubernetes-server-linux-ppc64le.tar.gz	7b4bdf49cc2510af81205f2a65653a577fc79623c76c7ed3c29c2fbe1d835773
kubernetes-server-linux-s390x.tar.gz	3c55f1322ca39b7acb4914dd174978b015c1124e1ddd5431ec14c97b1b45f69f

Changelog since v1.6.0

Other notable changes

- Fix a deadlock in kubeadm master initialization. ([#43835](#), [@mikedanese](#))
- Use Cluster Autoscaler 0.5.1, which fixes an issue in Cluster Autoscaler 0.5 where the cluster may be scaled up unnecessarily. Also the status of Cluster Autoscaler is now exposed in kube-system/cluster-autoscaler-status config map. ([#43745](#), [@mwielgus](#))

v1.6.0

[Documentation](#) & [Examples](#)

Downloads for v1.6.0

--	--

filename	sha256 hash
kubernetes.tar.gz	e89318b88ea340e68c427d0aad701e544ce2291195dc1d5901222e7bae48f03b
kubernetes-src.tar.gz	0b03d27e1c7af3be5d94ecd5f679e5f55588d801376cf1ae170d9ec0a229b1e2

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	274277a67a85e9081d9fee5e763ed7c3dd096acf641c31a9ccc916a3981fead2
kubernetes-client-darwin-amd64.tar.gz	af8d1aa034721b31fd14f7b93f5ef16f8dbac4fdcd9e312c3c61e6cf03295057
kubernetes-client-linux-386.tar.gz	4c6a3c12f131c3c88612f888257d00a3cc7fef67947757b897b0d8be9fab547c
kubernetes-client-linux-amd64.tar.gz	4a5daf0459dfc24bf0ccbb2fc881f688008e91ae41fde961b81d09b0801004c
kubernetes-client-linux-arm64.tar.gz	91d5e31407140a55cf00c0dc6e20aa8433cc918615dedd842637585e81694ebd
kubernetes-client-linux-arm.tar.gz	985fec7fb94b42c25b8a56efde1831b2616a6792d3d5a02549248e01ce524ed
kubernetes-client-linux-ppc64le.tar.gz	303279f935289cadfb97a6a5d3f58b0da67d1b88b5ed049e6a98fc203b7b9d52
kubernetes-client-linux-s390x.tar.gz	2bd216c6b7d4f09de02c3b5d20021124f7d04f483ab600b291c515386003ca74
kubernetes-client-windows-386.tar.gz	11d5459b0d413a25045c55ce3548d30616ddc2d62451280d3299baa9f3e3e014
kubernetes-client-windows-amd64.tar.gz	84eba6f2b2b82a95397688b1e2ca4deb8d7daf1f8a40919fa0312741ca253799

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	3625b63d573aa4d28eaa30b291017f775f2ddc0523f40d25023ad1da9c30390e
kubernetes-server-linux-arm64.tar.gz	906496c985d4d836466b73e1c9e618ea8ce07f396aba3a96edcdc6045e0ab4e3
kubernetes-server-linux-arm.tar.gz	3b63f481156f57729bc8100566d8b3d7856791e5b36bb70042e17d21f11f8d5d
kubernetes-server-linux-ppc64le.tar.gz	382666b3892fd4d89be5e4bb052dd0ef0d1c1d213c1ae7a92435083a105064fd
kubernetes-server-linux-s390x.tar.gz	e15de8896bd84a9b74756adc1a2e20c6912a65f6ff0a3f3dfabc8b463e31d19b

WARNING: etcd backup strongly recommended

Before updating to 1.6, you are strongly recommended to back up your etcd data. Please consult the installation procedure you are using (kargo, kops, kube-up, kube-aws, kubeadm etc) for specific advice.

1.6 encourages etcd3, and switching from etcd2 to etcd3 involves a full migration of data between different storage engines. You must stop the API from writing to etcd during an etcd2 -> etcd3 migration. HA installations cannot be migrated at the current time using the official Kubernetes procedure.

1.6 will also default to protobuf encoding if using etcd3. **This change is irreversible.** To rollback, you must restore from a backup made before the protobuf/etcd3 switch, and any changes since the backup will be lost. As 1.5 does not support protobuf encoding, if you roll back to 1.5 after upgrading to protobuf you will be forced to restore from backup, and you will lose any changes since you converted to protobuf. After conversion to protobuf, you should validate the correct operation of your cluster thoroughly before returning it to normal operation.

Backups are always a good precaution, particularly around upgrades, but this upgrade has multiple known issues where the only remedy is to restore from backup.

Also, please note:

- using `application/vnd.kubernetes.protobuf` as the media storage type for 1.6 is default but not required
- the ability to rollback to etcd2 can be preserved by setting the storage media type flag on `kube-apiserver`

```
--storage-media-type application/json
```

to continue to use `application/json` as the storage media type which can be changed to `application/vnd.kubernetes.protobuf` at a later time.

Major updates and release themes

- Kubernetes now supports up to 5,000 nodes via etcd v3, which is enabled by default.
- [Role-based access control \(RBAC\)](#) has graduated to beta, and defines secure default roles for control plane, node, and controller components.
- The [kubeadm cluster bootstrap tool](#) has graduated to beta. Some highlights:
 - **WARNING:** A [known issue](#) in v1.6.0 causes `kubeadm init` to hang. Please use v1.6.1, which fixes the issue.
 - All communication is now over TLS
 - Authorization plugins can be installed by kubeadm, including the new default of RBAC
 - The bootstrap token system now allows token management and expiration
- The [kubefed federation bootstrap tool](#) has also graduated to beta.
- Interaction with container runtimes is now through the CRI interface, enabling easier integration of runtimes with the kubelet. Docker remains the default runtime via Docker-CRI (which moves to beta).
 - **WARNING:** A [known issue](#) in v1.6.0 causes `Pod.Spec.HostPid` (using the host PID namespace for the pod) to always be false. Please wait for v1.6.2, which will include a fix for this issue.
- Various scheduling features have graduated to beta:
 - You can now use [multiple schedulers](#)
 - [Nodes](#) and [pods](#) now support affinity and anti-affinity
 - Advanced scheduling can be performed with [taints and tolerations](#)
- You can now specify (per pod) how long a pod should stay bound to a node, when there is a node problem.
- Various storage features have graduated to GA:
 - StorageClass pre-installed and set as default on Azure, AWS, GCE, OpenStack, and vSphere
 - Configurable [Dynamic Provisioning](#) and [StorageClass](#)

- DaemonSets [can now be updated by a rolling update](#).

Action Required

Certificates API

- Users of the alpha certificates API should delete v1alpha1 CSRs from the API before upgrading and recreate them as v1beta1 CSR after upgrading. ([#39772](#), [@mikedanese](#))

Cluster Autoscaler

- If you are using (or planning to use) Cluster Autoscaler please wait for Kubernetes 1.6.1. In 1.6.0 Cluster Autoscaler may occasionally increase the size of the cluster a bit more than it is actually needed, when there are unschedulable pods, scale up is required and cloud provider is slow to set up networking for new nodes. Anyway, the cluster should get back to the proper size after 10 min.

Deployment

- Deployment now fully respects ControllerRef to avoid fighting over Pods and ReplicaSets. At the time of upgrade, **you must not have Deployments with selectors that overlap**, or else [ownership of ReplicaSets may change](#). ([#42175](#), [@enisoc](#))

Federation

- The `--dns-provider` argument of 'kubefed init' is now mandatory and does not default to `google-clouddns`. To initialize a Federation control plane with Google Cloud DNS, use the following invocation: 'kubefed init --dns-provider=google-clouddns' ([#42092](#), [@marun](#))
- Cluster federation servers have changed the location in etcd where federated services are stored, so existing federated services must be deleted and recreated. Before upgrading, export all federated services from the federation server and delete the services. After upgrading the cluster, recreate the federated services from the exported data. ([#37770](#), [@enj](#))

Internal Storage Layer

- upgrade to etcd3 prior to upgrading to 1.6 **OR** explicitly specify `--storage-backend=etcd2 --storage-media-type=application/json` when starting the apiserver

Node Components

- **Kubelet with the Docker-CRI implementation**
 - The Docker-CRI implementation is enabled by default.
 - It is not compatible with containers created by older Kubelets. It is recommended to drain your node before upgrade. If you choose to perform an in-place upgrade, the Kubelet will automatically restart all Kubernetes-managed containers on the node.
 - It is not compatible with CNI plugins that do not conform to the [error handling behavior in the spec](#). The plugins are being updated to resolve this issue ([#43488](#)). You can disable CRI explicitly (`--enable-cri=false`) as a temporary workaround.
 - The standard `bridge` plugin have been validated to interoperate with the new CRI + CNI code path.
 - If you are using plugins other than `bridge`, make sure you have updated custom plugins to the latest version that is compatible.
- **CNI plugins now affect node readiness**
 - Kubelet will now block node readiness until a CNI configuration file is present in `/etc/cni/net.d` or a given custom CNI configuration path. [This change](#) ensures kubelet does not start pods that require networking before [networking is ready](#). This change may require

changes to clients that gate pod creation and/or scheduling on the node condition `type` `Ready` status being `True` for pods that need to run prior to the network being ready.

- **Enhance Kubelet QoS:**

- Pods are placed under a new cgroup hierarchy by default. This feature requires draining and restarting the node as part of upgrades. To opt-out set `--cgroups-per-qos=false`.
 - If `kube-reserved` and/or `system-reserved` are specified, node allocatable will be enforced on all pods by default. To opt-out set `--enforce-node-allocatable=""`.
 - Hard Eviction Thresholds will be subtracted from Capacity while calculating Node Allocatable. This will result in a reduction of schedulable capacity in clusters post upgrade where kubelet hard eviction has been turned on for memory. To opt-out set `--experimental-allocatable-ignore-eviction=true`.
 - More details on these feature here: <https://kubernetes.io/docs/tasks/administer-cluster/reserve-compute-resources/>
- Drop the support for docker 1.9.x. Docker versions 1.10.3, 1.11.2, 1.12.6 have been validated.
 - The following deprecated kubelet flags are removed: `--config`, `--auth-path`, `--resource-container`, `--system-container`, `--reconcile-cidr`
 - Remove the temporary fix for pre-1.0 mirror pods. Upgrade directly from pre-1.0 to 1.6 kubelet is not supported.
 - Fluentd was migrated to Daemon Set, which targets nodes with `beta.kubernetes.io/fluentd-ds-ready=true` label. If you use fluentd in your cluster please make sure that the nodes with version 1.6+ contains this label.

kubectl

- Running `kubectl taint` (alpha in 1.5) against a 1.6 server requires upgrading kubectl to version 1.6
- Running `kubectl taint` (alpha in 1.5) against a 1.5 server requires a kubectl version of 1.5
- Running `kubectl create secret` no longer accepts passing multiple values to a single `--from-literal` flag using comma separation
 - Update command invocations to pass separate `--from-literal` flags for each value

RBAC

- Default ClusterRole and ClusterRoleBinding objects are automatically updated at server start to add missing permissions and subjects (extra permissions and subjects are left in place). To prevent autoupdating a particular role or rolebinding, annotate it with `rbac.authorization.kubernetes.io/autoupdate=false`. (#41155, @liggitt)
- `v1beta1` RoleBinding/ClusterRoleBinding subjects changed `apiVersion` to `apiGroup` to fully-qualify a subject. ServiceAccount subjects default to an `apiGroup` of `"`, User and Group subjects default to an `apiGroup` of `"rbac.authorization.k8s.io"`. (#41184, @liggitt)
- To create or update an RBAC RoleBinding or ClusterRoleBinding object, a user must: (#39383, @liggitt)
 1. Be authorized to make the create or update API request
 2. Be allowed to bind the referenced role, either by already having all of the permissions contained in the referenced role, or by having the "bind" permission on the referenced role.
- The `--authorization-rbac-super-user` flag (alpha in 1.5) is deprecated; the `system:masters` group has privileged access (#38121, @deads2k)
- special handling of the user `*` in RoleBinding and ClusterRoleBinding objects is removed in v1beta1. To match all users, explicitly bind to the group `system:authenticated` and/or `system:unauthenticated`. Existing v1alpha1 bindings to the user `*` are automatically converted to the group `system:authenticated`. (#38981, @liggitt)

Scheduling

- **Multiple schedulers**

- Modify your PodSpecs that currently use the `scheduler.alpha.kubernetes.io/name` annotation on Pod, to instead use the `schedulerName` field in the PodSpec.
- Modify any custom scheduler(s) you have written so that they read the `schedulerName` field on Pod instead of the `scheduler.alpha.kubernetes.io/name` annotation.
- Note that you can only start using the `schedulerName` field **after** you upgrade to 1.6; it is not recognized in 1.5.

- **Node affinity/anti-affinity and pod affinity/anti-affinity**

- You can continue to use the alpha version of this feature (with one caveat -- see below), in which you specify affinity requests using Pod annotations, in 1.6 by including `AffinityInAnnotations=true` in `--feature-gates`, such as `--feature-gates=FooBar=true,AffinityInAnnotations=true`. Otherwise, you must modify your PodSpecs that currently use the `scheduler.alpha.kubernetes.io/affinity` annotation on Pod, to instead use the `affinity` field in the PodSpec. Support for the annotation will be removed in a future release, so we encourage you to switch to using the field as soon as possible.
- Caveat: The alpha version no longer supports, and the beta version does not support, the "empty `podAffinityTerm.namespaces` list means all namespaces" behavior. In both alpha and beta it now means "same namespace as the pod specifying this affinity rule."
- Note that you can only start using the `affinity` field **after** you upgrade to 1.6; it is not recognized in 1.5.
- The `--failure-domains` scheduler command line-argument is not supported in the beta version of the feature.

- **Taints**

- You will need to use `kubectl taint` to re-create all of your taints after kubectl and the master are upgraded to 1.6. Between the time the master is upgraded to 1.6 and when you do this, your existing taints will have no effect.
- You can find out what taints you have in place on a node while you are still running Kubernetes 1.5 by doing `kubectl describe node <node name>`; the `Taints` section will show the taints you have in place. To see the taints that were created under 1.5 when you are running 1.6, do `kubectl get node <node name> -o yaml` and look for the "Annotation" section with the annotation key `scheduler.alpha.kubernetes.io/taints`
- You can remove the "old" taints (stored internally as annotations) at any time after the upgrade by doing `kubectl annotate nodes <node name> scheduler.alpha.kubernetes.io/taints-` (note the minus at the end, which means "delete the taint with this key")
- Note that because any taints you might have created with Kubernetes 1.5 can only affect the scheduling of new pods (the `NoExecute` taint effect is introduced in 1.6), neither the master upgrade nor your running `kubectl taint` to re-create the taints will affect pods that are already running.
- Rescheduler relies on taints, which were changed in a backward incompatible way. Rescheduler 0.3 shipped together with Kubernetes 1.6 understands the new taints and will clean up the old annotations, but Rescheduler 0.2 shipped together with Kubernetes 1.5 doesn't understand the new taints. In order to avoid eviction loop during 1.5->1.6 upgrade you need to either upgrade the

master node atomically (for example by using `upgrade.sh` script for GCE) or ensure that the rescheduler is upgraded first, then the scheduler and then all the other master components.

- **Tolerations**

- After your master is upgraded to 1.6, you will need to update your PodSpecs to set the `tolerations` field of the PodSpec and remove the `scheduler.alpha.kubernetes.io/tolerations` annotation on the Pod. (It's not strictly necessary to remove the annotation, as it will have no effect once you upgrade to 1.6.) Between the time the master is upgraded to 1.6 and when you do this, tolerations attached to Pods that are created will have no effect. Pods that are already running will not be affected by the upgrade.
- You can find the PodSpec tolerations that were created as annotations (if any) in a controller definition by doing `kubectl get <controller kind> <controller name> -o yaml` and looking for the "Annotation" section with the annotation key `scheduler.alpha.kubernetes.io/tolerations` (This will work whether you are running Kubernetes 1.5 or 1.6).
- To update a controller's PodSpec to use the field instead of the annotation, use one of the `kubectl` commands that do update ("`kubectl replace`" or "`kubectl apply`" or "`kubectl patch`") or just delete the controller entirely and re-create it with a new pod template. Note that you will be able to do these things only after the upgrade.

Service

- The 'endpoints.beta.kubernetes.io/hostnames-map' annotation is no longer supported. Users can use the 'Endpoints.subsets[].addresses[].hostname' field instead. ([#39284](#), [@bowei](#))

StatefulSet

- StatefulSet now respects ControllerRef to avoid fighting over Pods. At the time of upgrade, **you must not have StatefulSets with selectors that overlap** with any other controllers (such as ReplicaSets), or else [ownership of Pods may change](#). ([#42080](#), [@enisoc](#))

Volumes

- StorageClass pre-installed and set as default on Azure, AWS, GCE, OpenStack, and vSphere.
 - This is something to pay close attention to if you've been using Kubernetes for a while, because it changes the default behavior of PersistentVolumeClaim objects on these clouds.
 - Marking a StorageClass as default makes it so that even a PersistentVolumeClaim without a StorageClass specified will trigger dynamic provisioning (instead of binding to an existing pool of PVs).
 - If you depend on the old behavior of volumes binding to existing pool of PersistentVolume objects then modify the StorageClass object and set `storageclass.beta.kubernetes.io/is-default-class` to `false`.
- Flex volume plugin is updated to support attach/detach interfaces. It broke backward compatibility. Please update your drivers and implement the new callouts. ([#41804](#), [@chakri-nelluri](#))

Notable Features

Features for this release were tracked via the use of the [kubernetes/features](#) issues repo. Each Feature issue is owned by a Special Interest Group from the [kubernetes/community](#).

Autoscaling

- **[alpha]** The Horizontal Pod Autoscaler now supports drawing metrics through the API server aggregator.

- **[alpha]** The Horizontal Pod Autoscaler now supports scaling on multiple, custom metrics.
- Cluster Autoscaler publishes its status to kube-system/cluster-autoscaler-status ConfigMap.
- Cluster Autoscaler can continue operations while some nodes are broken or unready.
- Cluster Autoscaler respects Pod Disruption Budgets when removing a node.

DaemonSet

- **[beta]** Introduce the rolling update feature for DaemonSet. See [Performing a Rolling Update on a DaemonSet](#).

Deployment

- **[beta]** Deployments that cannot make progress in rolling out the newest version will now indicate via the API they are blocked ([docs](#))

Federation

- **[beta]** `kubefed` has graduated to beta: supports hosting federation on on-prem clusters, automatically configures `kube-dns` in joining clusters and allows passing arguments to federation components.

Internal Storage Layer

- **[stable]** The internal storage layer for kubernetes cluster state has been updated to use etcd v3 by default. Existing clusters will have to plan for a data migration window. ([docs](#))([kubernetes/features#44](#))

kubeadm

- **[beta]** Introduces an API for clients to request TLS certificates from the API server. See the [tutorial](#).
- **[beta]** kubeadm is enhanced and improved with a baseline feature set and command line flags that are now marked as beta. Other parts of kubeadm, including subcommands under `kubeadm alpha`, are [still in alpha](#). Using it is considered safe, although note that upgrades and HA are not yet supported. Please [try it out](#) and [give us feedback](#)!
- **[alpha]** New Bootstrap Token authentication and management method. Works well with kubeadm. kubeadm now supports managing tokens, including time based expiration, after the cluster is launched. See [kubeadm reference docs](#) for details.
- **[alpha]** Adds a new cloud-controller-manager binary that may be used for testing the new out-of-core cloudprovider flow.

Node Components

- **[stable]** Init containers have graduated to GA and now appear as a field. The beta annotation value will still be respected and overrides the field value.
- Kubelet Container Runtime Interface (CRI) support
 - **[beta]** The Docker-CRI implementation is enabled by default in kubelet. You can disable it by `--enable-cri=false`. See [notes on the new implementation](#) for more details.
 - **[alpha]** Alpha support for other runtimes: [cri-o](#), [frakti](#), [rkt](#).
- **[beta]** Node Problem Detector is beta (v0.3.0) now. New features added into node-problem-detector:v0.3.0:
 - Add support for journald.
 - The ability to monitor any system daemon logs. Previously only kernel logs were supported.
 - The ability to be deployed and run as a native daemon.
- **[alpha]** Critical Pods: When feature gate "ExperimentalCriticalPodAnnotation" is set to true, the system will guarantee scheduling and admission of pods with the following annotation - `scheduler.alpha.kubernetes.io/critical-pod`
 - This feature should be used in conjunction with the [rescheduler](#) to guarantee resource availability for critical system pods.

- **[alpha]** `--experimental-nvidia-gpus` flag is replaced by `Accelerators` alpha feature gate along with addition of support for multiple Nvidia GPUs.
 - To use GPUs, pass `Accelerators=true` as part of `--feature-gates` flag.
 - More information [here](#).
- A pod's Quality of Service Class is now available in its Status.
- Upgrade cAdvisor library to v0.25.0. Notable changes include,
 - Container filesystem usage tracking disabled for device mapper due to excessive IOPS.
 - Ignore `.mount` cgroups, fixing disappearing stats.
- A new field `terminationMessagePolicy` has been added to containers that allows a user to request `FallbackToLogsOnError`, which will read from the container's logs to populate the termination message if the user does not write to the termination message log file. The termination message file is now properly readable for end users and has a maximum size (4k bytes) to prevent abuse. Each pod may have up to 12k bytes of termination messages before the contents of each will be truncated.
- Do not delete pod objects until all its compute resource footprint has been reclaimed.
 - This feature prevents the node and scheduler from oversubscribing resources that are still being used by a pod in the process of being cleaned up.
 - This feature can result in increase of Pod Deletion latency especially if the pod has a large filesystem footprint.

RBAC

- **[beta]** RBAC API is promoted to v1beta1 (`rbac.authorization.k8s.io/v1beta1`), and defines default roles for control plane, node, and controller components.
- **[beta]** The Docker-CRI implementation is Beta and is enabled by default in kubelet. You can disable it by `--enable-cri=false`. See [notes on the new implementation](#) for more details.

Scheduling

- **[beta]** The [multiple schedulers](#). This feature allows you to run multiple schedulers in parallel, each responsible for different sets of pods. When using multiple schedulers, the scheduler name is now specified in a new-in-1.6 `schedulerName` field of the PodSpec rather than using the `scheduler.alpha.kubernetes.io/name` annotation on the Pod. When you upgrade to 1.6, the Kubernetes default scheduler will start using the `schedulerName` field of the PodSpec and will ignore the annotation.
- **[beta]** [Node affinity/anti-affinity](#) and **[beta]** [pod affinity/anti-affinity](#). Node affinity/anti-affinity allow you to specify rules for restricting which node(s) a pod can schedule onto, based on the labels on the node. Pod affinity/anti-affinity allow you to specify rules for spreading and packing pods relative to one another, across arbitrary topologies (node, zone, etc.) These affinity rules are now be specified in a new-in-1.6 `affinity` field of the PodSpec. Kubernetes 1.6 continues to support the alpha `scheduler.alpha.kubernetes.io/affinity` annotation on the Pod if you explicitly enable the alpha feature "AffinityInAnnotations", but it will be removed in a future release. When you upgrade to 1.6, if you have not enabled the alpha feature, then the scheduler will use the `affinity` field in PodSpec and will ignore the annotation. If you have enabled the alpha feature, then the scheduler will use the `affinity` field in PodSpec if it is present, and otherwise will use the annotation.
- **[beta]** [Taints and tolerations](#). This feature allows you to specify rules for "repelling" pods from nodes by default, which enables use cases like dedicated nodes and reserving nodes with special features for pods that need those features. We've also added a `NoExecute` taint type that evicts already-running pods, and an associated `tolerationSeconds` field to tolerations to delay the eviction for a specified amount of time. As before, taints are created using `kubectl taint` (but internally they are now represented as a field `taints` in the NodeSpec rather than using the `scheduler.alpha.kubernetes.io/taints`

annotation on Node). Tolerations are now specified in a new-in-1.6 `tolerations` field of the PodSpec rather than using the `scheduler.alpha.kubernetes.io/tolerations` annotation on the Pod. When you upgrade to 1.6, the scheduler will start using the fields and will ignore the annotations.

- **[alpha]** Represent node problems "not ready" and "unreachable" using `NoExecute` taints. In combination with `tolerationSeconds` described below, this allows per-pod specification of how long to remain bound to a node that becomes unreachable or not ready, rather than using the default of 5 minutes. You can enable this alpha feature by including `TaintBasedEvictions=true` in `--feature-gates`, such as `--feature-gates=FooBar=true,TaintBasedEvictions=true`. Documentation is [here](#).

Service Catalog

- **[alpha]** Adds a new API resource `PodPreset` and admission controller to enable defining cross-cutting injection of Volumes and Environment into Pods.

Volumes

- **[stable]** StorageClass API is promoted to v1 (storage.k8s.io/v1).
- **[stable]** Default storage classes are deployed during installation on Azure, AWS, GCE, OpenStack and vSphere.
- **[stable]** Added ability to populate environment variables from a configmap or secret.
- **[stable]** Support for user-written/run dynamic PV provisioners. The Kubernetes Incubator contains [a golang library and examples](#).
- **[stable]** Volume plugin for ScaleIO enabling pods to seamlessly access and use data stored on Dell EMC ScaleIO volumes.
- **[stable]** Volume plugin for Portworx added capability to use [Portworx](#) as a storage provider for Kubernetes clusters. Portworx pools server capacity and turns servers or cloud instances into converged, highly available compute and storage nodes.
- **[stable]** Add support to use NFSv3, NFSv4, and GlusterFS on GCE/GKE GCI image based clusters.
- **[beta]** Added support for mount options in persistent volumes.
- **[alpha]** All in one volume proposal - a new volume driver capable of projecting secrets, configmaps, and downward API items into the same directory.

Deprecations

- Remove extensions/v1beta1 Jobs resource, and job/v1beta1 generator. ([#38614](#), [@soltys](#))
- `federation/deploy/deploy.sh` was an interim solution introduced in Kubernetes v1.4 to simplify the federation control plane deployment experience. Now that we have `kubefed`, we are deprecating `deploy.sh` scripts. ([#38902](#), [@madhusudancs](#))

Cluster Provisioning Scripts

- The bash AWS deployment via kube-up.sh has been deprecated. See <http://kubernetes.io/docs/getting-started-guides/aws/> for alternatives. ([#38772](#), [@zmerlynn](#))
- Remove Azure kube-up as the Azure community has focused efforts elsewhere. ([#41672](#), [@mikedanese](#))
- Remove the deprecated vsphere kube-up. ([#39140](#), [@kerneltime](#))

kubeadm

- Quite a few flags been renamed or removed. Those options that are removed as flags can still be accessed via the config file. Most notably this includes external etcd settings and the option for setting the cloud provider on the API server. The [kubeadm reference documentation](#) is up to date with the new flags.

Other Deprecations

- Remove cmd/kube-discovery from the tree since it's not necessary anymore ([#42070](#), [@luxas](#))

Changes to API Resources

ABAC

- ABAC policies using `"user": "*" or "group": "*" to match all users or groups will only match authenticated requests. To match unauthenticated requests, ABAC policies must explicitly specify "group": "system:unauthenticated" (#38968, @liggitt)`

Admission Control

- Adds a new API resource `PodPreset` and admission controller to enable defining cross-cutting injection of Volumes and Environment into Pods. ([#41931](#), [@jessfraz](#))
- Enable `DefaultTolerationSeconds` admission controller by default ([#41815](#), [@kevin-wangzefeng](#))
- ResourceQuota ability to support default limited resources ([#36765](#), [@derekwaynecarr](#))
- Add default `TolerationSeconds` admission controller ([#41414](#), [@kevin-wangzefeng](#))
- An `automountServiceAccountToken` field was added to `ServiceAccount` and `PodSpec` objects. If set to `false` on a pod spec, no service account token is automounted in the pod. If set to `false` on a service account, no service account token is automounted for that service account unless explicitly overridden in the pod spec. ([#37953](#), [@liggitt](#))
- Admission control support for versioned configuration files ([#39109](#), [@derekwaynecarr](#))
- Ability to quota storage by storage class ([#34554](#), [@derekwaynecarr](#))

Authentication

- The `authentication.k8s.io` API group was promoted to v1 ([#41058](#), [@liggitt](#))

Authorization

- The `authorization.k8s.io` API group was promoted to v1 ([#40709](#), [@liggitt](#))
- The `SubjectAccessReview` API now passes subresource and resource name information to the authorizer to answer authorization queries. ([#40935](#), [@liggitt](#))

Autoscaling

- Introduces an new alpha version of the Horizontal Pod Autoscaler including expanded support for specifying metrics. ([#36033](#), [@DirectXMan12](#))
- `HorizontalPodAutoscaler` is no longer supported in extensions/v1beta1 version. Use `autoscaling/v1` instead. ([#35782](#), [@piosz](#))
- Fixes an HPA-related panic due to division-by-zero. ([#39694](#), [@DirectXMan12](#))

Certificates

- The `CertificateSigningRequest` API added the `extra` field to persist all information about the requesting user. This mirrors the fields in the `SubjectAccessReview` API used to check authorization. ([#41755](#), [@liggitt](#))
- Native support for token based bootstrap flow. This includes signing a well known `ConfigMap` in the `kube-public` namespace and cleaning out expired tokens. ([#36101](#), [@jbeda](#))

ConfigMap

- Volumes and environment variables populated from `ConfigMap` and `Secret` objects can now tolerate the named source object or specific keys being missing, by adding `optional: true` to the volume or environment variable source specifications. ([#39981](#), [@fraenkel](#))
- Allow pods to define multiple environment variables from a whole `ConfigMap` ([#36245](#), [@fraenkel](#))

CronJob

- Add configurable limits to CronJob resource to specify how many successful and failed jobs are preserved. ([#40932](#), [@peay](#))

DaemonSet

- DaemonSet now respects ControllerRef to avoid fighting over Pods. ([#42173](#), [@enisoc](#))
- Make DaemonSet respect critical pods annotation when scheduling. ([#42028](#), [@janetkuo](#))
- Implement the update feature for DaemonSet. ([#41116](#), [@lukaszo](#))
- Make DaemonSets survive taint-based evictions when nodes turn unreachable/notReady. ([#41896](#), [@kevin-wangzefeng](#))
- Make DaemonSet controller respect node taints and pod tolerations. ([#41172](#), [@janetkuo](#))
- DaemonSet controller actively kills failed pods (to recreate them) ([#40330](#), [@janetkuo](#))
- DaemonSet ObservedGeneration ([#39157](#), [@lukaszo](#))

Deployment

- Add ready replicas in Deployments ([#37959](#), [@kargakis](#))
- Deployments that cannot make progress in rolling out the newest version will now indicate via the API they are blocked
- Introduce apps/v1beta1.Deployments resource with modified defaults compared to extensions/v1beta1.Deployments. ([#39683](#), [@soltys](#))
- Introduce new generator for apps/v1beta1 deployments ([#42362](#), [@soltys](#))

Node

- Set all node conditions to Unknown when node is unreachable ([#36592](#), [@andrewsykim](#))

Pod

- Init containers have graduated to GA and now appear as a field. The beta annotation value will still be respected and overrides the field value. ([#38382](#), [@hodovska](#))
- A new field `terminationMessagePolicy` has been added to containers that allows a user to request `FallbackToLogsOnError`, which will read from the container's logs to populate the termination message if the user does not write to the termination message log file. The termination message file is now properly readable for end users and has a maximum size (4k bytes) to prevent abuse. Each pod may have up to 12k bytes of termination messages before the contents of each will be truncated. ([#39341](#), [@smarterclayton](#))
- Fix issue with PodDisruptionBudgets in which `minAvailable` specified as a percentage did not work with StatefulSet Pods. ([#39454](#), [@foxish](#))
- Node affinity has moved from annotations to api fields in the pod spec. Node affinity that is defined in the annotations will be ignored. ([#37299](#), [@rrati](#))
- Moved pod affinity and anti-affinity from annotations to api fields [#25319](#) ([#39478](#), [@rrati](#))
- Add QoS pod status field ([#37968](#), [@sjenning](#))

Pod Security Policy

- PodSecurityPolicy resource is now enabled by default in the extensions API group. ([#39743](#), [@pweil-](#))

RBAC

- The `attributeRestrictions` field has been removed from the PolicyRule type in the rbac.authorization.k8s.io/v1alpha1 API. The field was not used by the RBAC authorizer. ([#39625](#), [@deads2k](#))
- A user can now be authorized to bind a particular role by having permission to perform the `bind` verb on the referenced role ([#39383](#), [@liggitt](#))

ReplicaSet

- ReplicaSet has owner ref of the Deployment that created it ([#35676](#), [@krmayankk](#))

Secrets

- Populate environment variables from a secrets. ([#39446](#), [@fraenkel](#))
- Added a new secret type "bootstrap.kubernetes.io/token" for dynamically creating TLS bootstrapping bearer tokens. ([#41281](#), [@ericchiang](#))

Service

- Endpoints, that tolerate unready Pods, are now listing Pods in state Terminating as well ([#37093](#), [@simonswine](#))
- Fix Service Update on LoadBalancerSourceRanges Field ([#37720](#), [@freehan](#))
- Bug fix. Incoming UDP packets not reach newly deployed services ([#32561](#), [@zreigz](#))
- Services of type loadbalancer consume both loadbalancer and nodeport quota. ([#39364](#), [@zhouhaibing089](#))

StatefulSet

- Fix zone placement heuristics so that multiple mounts in a StatefulSet pod are created in the same zone ([#40910](#), [@justinsb](#))
- Fixes issue [#38418](#) which, under circumstance, could cause StatefulSet to deadlock. ([#40838](#), [@kow3ns](#))
 - Mediates issue [#36859](#). StatefulSet only acts on Pods whose identity matches the StatefulSet, providing a partial mediation for overlapping controllers.

Taints and Tolerations

- Add a manager to NodeController that is responsible for removing Pods from Nodes tainted with NoExecute Taints. This feature is beta (as the rest of taints) and enabled by default. It's gated by controller-manager enable-taint-manager flag. ([#40355](#), [@gmarek](#))
- Add an alpha feature that makes NodeController set Taints instead of deleting Pods from not Ready Nodes. ([#41133](#), [@gmarek](#))
- Make tolerations respect wildcard key ([#39914](#), [@kevin-wangzefeng](#))
- Forgiveness alpha version api definition ([#39469](#), [@kevin-wangzefeng](#))
- Rescheduler uses taints in v1beta1 and will remove old ones (in version v1alpha1) right after its start. ([#43106](#), [@piosz](#))

Volumes

- StorageClassName attribute has been added to PersistentVolume and PersistentVolumeClaim objects and should be used instead of annotation `volume.beta.kubernetes.io/storage-class`. The beta annotation is still working in this release, however it will be removed in a future release. ([#42128](#), [@jsafrane](#))
- Parameter keys in a StorageClass `parameters` map may not use the `kubernetes.io` or `k8s.io` namespaces. ([#41837](#), [@liggitt](#))
- Add storage.k8s.io/v1 API ([#40088](#), [@jsafrane](#))
- Alpha version of dynamic volume provisioning is removed in this release. Annotation ([#40000](#), [@jsafrane](#))
 - "volume.alpha.kubernetes.io/storage-class" does not have any special meaning. A default storage class
 - and DefaultStorageClass admission plugin can be used to preserve similar behavior of Kubernetes cluster,
 - see <https://kubernetes.io/docs/user-guide/persistent-volumes/#class-1> for details.
- Reduce verbosity of volume reconciler when attaching volumes ([#36900](#), [@codablock](#))
- We change the default attach_detach_controller sync period to 1 minute to reduce the query frequency through cloud provider to check whether volumes are attached or not. ([#41363](#), [@jingxu97](#))

Changes to Major Components

API Server

- `--anonymous-auth` is enabled by default, unless the API server is started with the `AlwaysAllow` authorizer. ([#38706](#), [@deads2k](#))
- When using OIDC authentication and specifying `--oidc-username-claim=email`, an `"email_verified":true` claim must be returned from the identity provider. ([#36087](#), [@ericchiang](#))
 - `--basic-auth-file` supports optionally specifying groups in the fourth column of the file ([#39651](#), [@liggitt](#))
- API server now has two separate limits for read-only and mutating inflight requests. ([#36064](#), [@gmarek](#))
- Restored normalization of custom `--etcd-prefix` when `--storage-backend` is set to `etcd3` ([#42506](#), [@liggitt](#))
- Updating apiserver to return http status code 202 for a delete request when the resource is not immediately deleted because of user requesting cascading deletion using `DeleteOptions.OrphanDependents=false`. ([#41165](#), [@nikhiljindal](#))
- Use full package path for definition name in OpenAPI spec ([#40124](#), [@mbohlool](#))
- Follow redirects for streaming requests (exec/attach/port-forward) in the apiserver by default (alpha -> beta). ([#40039](#), [@timstclair](#))
- Add 'X-Content-Type-Options: nosniff' to some error messages ([#37190](#), [@brendandburns](#))
- Fixes bug in resolving client-requested API versions ([#38533](#), [@DirectXMan12](#))
- Replace `glog.Fatal`s with `fmt.Errorf`s ([#38175](#), [@sttts](#))
- Pipe get options to storage ([#37693](#), [@wojtek-t](#))
- The `--long-running-request-regex` flag to kube-apiserver is deprecated and will be removed in a future release. Long-running requests are now detected based on specific verbs (watch, proxy) or subresources (proxy, portforward, log, exec, attach). ([#38119](#), [@liggitt](#))
- if kube-apiserver is started with `--storage-backend=etcd2`, the media type `application/json` is used. ([#43122](#), [@liggitt](#))
- API fields that previously serialized null arrays as `null` and empty arrays as `[]` no longer distinguish between those values and always output `[]` when serializing to JSON. ([#43422](#), [@liggitt](#))
- Generate OpenAPI definition for inlined types ([#39466](#), [@mbohlool](#))

API Server Aggregator

- Rename `kubernetes-discovery` to `kube-aggregator` ([#39619](#), [@deads2k](#))
- Fix connection upgrades through `kubernetes-discovery` ([#38724](#), [@deads2k](#))

Generic API Server

- Move `pkg/api/rest` into `genericapiserver` ([#39948](#), [@sttts](#))
- Move non-generic apiserver code out of the generic packages ([#38191](#), [@sttts](#))
- Fixes API compatibility issue with empty lists incorrectly returning a null `items` field instead of an empty array. ([#39834](#), [@liggitt](#))
- Re-add `/healthz/ping` handler in `genericapiserver` ([#38603](#), [@sttts](#))
- Remove `genericapiserver.Options.MasterServiceNamespace` ([#38186](#), [@sttts](#))
- `genericapiserver`: cut off more dependencies – episode 3 ([#40426](#), [@sttts](#))
- `genericapiserver`: more dependency cutoffs ([#40216](#), [@sttts](#))
- `genericapiserver`: cut off kube pkg/version dependency ([#39943](#), [@sttts](#))
- `genericapiserver`: cut off pkg/serviceaccount dependency ([#39945](#), [@sttts](#))
- `genericapiserver`: cut off pkg/apis/extensions and pkg/storage dependencies ([#39946](#), [@sttts](#))
- `genericapiserver`: cut off certificates api dependency ([#39947](#), [@sttts](#))

- genericapiserver: extract CA cert from server cert and SNI cert chains ([#39022](#), [@sttts](#))
- genericapiserver: turn APIContainer.SecretRoutes into a real ServeMux ([#38826](#), [@sttts](#))
- genericapiserver: unify swagger and openapi in config ([#38690](#), [@sttts](#))

Client

- Use Prometheus instrumentation conventions ([#36704](#), [@fabxc](#))
- Clients now use the `?watch=true` parameter to make watch API calls, instead of the `/watch/` path prefix ([#41722](#), [@liggitt](#))
- Move private key parsing from serviceaccount/jwt.go to client-go/util/cert ([#40907](#), [@cblecker](#))
- Caching added to the OIDC client auth plugin to fix races and reduce the time kubect commands using this plugin take by several seconds. ([#38167](#), [@ericchiang](#))
- Fix resync goroutine leak in ListAndWatch ([#35672](#), [@tatsuhiro-t](#))

client-go

- The main repository does not keep multiple releases of clientsets anymore. Please find previous releases at <https://github.com/kubernetes/client-go> ([#38154](#), [@caesarxuchao](#))
- Support whitespace in command path for gcp auth plugin ([#41653](#), [@jlowdermilk](#))
- client-go no longer imports GCP OAuth2 and OpenID Connect packages by default. ([#41532](#), [@ericchiang](#))
- Added bool type support for jsonpath. ([#39063](#), [@xingzhou](#))
- Preventing nil pointer reference in client_config ([#40508](#), [@vjsamuel](#))
- Prevent hotloops on error conditions, which could fill up the disk faster than log rotation can free space. ([#40497](#), [@lavalamp](#))

Cloud Provider

AWS

- Allow to running the master with a different AWS account or even on a different cloud provider than the nodes. ([#39996](#), [@scheeles](#))
- Support shared tag `kubernetes.io/cluster/<clusterid>` ([#41695](#), [@justinsb](#))
- Do not consider master instance zones for dynamic volume creation ([#41702](#), [@justinsb](#))
- Fix AWS device allocator to only use valid device names ([#41455](#), [@gnufied](#))
- Trust region if found from AWS metadata ([#38880](#), [@justinsb](#))
- Remove duplicate calls to DescribeInstance during volume operations ([#39842](#), [@gnufied](#))
- Recognize eu-west-2 region ([#38746](#), [@justinsb](#))
- Recognize ca-central-1 region ([#38410](#), [@justinsb](#))
- Add sequential allocator for device names. ([#38818](#), [@jsafrane](#))

Azure

- Fix failing load balancers in Azure ([#40405](#), [@codablock](#))
- Reduce time needed to attach Azure disks ([#40066](#), [@codablock](#))
- Remove Azure Subnet RouteTable check ([#38334](#), [@mogthesprog](#))
- Add support for Azure Container Registry, update Azure dependencies ([#37783](#), [@brendandburns](#))
- Allow backendpools in Azure Load Balancers which are not owned by cloud provider ([#36882](#), [@codablock](#))

GCE

- On GCE by default logrotate is disabled for application containers in favor of rotation mechanism provided by docker logging driver. ([#40634](#), [@crassirostris](#))

GKE

- New GKE certificates controller. ([#41160](#), [@pipejakob](#))

vSphere

- Reverts to looking up the current VM in vSphere using the machine's UUID, either obtained via sysfs or via the `vm-uuid` parameter in the cloud configuration file. ([#40892](#), [@robdaemon](#))
- Fix for detach volume when node is not present/ powered off ([#40118](#), [@BaluDontu](#))
- Adding vmdk file extension for vmDiskPath in vsphere DeleteVolume ([#40538](#), [@divyenpatel](#))
- Changed default scsi controller type in vSphere Cloud Provider ([#38426](#), [@abrashivani](#))
- Fixes NotAuthenticated errors that appear in the kubelet and kube-controller-manager due to never logging in to vSphere ([#36169](#), [@robdaemon](#))
- Fix panic in vSphere cloud provider ([#38423](#), [@BaluDontu](#))
- Fix space issue in volumePath with vSphere Cloud Provider ([#38338](#), [@BaluDontu](#))

Federation

kubefed

- Flag cleanup ([#41335](#), [@irfanurrehman](#))
- Create configmap for the cluster kube-dns when cluster joins and remove when it unjoins ([#39338](#), [@irfanurrehman](#))
- Support configuring dns-provider ([#40528](#), [@shashidharatd](#))
- Bug fix relating kubeconfig path in kubefed init ([#41410](#), [@irfanurrehman](#))
- Add override flags options to kubefed init ([#40917](#), [@irfanurrehman](#))
- Add option to expose federation apiserver on nodeport service ([#40516](#), [@shashidharatd](#))
- Add option to disable persistence storage for etcd ([#40862](#), [@shashidharatd](#))
- kubefed init creates a service account for federation controller manager in the federation-system namespace and binds that service account to the federation-system:federation-controller-manager role that has read and list access on secrets in the federation-system namespace. ([#40392](#), [@madhusudancs](#))
- Implement dry run support in kubefed init ([#36447](#), [@irfanurrehman](#))
- Make federation etcd PVC size configurable ([#36310](#), [@irfanurrehman](#))

Other Notable Changes

- Federated Ingress over GCE no longer requires separate firewall rules to be created for each cluster to circumvent flapping firewall health checks. ([#41942](#), [@csbell](#))
- Add support for finalizers in federated configmaps (deletes configmaps from underlying clusters). ([#40464](#), [@csbell](#))
- Add support for DeleteOptions.OrphanDependents for federated services. Setting it to false while deleting a federated service also deletes the corresponding services from all registered clusters. ([#36390](#), [@nikhiljindal](#))
- Add `--controllers` flag to federation controller manager for enable/disable federation ingress controller ([#36643](#), [@kzwang](#))
- Stop deleting services from underlying clusters when federated service is deleted. ([#37353](#), [@nikhiljindal](#))
- Expose autoscaling apis through federation api server ([#38976](#), [@irfanurrehman](#))
- Federation: Add `batch/jobs` API objects to federation-apiserver ([#35943](#), [@jianhuiz](#))
- Add logging of route53 calls ([#39964](#), [@justinsb](#))

Garbage Collector

- Added foreground garbage collection: the owner object will not be deleted until all its dependents are deleted by the garbage collector. Please checkout the [user doc](#) for details. ([#38676](#), [@caesarxuchao](#))
 - `deleteOptions.orphanDependents` is going to be deprecated in 1.7. Please use `deleteOptions.propagationPolicy` instead.

kubeadm

- A new label and taint is used for marking the master. The label is `node-role.kubernetes.io/master=""` and the taint has the effect `NoSchedule`. Tolerate the `node-role.kubernetes.io/master=""`:`NoSchedule` taint to schedule a workload on the master (a networking DaemonSet for example).
- The kubelet API is now secured, only cluster admins are allowed to access it.
- Insecure access to the API Server over `localhost:8080` is now disabled.
- The control plane components now talk securely to each other. The API Server talks securely to the kubelets in the cluster.
- kubeadm creates RBAC-enabled clusters. This means that some add-ons which worked previously won't work without having their YAML configuration updated. Please see each vendor's own documentation to check that the add-ons you are using will work with Kubernetes 1.6.
- The kube-discovery Deployment isn't used anymore when creating a kubeadm cluster and shouldn't be used anywhere else either due to its insecure nature.
- The Certificates API has graduated from alpha to beta. This is a backwards-incompatible change since the alpha support is dropped, and therefore kubeadm v1.5 and v1.6 don't work together (for example kubeadm v1.5 can't join a kubeadm v1.6 cluster).
- Supporting only etcd3, with 3.0.14 as the minimum version.
- `kubeadm reset` will no longer drain nodes automatically. This is because the credentials on nodes do not have permission to perform this operation. We have documented an [alternate procedure](#), driven from the API server/master.
- Hook up kubeadm against the BootstrapSigner ([#41417](#), [@luxas](#))
- Rename some flags for beta UI and fixup some logic ([#42064](#), [@luxas](#))
- Insecure access to the API Server at localhost:8080 will be turned off in v1.6 when using kubeadm ([#42066](#), [@luxas](#))
- Flag `--use-kubernetes-version` for kubeadm init renamed to `--kubernetes-version` ([#41820](#), [@kad](#))
- Remove the `--cloud-provider` flag for beta init UX ([#41710](#), [@luxas](#))
- Fixed an SELinux issue in kubeadm on Docker 1.12+ by moving etcd SELinux options from container to pod. ([#40682](#), [@dgoodwin](#))
- Add authorization mode to kubeadm ([#39846](#), [@andrewrynhard](#))
- Refactor the certificate and kubeconfig code in the kubeadm binary into two phases ([#39280](#), [@luxas](#))
- Added kubeadm commands to manage bootstrap tokens and the duration they are valid for. ([#35805](#), [@dgoodwin](#))

kubectl

New Commands

- `apply set-last-applied` *updates the applied-applied-configuration annotation* ([#41694](#), [@shiywang](#))
- `kubectl apply view-last-applied` *viewing the last configuration file applied* ([#41146](#), [@shiywang](#))

Create subcommands

- `create poddisruptionbudget` ([#36646](#), [@kargakis](#))
- `create clusterrole` ([#41538](#), [@xingzhou](#))
- `create role` ([#39852](#), [@xingzhou](#))
- `create clusterrolebinding` ([#37098](#), [@deads2k](#))
- `create service externalname` ([#34789](#), [@adohe](#))
- `set selector` - update selector labels ([#38966](#), [@kargakis](#))
- `can-i` to see if you can perform an action ([#41077](#), [@deads2k](#))

Updates to existing commands

- Printing and output

- Import a numeric ordering sorting library and use it in the sorting printer. ([#40746](#), [@matthyx](#))
- DaemonSet get and describe show status fields. ([#42843](#), [@janetkuo](#))
- Pods describe shows tolerationSeconds ([#42162](#), [@kevin-wangzefeng](#))
- Node describe contains closing paren ([#39217](#), [@luksa](#))
- Display pod node selectors with kubectl describe. ([#36396](#), [@aveshagarwal](#))
- Add Version to the resource printer for 'get nodes' ([#37943](#), [@ailusazh](#))
- Added support for printing in all supported `--output` formats to `kubectl create ...` and `kubectl apply ...` ([#38112](#), [@juanvallejo](#))
- Add three more columns to `kubectl get deploy -o wide` output. ([#39240](#), [@xingzhou](#))
- Fix kubectl get -f -o so it prints all items in the file ([#39038](#), [@ncdc](#))
- kubectl describe no longer prints the last-applied-configuration annotation for secrets. ([#34664](#), [@ymqytw](#))
- Completed pods should not be hidden when requested by name via `kubectl get .` ([#42216](#), [@smarterclayton](#))
- Improve formatting of EventSource in kubectl get and kubectl describe ([#40073](#), [@matthyx](#))
- Attach now supports multiple types ([#40365](#), [@shiywang](#))
- Create now accepts the label selector flag for filtering objects to create ([#40057](#), [@MrHohn](#))
- Top now accepts short forms for "node" and "pod" ("no", "po") ([#39218](#), [@luksa](#))
- Begin paths for internationalization in kubectl ([#36802](#), [@brendandburns](#))
 - Add initial french translations for kubectl ([#40645](#), [@brendandburns](#))

Updates to apply

- New command `apply set-last-applied` *updates the applied-applied-configuration annotation* ([#41694](#), [@shiywang](#))
- New command `apply view-last-applied` *command for viewing the last configuration file applied* ([#41146](#), [@shiywang](#))
- `apply` now supports explicitly clearing values by setting them to null ([#40630](#), [@liggitt](#))
- Warn user when using `apply` on a resource lacking the `LastAppliedConfig` annotation ([#36672](#), [@ymqytw](#))
- PATCH (i.e. apply and edit) now supports merging lists of primitives ([#38665](#), [@ymqytw](#))
- `apply` falls back to generic 3-way JSON merge patch for Third Party Resource or unregistered types ([#40666](#), [@ymqytw](#))

Updates to edit

- `edit` now supports Third party resources and extension API servers. ([#41304](#), [@liggitt](#))
 - Now to edit a particular API version, provide the fully-qualify the resource, version, and group used to fetch the object (for example, `job.v1.batch/myjob`)
 - Client-side conversion is no longer done, and the `--output-version` option is deprecated for `kubectl edit .`
- `edit` works as intended with apply and will not change the annotation
 - No longer updates the last-applied-configuration annotation when `--save-config` is unspecified or false. ([#41924](#), [@ymqytw](#))
 - Fixes issue that caused apply to revert changes made by edit

Bug fixes

- Fixed `--save-config` in create subcommand to save the annotation ([#40289](#), [@xilabao](#))
- Fixed an issue where 'kubectl get --sort-by=' would return an error if the specified fields in sort were not specified in one or more of the returned objects. ([#40541](#), [@fabianofranz](#))

- Previously this would cause the command to fail regardless of whether or not the field was present in the object model
- Now the command will succeed even if the sort-by field is missing from one or more of the objects
- Fixed issue with kubectl proxy so it will now proxy an empty path - e.g. <http://localhost:8001> (#39226, @luksa)
- Fixed an issue where commas were not accepted in --from-literal flags for the creation of secrets. (#35191, @SamiHiltunen)
 - Passing multiple values separated by a comma in a single --from-literal flag is no longer supported. Please use multiple --from-literal flags to provide multiple values.
- Fixed a bug where the --server, --token, and --certificate-authority flags were not overriding the related in-cluster configs when provided in a `kubectl` call inside a cluster. (#39006, @fabianofranz)

Other Notable Changes

- The api server will publish the extensions/Deployments API as preferred over the apps/Deployment (introduced in 1.6). (#43553, @liggitt)
 - This will ensure certain commands in 1.5 versions of kubectl continue function when run against a 1.6 server. (e.g. `kubectl edit deployment`)
- Taint
 - The `taint` command will not function in a skewed 1.5 / 1.6 environment - client and server versions must match (See Action required section above)
 - Change taints/tolerations to api fields (#38957, @aveshagarwal)
 - Make kubectl taint command respect effect NoExecute (#42120, @kevin-wangzefeng)
- Allow drain --force to remove pods whose managing resource is deleted. (#41864, @marun)
- `--output-version` is ignored for all commands except `kubectl convert`. This is consistent with the generic nature of `kubectl` CRUD commands and the previous removal of `--api-version`. Specific versions can be specified in the resource field: `resource.version.group`, `jobs.v1.batch`. (#41576, @deads2k)
- Allow missing keys in templates by default (#39486, @ncdc)
- Add error message when trying to use clusterrole with namespace in kubectl (#36424, @xilabao)
- When deleting an object with `--grace-period=0`, the client will begin a graceful deletion and wait until the resource is fully deleted. To force deletion, use the `--force` flag. (#37263, @smarterclayton)

Node Components

- Kubelet config should ignore file start with dots. (#39196, @resouer)
- Bump GCI to gci-stable-56-9000-84-2. (#41819, @dchen1107)
- Bump GCE ContainerVM to container-vm-v20170214 to address CVE-2016-9962. (#41449, @zmerlynn)
- Kubelet: Remove the PLEG health check from /healthz, Kubelet will now report
- NodeNotReady on failed PLEG health check. (#41569, @yujuhong)
- CRI: upgrade protobuf to v3. Protobuf v2 and v3 are not compatible. (#39158, @feiskyer)
- kubelet exports metrics for cgroup management (#41988, @sjenning)
- Experimental support to reserve a pod's memory request from being utilized by pods in lower QoS tiers. (#41149, @sjenning)
- Port forwarding can forward over websockets or SPDY. (#33684, @fraenkel)
- Flag gate faster evictions based on node memory pressure using kernel memcg notifications - `--experimental-kernel-memcg-notification`. (#38258, @derekwaynecarr)
- Nodes can now report two additional address types in their status: InternalDNS and ExternalDNS. The apiserver can use `--kubelet-preferred-address-types` to give priority to the type of address it uses to reach nodes. (#34259, @liggitt)

Bug fixes

- Add image cache to fix the issue where kubelet hangs when reporting the node status. ([#38375](#), [@Random-Liu](#))
- Fix logic error in graceful deletion that caused pods not being able to be deleted. ([#37721](#), [@derekwaynecarr](#))
- Fix ConfigMap for Windows Containers. ([#39373](#), [@jbhurat](#))
- Fix the "pod rejected by kubelet may stay at pending forever" bug. (<https://github.com/kubernetes/kubernetes/pull/37661>), [@yujuhong](#))

kube-controller-manager

- add --controllers to controller manager ([#39740](#), [@deads2k](#))

kube-dns

- Adds support for configurable DNS stub domains and upstream nameservers. The following configuration options have been added to the `kube-system:kube-dns` ConfigMap:

```
"stubDomains": {  
  "acme.local": ["1.2.3.4"]  
},
```

is a map of domain to list of nameservers for the domain. This is used to inject private DNS domains into the kube-dns namespace. In the above example, any DNS requests for *.acme.local will be served by the nameserver 1.2.3.4.

```
"upstreamNameservers": ["8.8.8.8", "8.8.4.4"]
```

is a list of upstreamNameservers to use, overriding the configuration specified in /etc/resolv.conf.

- An empty `kube-system:kube-dns` ConfigMap will be created for the cluster if one did not already exist.

kube-proxy

- - **Add tcp/udp userspace proxy support for Windows.** ([#41487](#), [@anhowe](#))
- Add DNS suffix search list support in Windows kube-proxy. ([#41618](#), [@JiangtianLi](#))
- Add a KUBERNETES_NODE_* section to build kubelet/kube-proxy for windows ([#38919](#), [@brendandburns](#))
- Remove outdated net.experimental.kubernetes.io/proxy-mode and net.beta.kubernetes.io/proxy-mode annotations from kube-proxy. ([#40585](#), [@cblecker](#))
- proxy/iptables: don't sync proxy rules if services map didn't change ([#38996](#), [@dcbw](#))
- Update kube-proxy image to be based off of Debian 8.6 base image. ([#39695](#), [@ixdy](#))
- Update amd64 kube-proxy base image to debian-iptables-amd64:v5 ([#39725](#), [@ixdy](#))
- Clean up the kube-proxy container image by removing unnecessary packages and files. ([#42090](#), [@timstclair](#))
- Better compat with very old iptables (e.g. CentOS 6) ([#37594](#), [@thockin](#))

Scheduler

- Add the support to the scheduler for spreading pods of StatefulSets. ([#41708](#), [@bsalamat](#))
- Added support to minimize sending verbose node information to scheduler extender by sending only node names and expecting extenders to cache the rest of the node information ([#41119](#), [@sarat-k](#))
- Support KUBE_MAX_PD_VOLS on Azure ([#41398](#), [@codablock](#))
- Mark multi-scheduler graduation to beta and then v1. ([#38871](#), [@k82cn](#))
- Scheduler treats StatefulSet pods as belonging to a single equivalence class. ([#39718](#), [@foxish](#))

- Update FitError as a message component into the PodConditionUpdater. ([#39491](#), [@jayunit100](#))
- Fix comment and optimize code ([#38084](#), [@tanshanshan](#))
- Add flag to enable contention profiling in scheduler. ([#37357](#), [@gmarek](#))
- Try self-repair scheduler cache or panic ([#37379](#), [@wojtek-t](#))

Volume Plugins

Azure Disk

- restrict name length for Azure specifications ([#40030](#), [@colemickens](#))

GlusterFS

- The glusterfs dynamic volume provisioner will now choose a unique GID for new persistent volumes from a range that can be configured in the storage class with the "gidMin" and "gidMax" parameters. The default range is 2000 - 2147483647 (max int32). ([#37886](#), [@obnoxxx](#))

Photon

- Fix photon controller plugin to construct with correct PdID ([#37167](#), [@luomiao](#))

rbd

- force unlock rbd image if the image is not used ([#41597](#), [@rootfs](#))

vSphere

- Fix fsGroup to vSphere ([#38655](#), [@abrarshivani](#))
- Fix issue when attempting to unmount a wrong vSphere volume ([#37413](#), [@BaluDontu](#))

Other Notable Changes

- Implement bulk polling of volumes ([#41306](#), [@gnufied](#))
- Check if pathExists before performing Unmount ([#39311](#), [@rkouj](#))
- Unmount operation should not fail if volume is already unmounted ([#38547](#), [@rkouj](#))
- Provide kubernetes-controller-manager flags to control volume attach/detach reconciler sync. The duration of the syncs can be controlled, and the syncs can be shut off as well. ([#39551](#), [@chrislovecnm](#))
- Fix unmountDevice issue caused by shared mount in GCI ([#38411](#), [@jingxu97](#))
- Fix permissions when using fsGroup ([#37009](#), [@sjenning](#))
- Fixed issues ([#39202](#)), ([#41041](#)) and ([#40941](#)) that caused the iSCSI connections to be prematurely closed when deleting a pod with an iSCSI persistent volume attached and that prevented the use of newly created LUNs on targets with preestablished connections. ([#41196](#), [@CristianPop](#))

Changes to Cluster Provisioning Scripts

AWS

- Deployment of AWS Kubernetes clusters using the in-tree bash deployment (i.e. cluster/kube-up.sh or get-kube.sh) is obsolete. v1.5.x will be the last release to support cluster/kube-up.sh with AWS. For a list of viable alternatives, see: <http://kubernetes.io/docs/getting-started-guides/aws/> ([#42196](#), [@zmerlynn](#))
- Fix an issue where AWS tear-down leaks an DHCP Option Set. ([#38645](#), [@zmerlynn](#))

Juju

- The kubernetes-master, kubernetes-worker and kubeapi-load-balancer charms have gained an nrpe-external-master relation, allowing the integration of their monitoring in an external Nagios server. ([#41923](#), [@Cynerva](#))
- Disable anonymous auth on kubelet ([#41919](#), [@Cynerva](#))
- Fix shebangs in charm actions to use python3 ([#42058](#), [@Cynerva](#))

- K8s master charm now properly keeps distributed master files in sync for an HA control plane. ([#41351](#), [@chuckbutler](#))
- Improve status messages ([#40691](#), [@Cynerva](#))
- Splits Juju Charm layers into master/worker roles ([#40324](#), [@chuckbutler](#))
 - Adds support for 1.5.x series of Kubernetes
 - Introduces a tactic for keeping templates in sync with upstream eliminating template drift
 - Adds CNI support to the Juju Charms
 - Adds durable storage support to the Juju Charms
 - Introduces an e2e Charm layer for repeatable testing efforts and validation of clusters

libvirt CoreOS

- To add local registry to libvirt_coreos ([#36751](#), [@sdminonne](#))

GCE

- the `gce` provider enables both RBAC authorization and the permissive legacy ABAC policy that makes all service accounts superusers. To opt out of the permissive ABAC policy, export the environment variable `ENABLE_LEGACY_ABAC=false` before running `cluster/kube-up.sh`. ([#43544](#), [@liggitt](#))
- the `gce` provider ensures the bootstrap admin token user is included in the super-user group ([#39537](#), [@liggitt](#))
- Remove support for debian masters in GCE kube-up. ([#41666](#), [@mikedanese](#))
- Remove support for trusty in GCE kube-up. ([#41670](#), [@mikedanese](#))
- Don't fail if the grep fails to match any resources ([#41933](#), [@ixdy](#))
- Fix the output of health-mointor.sh ([#41525](#), [@yujuhong](#))
- Added configurable etcd initial-cluster-state to kube-up script. ([#41332](#), [@jszczepkowski](#))
- The kube-apiserver [basic audit log](#) can be enabled in GCE by exporting the environment variable `ENABLE_APISERVER_BASIC_AUDIT=true` before running `cluster/kube-up.sh`. This will log to `/var/log/kube-apiserver-audit.log` and use the same `logrotate` settings as `/var/log/kube-apiserver.log`. ([#41211](#), [@enisoc](#))
- On kube-up.sh clusters on GCE, kube-scheduler now contacts the API on the secured port. ([#41285](#), [@liggitt](#))
- Use existing ABAC policy file when upgrading GCE cluster ([#40172](#), [@liggitt](#))
- Ensure the GCI metadata files do not have newline at the end ([#38727](#), [@Amey-D](#))
- Fixed detection of master during creation of multizone nodes cluster by kube-up. ([#38617](#), [@jszczepkowski](#))
- Fixed validation of multizone cluster for GCE ([#38695](#), [@jszczepkowski](#))
- Fix GCI mounter issue ([#38124](#), [@jingxu97](#))
- Exit with error if is not the final parameter. ([#37723](#), [@mtaufen](#))
- GCI: Remove `/var/lib/docker/network` ([#37593](#), [@yujuhong](#))
- Fix the equality checks for numeric values in cluster/gce/util.sh. ([#37638](#), [@roberthbailey](#))
- Modify GCI mounter to enable NFSv3 ([#37582](#), [@jingxu97](#))
- Use `gsed` on the Mac ([#37562](#), [@roberthbailey](#))
- Bump GCI
 - to `gci-beta-56-9000-80-0` ([#41027](#), [@dchen1107](#))
 - to `gci-stable-56-9000-84-2` ([#41819](#), [@dchen1107](#))
- Bump GCE ContainerVM
 - to `container-vm-v20161208` ([release notes](#)) ([#38432](#), [@timstclair](#))
 - to `container-vm-v20170201` to address CVE-2016-9962. ([#40828](#), [@zmerlynn](#))
 - to `container-vm-v20170117` to pick up CVE fixes in base image. ([#40094](#), [@zmerlynn](#))
 - to `container-vm-v20170214` to address CVE-2016-9962. ([#41449](#), [@zmerlynn](#))

OpenStack

- Do not daemonize `salt-minion` for the openstack-heat provider. ([#40722](#), [@micmro](#))
- OpenStack-Heat will now look for an image named "CentOS-7-x86_64-GenericCloud-1604". To restore the previous behavior set `OPENSTACK_IMAGE_NAME="CentOS7"` ([#40368](#), [@sc68cal](#))
- Fixes a bug in the OpenStack-Heat kubernetes provider, in the handling of differences between the Identity v2 and Identity v3 APIs ([#40105](#), [@sc68cal](#))

Container Images

- Update gcr.io/google-containers/rescheduler to v0.2.2, which uses busybox as a base image instead of ubuntu. ([#41911](#), [@ixdy](#))
- Remove unnecessary metrics (http/process/go) from being exposed by etcd-version-monitor ([#41807](#), [@shyamjvs](#))
- Align the hyperkube image to support running binaries at `/usr/local/bin/` like the other server images ([#41017](#), [@luxas](#))
- Bump up GLBC version from 0.9.0-beta to 0.9.1 ([#41037](#), [@bprashanth](#))

Other Notable Changes

- The default client certificate generated by kube-up now contains the superuser `system:masters` group ([#39966](#), [@liggitt](#))
- Added support for creating HA clusters for centos using kube-up.sh. ([#39462](#), [@Shawyeok](#))
- Enable lazy inode table and journal initialization for ext3 and ext4 ([#38865](#), [@codablock](#))
- Since `kubernetes.tar.gz` no longer includes client or server binaries, `cluster/kube-{up,down,push}.sh` now automatically download released binaries if they are missing. ([#38730](#), [@ixdy](#))
- Fix broken cluster/centos and enhance the style ([#34002](#), [@xiaoping378](#))
- Set `kernel.softlockup_panic=1` based on the flag. ([#38001](#), [@dchen1107](#))
- Configure local-up-cluster.sh to handle auth proxies ([#36838](#), [@deads2k](#))
- `kube-up.sh` / `kube-down.sh` no longer force update gcloud for provider=gce|gke. ([#36292](#), [@jlowdermilk](#))
- Collect logs for dead kubelets too ([#37671](#), [@mtaufen](#))

Changes to Addons

Dashboard

- Update dashboard version to v1.6.0 ([#43210](#), [@floreks](#))

DNS

- Updates the dnsmasq cache/mux layer to be managed by dnsmasq-nanny. ([#41826](#), [@bowei](#)) dnsmasq-nanny manages dnsmasq based on values from the kube-system:kube-dns configmap:

```
"stubDomains": {
  "acme.local": ["1.2.3.4"]
},
```

is a map of domain to list of nameservers for the domain. This is used to inject private DNS domains into the kube-dns namespace. In the above example, any DNS requests for `*.acme.local` will be served by the

```
nameserver 1.2.3.4.
```

```
upstreamNameservers": ["8.8.8.8", "8.8.4.4"]
```

is a list of upstreamNameservers to use, overriding the configuration specified in `/etc/resolv.conf`.

- `kube-dns` now runs using a separate `system:serviceaccount:kube-system:kube-dns` service account which is automatically bound to the correct RBAC permissions. ([#38816](#), [@deads2k](#))
- Use kube-dns:1.11.0 ([#39925](#), [@sadijl](#))

DNS Autoscaler

- Patch CVE-2016-8859 in gcr.io/google-containers/cluster-proportional-autoscaler-amd64 ([#42933](#), [@timstclair](#))

Cluster Autoscaler

- Allow the Horizontal Pod Autoscaler controller to talk to the metrics API and custom metrics API as standard APIs. ([#41824](#), [@DirectXMan12](#))

Cluster Load Balancing

- Update defaultbackend image to 1.3 ([#42212](#), [@timstclair](#))

etcd Empty Dir Cleanup

- Base etcd-empty-dir-cleanup on busybox, run as nobody, and update to etcdctl 3.0.14 ([#41674](#), [@ixdy](#))

Fluentd

- Migrated fluentd addon to daemon set ([#32088](#), [@piosz](#))
- Fluentd was migrated to Daemon Set, which targets nodes with `beta.kubernetes.io/fluentd-ds-ready=true` label. If you use fluentd in your cluster please make sure that the nodes with version 1.6+ contains this label. ([#42931](#), [@piosz](#))
- Fluentd-gcp containers spawned by DaemonSet are now configured using ConfigMap ([#42126](#), [@crassirostris](#))
- Cleanup fluentd-gcp image: rebase on debian-base, switch to upstream packages, remove fluent-ui & rails ([#41998](#), [@timstclair](#))
- On GCE, the apiserver audit log (`/var/log/kube-apiserver-audit.log`) will be sent through fluentd if enabled. It will go to the same place as `kube-apiserver.log` , but tagged as its own stream. ([#41360](#), [@enisoc](#))
- If `experimentalCriticalPodAnnotation` feature gate is set to true, fluentd pods will not be evicted by the kubelet. ([#41035](#), [@vishh](#))
- fluentd config for GKE clusters updated: detect exceptions in container log streams and forward them as one log entry. ([#39656](#), [@thomasschickinger](#))
- Make fluentd pods critical ([#39146](#), [@crassirostris](#))
- Fluentd/Elasticsearch add-on: correctly parse and index kubernetes labels ([#36857](#), [@Shrugs](#))

Heapster

- Bumped Heapster to v1.3.0. ([#43298](#), [@piosz](#))
 - More details about the release <https://github.com/kubernetes/heapster/releases/tag/v1.3.0>

Registry

- Use daemonset in docker registry add on ([#35582](#), [@surajssd](#))
- contribute deis/registry-proxy as a replacement for kube-registry-proxy ([#35797](#), [@bacongobbler](#))

External Dependency Version Information

Continuous integration builds have used the following versions of external dependencies, however, this is not a strong recommendation and users should consult an appropriate installation or upgrade guide before deciding what versions of etcd, docker or rkt to use.

- Docker versions 1.10.3, 1.11.2, 1.12.6 have been validated
 - Docker version 1.12.6 known issues
 - overlay2 driver not fully supported
 - live-restore not fully supported
 - no shared pid namespace support
 - Docker version 1.11.2 known issues
 - Kernel crash with Aufs storage driver on Debian Jessie ([#27885](#)) which can be identified by the [node problem detector](#)
 - Leaked File descriptors ([#275](#))
 - Additional memory overhead per container ([#21737](#))
 - Docker 1.10.3 contains [backports provided by RedHat](#) for known issues
 - Support for Docker version 1.9.x has been removed
- rkt version 1.23.0+
 - known issues with the rkt runtime are [listed in the Getting Started Guide](#)
- etcd version 3.0.17

Changelog since v1.6.0-rc.1

Previous Releases Included in v1.6.0

- [v1.6.0-rc.1](#)
- [v1.6.0-beta.4](#)
- [v1.6.0-beta.3](#)
- [v1.6.0-beta.2](#)
- [v1.6.0-beta.1](#)
- [v1.6.0-alpha.3](#)
- [v1.6.0-alpha.2](#)
- [v1.6.0-alpha.1](#) **No notable changes for this release**

v1.6.0-rc.1

[Documentation](#) & [Examples](#)

Downloads for v1.6.0-rc.1

filename	sha256 hash
kubernetes.tar.gz	b92be4b71184888ba4a2781d4068ea369442b6030dfb38e23029192a554651e5
kubernetes-src.tar.gz	e45e993edfdb176a6750c6d3c2207d54d60b5b1fc80a0fe47274d4d9b233d66

Client Binaries

filename	sha256 hash

kubernetes-client-darwin-386.tar.gz	1d56088fb85fba02362f7f87a5d5f899c05caa605f4d11b8616749cb0d970384
kubernetes-client-darwin-amd64.tar.gz	f3df7b558c2ecf6ed8344668515f436b7211a2f840d982f81c55586e1ec84a7b
kubernetes-client-linux-386.tar.gz	c5ee1787d69d508d8448675428936d70e21f17b21ff44e22db4462483adcebe2
kubernetes-client-linux-amd64.tar.gz	0960505da11330c8cc66b7df4e4413680afd2a62afc2341bad6bbd88c73e3a56
kubernetes-client-linux-arm64.tar.gz	dc113881b9cd09ef8ccebdf8f4ff41eddeba7df3ad7af70461e513eb79757e54
kubernetes-client-linux-arm.tar.gz	5f6bd182852ffe3776b520fbf2db3546c8246133df166dcf6c81ece4b0974227
kubernetes-client-linux-ppc64le.tar.gz	ea91e79a779eac8c00a5eb80be1fd5b227b9f5ae767e30a12354bfa691f198d5
kubernetes-client-linux-s390x.tar.gz	874d7410078d39b80fe07a44018f6e95655cb9e05c99ec66dea012d06633fbbb
kubernetes-client-windows-386.tar.gz	b02d6d8e436322294a65def8c9c576f232df9387093c4ca61e57dd3bdf184b87
kubernetes-client-windows-amd64.tar.gz	68dbf06824b3785027a85d448f9f2b9928a4092912b382e67c1579e30bb58bbd

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	aa9e5d1cb60c1d33d048a75003fdce9ffa0985ede3748b38b4357d961943d603
kubernetes-server-linux-arm64.tar.gz	0343a1dead1efb8b829ab485028d2ec58ffc4aa7845b3415da5a5bb6fd8bcbfd
kubernetes-server-linux-arm.tar.gz	77a724b28e071e92113759440fdca7e12ea00c5b41a5334ce7581a0139d8f264
kubernetes-server-linux-ppc64le.tar.gz	ae21bc7cced29a3c20c76dbf57262a8ea276fe120e411d950ff5267fe4b6cd50
kubernetes-server-linux-s390x.tar.gz	424f5cd9f4aee3e53a8a760ccdc16bd7e2683913e57d56519b536bf4a98f56e5

Changelog since v1.6.0-beta.4

Other notable changes

- `kube-up.sh` using the `gce` provider enables both RBAC authorization and the permissive legacy ABAC policy that makes all service accounts superusers. To opt out of the permissive ABAC policy, export the environment variable `ENABLE_LEGACY_ABAC=false` before running `cluster/kube-up.sh`. ([#43544](#), [@liggitt](#))
- Bump CNI consumers to v0.5.1 ([#43546](#), [@calebamiles](#))
- The API server discovery document now prioritizes the `extensions` API group over the `apps` API group. This ensures certain commands in 1.5 versions of `kubectl` (such as `kubectl edit deployment`) continue to function against a 1.6 API. ([#43553](#), [@liggitt](#))
- Fix adding disks to more than one scsi adapter. ([#42422](#), [@kerneltime](#))

- PodSecurityPolicy authorization is correctly enforced by the PodSecurityPolicy admission plugin. ([#43489](#), [@liggitt](#))
- API fields that previously serialized null arrays as `null` and empty arrays as `[]` no longer distinguish between those values and always output `[]` when serializing to JSON. ([#43422](#), [@liggitt](#))
- Apply taint tolerations for NoExecute for all static pods. ([#43116](#), [@dchen1107](#))
- Bumped Heapster to v1.3.0. ([#43298](#), [@piosz](#))
 - More details about the release <https://github.com/kubernetes/heapster/releases/tag/v1.3.0>

v1.6.0-beta.4

[Documentation](#) & [Examples](#)

Downloads for v1.6.0-beta.4

filename	sha256 hash
kubernetes.tar.gz	8f308a87bcc367656c777f74270a82ad6986517c28a08c7158c77b1d7954e243
kubernetes-src.tar.gz	3ba73cf27a05f78026d1cfb3a0e47c6e5e33932aefc630a0a5aa3619561bc4dc

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	7007e8024257fd2436c9f68ddb25383e889d58379e30a60c9bb6bffb1a6809df
kubernetes-client-darwin-amd64.tar.gz	f1bc3f0c8e4c8c9e0aa2f66fffea163a5bf139d528160eb4266cd5322cf112e1
kubernetes-client-linux-386.tar.gz	7ceb47d4b282b31d300aa7a81bf00eef744fb58df58d613e1ea01930287c85d9
kubernetes-client-linux-amd64.tar.gz	d25c73f0ebb3338fc3e674d4a667d3023d073b8bc4942eb98f1a3fc9001675ef
kubernetes-client-linux-arm64.tar.gz	3d5a1188f638cddad7cd5eca0668d25f46a6a6f80641a8e9e6f3777a23af0f7c
kubernetes-client-linux-arm.tar.gz	e9d40ad06385266cd993adf436270972412dd5407d436e682bddf30706fddbdba
kubernetes-client-linux-ppc64le.tar.gz	17f9a60eb6175e28aa0a9ba534cc0ceda24ff8ab81eaf06d04c362146f707e81
kubernetes-client-linux-s390x.tar.gz	30017ac4603bda496a125162cd956e9e874a4d04efff170972c72c8095a9f9121
kubernetes-client-windows-386.tar.gz	6165b8d0781894b36b2f2cd72d79063ce95621012cd1ca38bd7d936feeea8416
kubernetes-client-windows-amd64.tar.gz	ac45e5ddf44dd0a680abc5641ae1cb59ad9c7ab8d4132e3b110ebca7ed2119ac

Server Binaries

filename	sha256 hash
kubernetes-server-linux-	a37f0b431aea2cc7e259ddf118fd42315589236106b279de5803e2d50af08531

amd64.tar.gz	
kubernetes-server-linux-arm64.tar.gz	e6a5c8a9e59a12df5294766a4e31e08603a041dd75bcc23f19fb7d20d8a30b9a
kubernetes-server-linux-arm.tar.gz	ebe1ccf95a80a829c294fe8bb216a10a096bc7f311fb0f74b7a121772c4d238b
kubernetes-server-linux-ppc64le.tar.gz	8a09baa5c2ddfb579a1601f76b7079dab695c1423d22a04acd039256e26355c
kubernetes-server-linux-s390x.tar.gz	621feb08ac3bee0b9f5b31c648b3011f91883c44954db04268c0da4ef59f16f1

Changelog since v1.6.0-beta.3

Other notable changes

- Update dashboard version to v1.6.0 ([#43210](#), [@floreks](#))
- Update photon controller go SDK in vendor code. ([#43108](#), [@luomiao](#))
- Fluentd was migrated to Daemon Set, which targets nodes with beta.kubernetes.io/fluentd-ds-ready=true label. If you use fluentd in your cluster please make sure that the nodes with version 1.6+ contains this label. ([#42931](#), [@piosz](#))
- if kube-apiserver is started with `--storage-backend=etcd2`, the media type `application/json` is used. ([#43122](#), [@liggitt](#))
- Add -p to mkdirs in gci-mounter function of gce configure.sh script ([#43134](#), [@shyamjvs](#))
- Rescheduler uses taints in v1beta1 and will remove old ones (in version v1alpha1) right after its start. ([#43106](#), [@piosz](#))
- kubeadm: `kubeadm reset` won't drain and remove the current node anymore ([#42713](#), [@luxas](#))
- hack/godep-restore.sh: use godep v79 which works ([#42965](#), [@sttts](#))
- Patch CVE-2016-8859 in gcr.io/google-containers/cluster-proportional-autoscaler-amd64 ([#42933](#), [@timstclair](#))
- Disable devicemapper thin_ls due to excessive iops ([#42899](#), [@dashpole](#))

v1.6.0-beta.3

[Documentation](#) & [Examples](#)

Downloads for v1.6.0-beta.3

filename	sha256 hash
kubernetes.tar.gz	3903f0a49945abe26f5775c20deb25ba65a8607a2944da8802255bd50d20aca7
kubernetes-src.tar.gz	62f5f9459c14163e319f878494d10296052d75345da7906e8b38a2d6d0d2a25c

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	1294256f09d3a78a05cf2c85466495b08f87830911e68fd0206964f0466682e3
kubernetes-client-darwin-amd64.tar.gz	ff6d8561163d9039c807f4cf05144dd3837104b111fac1ae4b667e2b8548d135

kubernetes-client-linux-386.tar.gz	d32a07b4a24a88cfee589cff91336e411a89ed470557b8f74f34bb6636adc800
kubernetes-client-linux-amd64.tar.gz	e3663e134cd42bbf71f4f6f0395e6c3ea2080d8621bdab9cc668c77f5478196a
kubernetes-client-linux-arm64.tar.gz	39465c409396a4cc0ae672f0f0c0db971e482de52e9dff835eb43a8f7e3412e9
kubernetes-client-linux-arm.tar.gz	8897b38e59cee396213f50453bdc88808cd56d63be762362d79454ce526b1ea
kubernetes-client-linux-ppc64le.tar.gz	a32b85c5e495dd3645845f2e8ff0eb366fb4ae4795e2bdafaceae97cfe71e34b5
kubernetes-client-linux-s390x.tar.gz	0af4f0d7778cb67c1acc3b2f3870283e3008c6e1ea8d532c6b90b5a7f1475db8
kubernetes-client-windows-386.tar.gz	b298561b924c8c88b062759cc69b733187310a7e1af74b1b3987ed256f422b05
kubernetes-client-windows-amd64.tar.gz	42ec39178885bb06cba4002844e80948e0c9c3618bfb0a009618a3fab1797a69

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	333ea0cf5c25f65dbb5d353cac002af3fa5e6f8431e81eaba2534005164c9ce9
kubernetes-server-linux-arm64.tar.gz	2979a04409863f6e4dbc745eebfd57ee90e0b38ed4449dcb15cfd87d8f80dadcd
kubernetes-server-linux-arm.tar.gz	2ed1e98b2566b4f552951d9496537b18b28ae53eb9e36c6fd17202e9e498eae5
kubernetes-server-linux-ppc64le.tar.gz	f4989351a6a98746c1d269d72d2fa87dba8ce782bdfc088d9f7f8d10029aa3fe
kubernetes-server-linux-s390x.tar.gz	31fb764136e97e851d1640464154f3ce4fc696e3286314f538da7b19eed3e2fe

Changelog since v1.6.0-beta.2

Other notable changes

- Introduce new generator for apps/v1beta1 deployments ([#42362](#), [@soltys](#))
- Use Prometheus instrumentation conventions ([#36704](#), [@fabxc](#))
- Add new DaemonSet status fields to kubectl printer and describer. ([#42843](#), [@janetkuo](#))
- Dropped the support for docker 1.9.x and the belows. ([#42694](#), [@dchen1107](#))

v1.6.0-beta.2

[Documentation](#) & [Examples](#)

Downloads for v1.6.0-beta.2

filename	sha256 hash
kubernetes.tar.gz	8199c781f8c98ed7048e939a590ea10a6c39f6a74bd35ed526b459fa18e20f50

kubernetes-src.tar.gz	f8de26ab6493d4547f9068f5ef396650c169702863535ba63feaf815464a6702
---------------------------------------	--

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	0b2350c5ffec582f86d2bd95fa9ecd1b4213fbc3af79f2a7f67d071c3a0373f
kubernetes-client-darwin-amd64.tar.gz	a1c81457a34258f2622f841b9971ba490c66f6a0f5725c089430d0f0fb09dc8c
kubernetes-client-linux-386.tar.gz	40d45492f6741980afde0c83bb752382b699b3d62ac36203faca16fcd9fadd21
kubernetes-client-linux-amd64.tar.gz	a06baf31249b06375fde1f608ffea041bdbad0f4814ba8ea69839a7778fa4646
kubernetes-client-linux-arm64.tar.gz	d9e18ceb7efacee5cc2a579e204919bb4c272c586bc15750963946e7fe5dc741
kubernetes-client-linux-arm.tar.gz	7abc1a2e5c0e40b46b9839b9c9ca065fceed486413ee3c0687e832dc668560ca
kubernetes-client-linux-ppc64le.tar.gz	84d82f1c2a2b07bea7c827c20cc208f0741b72cf732319673edbf73b42f1b687
kubernetes-client-linux-s390x.tar.gz	605852ee99117abb5bf62f4239c7e2c7e3976f1f497e24ffed50ba4817c301dc
kubernetes-client-windows-386.tar.gz	2c442dbfaa393f67f2fe2a1fd2c10267092e99385ca40f7bed732d48bb36ae62
kubernetes-client-windows-amd64.tar.gz	6b64521cde0b239d9e23e0896919653dfe30ad064d363a9931305feefe04b359

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	0a49f719cd295be9a4947b7b8b0fe68c29d8168d7e03a9e37173de340490b578
kubernetes-server-linux-arm64.tar.gz	fb1464794b9e6375cc7f5b8b72125d81921416b6825fe2c37073aef006e846d1
kubernetes-server-linux-arm.tar.gz	27acc02302c6d45ef6314a2bceca6012e35c88d0678b219528d21d8ee4c6b424
kubernetes-server-linux-ppc64le.tar.gz	8eef21ab0700ba2802ef70d2c0b84ee0b27ae0833d2259d425429984f972690e
kubernetes-server-linux-s390x.tar.gz	c6e383f897ceb8143a7b1f023e155c9c39e9e7c220e989cc6c1bfcffdb886dd5

Changelog since v1.6.0-beta.1

Action Required

- Deployment now fully respects ControllerRef to avoid fighting over Pods and ReplicaSets. At the time of upgrade, **you must not have Deployments with selectors that overlap**, or else [ownership of ReplicaSets may change](#). (#42175, @enisoc)

- StatefulSet now respects ControllerRef to avoid fighting over Pods. At the time of upgrade, **you must not have StatefulSets with selectors that overlap** with any other controllers (such as ReplicaSets), or else [ownership of Pods may change](#). (#42080, @enisoc)

Other notable changes

- DaemonSet now respects ControllerRef to avoid fighting over Pods. (#42173, @enisoc)
- restored normalization of custom `--etcd-prefix` when `--storage-backend` is set to etcd3 (#42506, @liggitt)
- kubelet created cgroups follow lowercase naming conventions (#42497, @derekwaynecarr)
- Support whitespace in command path for gcp auth plugin (#41653, @jlowdermilk)
- Updates the dnsmasq cache/mux layer to be managed by dnsmasq-nanny. (#41826, @bowei)
 - dnsmasq-nanny manages dnsmasq based on values from the kube-system:kube-dns configmap:

```
"stubDomains": {
  "acme.local": ["1.2.3.4"]
},
```

is a map of domain to list of nameservers for the domain. This is used to inject private DNS domains into the kube-dns namespace. In the above example, any DNS requests for *.acme.local will be served by the nameserver 1.2.3.4. `"upstreamNameservers": ["8.8.8.8", "8.8.4.4"]` is a list of upstreamNameservers to use, overriding the configuration specified in `/etc/resolv.conf`.

- kubelet exports metrics for cgroup management (#41988, @sjenning)
- kubectrl: respect deployment strategy parameters for rollout status (#41809, @kargakis)
- Remove cmd/kube-discovery from the tree since it's not necessary anymore (#42070, @luxas)
- kubeadm: Hook up kubeadm against the BootstrapSigner (#41417, @luxas)
- Federated Ingress over GCE no longer requires separate firewall rules to be created for each cluster to circumvent flapping firewall health checks. (#41942, @csbell)
- ScaleIO Kubernetes Volume Plugin added enabling pods to seamlessly access and use data stored on ScaleIO volumes. (#38924, @vladimirvivien)
- Pods are launched in a separate cgroup hierarchy than system services. (#42350, @vishh)
- Experimental support to reserve a pod's memory request from being utilized by pods in lower QoS tiers. (#41149, @sjenning)
- Juju: Disable anonymous auth on kubelet (#41919, @Cynerva)
- Remove support for debian masters in GCE kube-up. (#41666, @mikedanese)
- Implement bulk polling of volumes (#41306, @gnufied)
- stop kubectrl edit from updating the last-applied-configuration annotation when `--save-config` is unspecified or false. (#41924, @ymqytw)

v1.6.0-beta.1

[Documentation](#) & [Examples](#)

Downloads for v1.6.0-beta.1

filename	sha256 hash
kubernetes.tar.gz	ca17c4f1ebdd4bbbd0e570bf3a29d52be1e962742155bc5e20765434f3141f2d
kubernetes-src.tar.gz	4aefc25b42594f0aab48e43608c8ef6eca8c115022fcc76a9a0d34430e33be0f

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	7629da89467e758e6e70c513d5332e6231941de60e99b6621376bc72f9ede314
kubernetes-client-darwin-amd64.tar.gz	3a6d6f78ca307486189c7a92e874508233d6b9b5697a0c42cb2803f4b17ccfb2
kubernetes-client-linux-386.tar.gz	544b944fdcbabb0dbf0e1acedf7e1deb40fd795c46b8f5afe5d622d2091f0ac9
kubernetes-client-linux-amd64.tar.gz	d13f3bede2beb1d7fbca7f01a2c0775938d9127073b0fa1cecb4fd152947eae
kubernetes-client-linux-arm64.tar.gz	8820b18ae1c3bdc8c93b5641e9322aa8dba25ec42362aa86ecbe6ae690a9809
kubernetes-client-linux-arm.tar.gz	d928f7e772a74cf715cf382d66ba757394afc02a03727edfe43305f279fdb87
kubernetes-client-linux-ppc64le.tar.gz	56ccc3a9def527278cd41ba1ce5b0528238ef7b7b5886d6ebc944b11e2f5228c
kubernetes-client-linux-s390x.tar.gz	4923b9617b5306b321e47450bbfe701242b46b2d27800d82a7289fbabe7a107d
kubernetes-client-windows-386.tar.gz	598703591fa2be13cc47930088117fc12731431b679f8ca2a5717430bb45fb93
kubernetes-client-windows-amd64.tar.gz	9e839346effcbe9c469519002967069c8d109282aaceb72e02f25cf606a691b2

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	726b9e4ead829ebd293fe6674ab334f72aa163b1544963febb9bc35d1fb26e6f
kubernetes-server-linux-arm64.tar.gz	975d02629619d441f60442ca07c42721e103e9e5bbcc2eea302b7c936303d26b
kubernetes-server-linux-arm.tar.gz	98223dd80f34eed3cdb30fb57df1da96630db9c0f04aae6a685e22a29c16398d
kubernetes-server-linux-ppc64le.tar.gz	a73715b7db73d6d0ad0b78b01829fe9f22566b557eebe2c1a960a81693b0c8b5
kubernetes-server-linux-s390x.tar.gz	d3cb54e9193c773ea9998106c75bb3f0af705477fb844bcc8f82c845c44bb00d

Changelog since v1.6.0-alpha.3

Action Required

- The `--dns-provider` argument of 'kubefed init' is now mandatory and does not default to `google-clouddns`. To initialize a Federation control plane with Google Cloud DNS, use the following invocation:
'kubefed init --dns-provider=google-clouddns' ([#42092](#), [@marun](#))
- Change taints/tolerations to api fields ([#38957](#), [@aveshagarwal](#))

Other notable changes

- kubeadm: Rename some flags for beta UI and fixup some logic ([#42064](#), [@luxas](#))
- StorageClassName attribute has been added to PersistentVolume and PersistentVolumeClaim objects and should be used instead of annotation `volume.beta.kubernetes.io/storage-class`. The beta annotation is still working in this release, however it will be removed in a future release. ([#42128](#), [@jsafrane](#))
- Remove Azure kube-up as the Azure community has focused efforts elsewhere. ([#41672](#), [@mikedanese](#))
- Fluentd-gcp containers spawned by DaemonSet are now configured using ConfigMap ([#42126](#), [@Crassirostris](#))
- Modified kubemark startup scripts to restore master on reboot ([#41980](#), [@shyamjvs](#))
- Added new Api `PodPreset` to enable defining cross-cutting injection of Volumes and Environment into Pods. ([#41931](#), [@jessfraz](#))
- AWS cloud provider: allow to run the master with a different AWS account or even on a different cloud provider than the nodes. ([#39996](#), [@scheeles](#))
- Update defaultbackend image to 1.3 ([#42212](#), [@timstclair](#))
- Allow the Horizontal Pod Autoscaler controller to talk to the metrics API and custom metrics API as standard APIs. ([#41824](#), [@DirectXMan12](#))
- Implement support for mount options in PVs ([#41906](#), [@gnufied](#))
- Introduce apps/v1beta1.Deployments resource with modified defaults compared to extensions/v1beta1.Deployments. ([#39683](#), [@soltysh](#))
- Add DNS suffix search list support in Windows kube-proxy. ([#41618](#), [@JiangtianLi](#))
- `--experimental-nvidia-gpus` flag is **replaced** by `Accelerators` alpha feature gate along with support for multiple Nvidia GPUs. ([#42116](#), [@vishh](#))
 - To use GPUs, pass `Accelerators=true` as part of `--feature-gates` flag.
 - Works only with Docker runtime.
- Clean up the kube-proxy container image by removing unnecessary packages and files. ([#42090](#), [@timstclair](#))
- AWS: Support shared tag `kubernetes.io/cluster/<clusterid>` ([#41695](#), [@justinsb](#))
- Insecure access to the API Server at localhost:8080 will be turned off in v1.6 when using kubeadm ([#42066](#), [@luxas](#))
- AWS: Do not consider master instance zones for dynamic volume creation ([#41702](#), [@justinsb](#))
- Added foreground garbage collection: the owner object will not be deleted until all its dependents are deleted by the garbage collector. Please checkout the [user doc](#) for details. ([#38676](#), [@caesarxuchao](#))
 - `deleteOptions.orphanDependents` is going to be deprecated in 1.7. Please use `deleteOptions.propagationPolicy` instead.
- force unlock rbd image if the image is not used ([#41597](#), [@rootfs](#))
- The kubernetes-master, kubernetes-worker and kubeapi-load-balancer charms have gained an nrpe-external-master relation, allowing the integration of their monitoring in an external Nagios server. ([#41923](#), [@Cynerva](#))
- make kubectl describe pod show tolerationSeconds ([#42162](#), [@kevin-wangzefeng](#))
- Completed pods should not be hidden when requested by name via `kubectl get .` ([#42216](#), [@smarterclayton](#))
- [Federation][Kubefed] Flag cleanup ([#41335](#), [@irfanurrehman](#))
- Add the support to the scheduler for spreading pods of StatefulSets. ([#41708](#), [@bsalamat](#))
- Portworx Volume Plugin added enabling [Portworx](#) to be used as a storage provider for Kubernetes clusters. Portworx pools your servers capacity and turns your servers or cloud instances into converged, highly available compute and storage nodes. ([#39535](#), [@adityadani](#))
- Remove support for trusty in GCE kube-up. ([#41670](#), [@mikedanese](#))
- Import a natural sorting library and use it in the sorting printer. ([#40746](#), [@matthyx](#))
- Parameter keys in a StorageClass `parameters` map may not use the `kubernetes.io` or `k8s.io` namespaces. ([#41837](#), [@liggitt](#))

- Make DaemonSet respect critical pods annotation when scheduling. ([#42028](#), [@janetkuo](#))
- New Kubelet flag `--enforce-node-allocatable` with a default value of `pods` is added which will make kubelet create a top level cgroup for all pods to enforce Node Allocatable. Optionally, `system-reserved` & `kube-reserved` values can also be specified separated by comma to enforce node allocatable on cgroups specified via `--system-reserved-cgroup` & `--kube-reserved-cgroup` respectively. Note the default value of the latter flags are `""`. ([#41234](#), [@vishh](#))
 - This feature requires a **Node Drain** prior to upgrade failing which pods will be restarted if possible or terminated if they have a `RestartNever` policy.
- Deployment of AWS Kubernetes clusters using the in-tree bash deployment (i.e. cluster/kube-up.sh or get-kube.sh) is obsolete. v1.5.x will be the last release to support cluster/kube-up.sh with AWS. For a list of viable alternatives, see: <http://kubernetes.io/docs/getting-started-guides/aws/> ([#42196](#), [@zmerlynn](#))
- kubectl logs allows getting logs directly from deployment, job and statefulset ([#40927](#), [@soltys](#))
- make kubectl taint command respect effect NoExecute ([#42120](#), [@kevin-wangzefeng](#))
- Flex volume plugin is updated to support attach/detach interfaces. It broke backward compatibility. Please update your drivers and implement the new callouts. ([#41804](#), [@chakri-nelluri](#))
- Implement the update feature for DaemonSet. ([#41116](#), [@lukaszo](#))
- [Federation] Create configmap for the cluster kube-dns when cluster joins and remove when it unjoins ([#39338](#), [@irfanurrehman](#))
- New GKE certificates controller. ([#41160](#), [@pipejakob](#))
- Juju: Fix shebangs in charm actions to use python3 ([#42058](#), [@Cynerva](#))
- Support kubectl apply set-last-applied command to update the applied-applied-configuration annotation ([#41694](#), [@shiywang](#))
- On GCI by default logrotate is disabled for application containers in favor of rotation mechanism provided by docker logging driver. ([#40634](#), [@Crassirostris](#))
- Cleanup fluentd-gcp image: rebase on debian-base, switch to upstream packages, remove fluent-ui & rails ([#41998](#), [@timstclair](#))
- Updating apiserver to return http status code 202 for a delete request when the resource is not immediately deleted because of user requesting cascading deletion using `DeleteOptions.OrphanDependents=false`. ([#41165](#), [@nikhiljindal](#))
- [Federation][kubefed] Support configuring dns-provider ([#40528](#), [@shashidharatd](#))
- Added support to minimize sending verbose node information to scheduler extender by sending only node names and expecting extenders to cache the rest of the node information ([#41119](#), [@sarat-k](#))
- Guaranteed admission for Critical Pods ([#40952](#), [@dashpole](#))
- Switch to the `node-role.kubernetes.io/master` label for marking and tainting the master node in kubeadm ([#41835](#), [@luxas](#))
- Allow drain `--force` to remove pods whose managing resource is deleted. ([#41864](#), [@marun](#))
- add kubectl can-i to see if you can perform an action ([#41077](#), [@deads2k](#))
- enable DefaultTolerationSeconds admission controller by default ([#41815](#), [@kevin-wangzefeng](#))
- Make DaemonSets survive taint-based evictions when nodes turn unreachable/notReady. ([#41896](#), [@kevin-wangzefeng](#))
- Add configurable limits to CronJob resource to specify how many successful and failed jobs are preserved. ([#40932](#), [@peay](#))
- Deprecate outofdisk-transition-frequency and low-diskspace-threshold-mb flags ([#41941](#), [@dashpole](#))
- Add OWNERS for sample-apiserver in staging ([#42094](#), [@sttts](#))
- Update gcr.io/google-containers/rescheduler to v0.2.2, which uses busybox as a base image instead of ubuntu. ([#41911](#), [@ixdy](#))
- Add storage.k8s.io/v1 API ([#40088](#), [@jsafrane](#))
- Juju - K8s master charm now properly keeps distributed master files in sync for an HA control plane. ([#41351](#), [@chuckbutler](#))
- Fix zsh completion: unknown file attribute error ([#38104](#), [@elipapa](#))

- kubelet config should ignore file start with dots ([#39196](#), [@resouer](#))
- Add an alpha feature that makes NodeController set Taints instead of deleting Pods from not Ready Nodes. ([#41133](#), [@gmarek](#))
- Base etcd-empty-dir-cleanup on busybox, run as nobody, and update to etcdctl 3.0.14 ([#41674](#), [@ixdy](#))
- Fix zone placement heuristics so that multiple mounts in a StatefulSet pod are created in the same zone ([#40910](#), [@justinsb](#))
- Flag --use-kubernetes-version for kubeadm init renamed to --kubernetes-version ([#41820](#), [@kad](#))
- kube-dns now runs using a separate system:serviceaccount:kube-system:kube-dns service account which is automatically bound to the correct RBAC permissions. ([#38816](#), [@deads2k](#))
- [Kubemark] Fixed hollow-npd container command to log to file ([#41858](#), [@shyamjvs](#))
- kubeadm: Remove the --cloud-provider flag for beta init UX ([#41710](#), [@luxas](#))
- The CertificateSigningRequest API added the extra field to persist all information about the requesting user. This mirrors the fields in the SubjectAccessReview API used to check authorization. ([#41755](#), [@liggitt](#))
- Upgrade golang versions to 1.7.5 ([#41771](#), [@cblecker](#))
- Added a new secret type "bootstrap.kubernetes.io/token" for dynamically creating TLS bootstrapping bearer tokens. ([#41281](#), [@ericchiang](#))
- Remove unnecessary metrics (http/process/go) from being exposed by etcd-version-monitor ([#41807](#), [@shyamjvs](#))
- Added kubectl create clusterrole command. ([#41538](#), [@xingzhou](#))
- Support new kubectl apply view-last-applied command for viewing the last configuration file applied ([#41146](#), [@shiywang](#))
- Bump GCI to gci-stable-56-9000-84-2 ([#41819](#), [@dchen1107](#))
- list-resources: don't fail if the grep fails to match any resources ([#41933](#), [@ixdy](#))
- client-go no longer imports GCP OAuth2 and OpenID Connect packages by default. ([#41532](#), [@ericchiang](#))
- Each pod has its own associated cgroup by default. ([#41349](#), [@derekwaynecarr](#))
- Whitelist kubemark in node_ssh_supported_providers for log dump ([#41800](#), [@shyamjvs](#))
- Support KUBE_MAX_PD_VOLS on Azure ([#41398](#), [@codablock](#))
- Projected volume plugin ([#37237](#), [@jpeeler](#))
- --output-version is ignored for all commands except kubectl convert . This is consistent with the generic nature of kubectl CRUD commands and the previous removal of --api-version . Specific versions can be specified in the resource field: resource.version.group , jobs.v1.batch . ([#41576](#), [@deads2k](#))
- Added bool type support for jsonpath. ([#39063](#), [@xingzhou](#))
- Nodes can now report two additional address types in their status: InternalDNS and ExternalDNS. The apiserver can use --kubelet-preferred-address-types to give priority to the type of address it uses to reach nodes. ([#34259](#), [@liggitt](#))
- Clients now use the ?watch=true parameter to make watch API calls, instead of the /watch/ path prefix ([#41722](#), [@liggitt](#))
- ResourceQuota ability to support default limited resources ([#36765](#), [@derekwaynecarr](#))
- Fix kubemark default e2e test suite's name ([#41751](#), [@shyamjvs](#))
- federation aws: add logging of route53 calls ([#39964](#), [@justinsb](#))
- Fix ConfigMap for Windows Containers. ([#39373](#), [@jbhurat](#))
- add defaultTolerationSeconds admission controller ([#41414](#), [@kevin-wangzefeng](#))
- Node Problem Detector is beta now. New features added: journald support, standalone mode and arbitrary system log monitoring. ([#40206](#), [@Random-Liu](#))
- Fix the output of health-mointor.sh ([#41525](#), [@yujuhong](#))
- kubectl describe no longer prints the last-applied-configuration annotation for secrets. ([#34664](#), [@ymqytw](#))
- Report node not ready on failed PLEG health check ([#41569](#), [@yujuhong](#))
- Delay Deletion of a Pod until volumes are cleaned up ([#41456](#), [@dashpole](#))
- Alpha version of dynamic volume provisioning is removed in this release. Annotation ([#40000](#), [@jsafrane](#))

- "volume.alpha.kubernetes.io/storage-class" does not have any special meaning. A default storage class and DefaultStorageClass admission plugin can be used to preserve similar behavior of Kubernetes cluster, see <https://kubernetes.io/docs/user-guide/persistent-volumes/#class-1> for details.
- An `automountServiceAccountToken *bool` field was added to ServiceAccount and PodSpec objects. If set to `false` on a pod spec, no service account token is automounted in the pod. If set to `false` on a service account, no service account token is automounted for that service account unless explicitly overridden in the pod spec. (#37953, @liggitt)
- Bump addon-manager version to v6.4-alpha.1 in kubemark (#41506, @shyamjys)
- Do not daemonize `salt-minion` for the openstack-heat provider. (#40722, @micmro)
- Move private key parsing from serviceaccount/jwt.go to client-go/util/cert (#40907, @cblecker)
- Added configurable etcd initial-cluster-state to kube-up script. (#41332, @jszczepkowski)

v1.6.0-alpha.3

[Documentation](#) & [Examples](#)

Downloads for v1.6.0-alpha.3

filename	sha256 hash
kubernetes.tar.gz	41b5e9edd973cbb8e68eb5d8d758c4f0afa11dfbd65df49e1c361206706a974c
kubernetes-src.tar.gz	ec13e22322c85752918c23b0b498ba02087a1227b8fdc169f19acdf128f907c4

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	5a631b7604a69ef13c27b43e6df10f8bf14ff9170440fb07d0c46bc88a5a1eac
kubernetes-client-darwin-amd64.tar.gz	cfa71e38a924b783fcdcb0b1a342671d52af3588a8211e35048e9c071ed03b2
kubernetes-client-linux-386.tar.gz	ceeee264b12959cb2b314efa9df4c165ea1598b8824ec652eb3994096f4ec07f
kubernetes-client-linux-amd64.tar.gz	1bd3a4b64ab1535780f18b3e7a56dd1301a8ea8d66869ee704f66985c1fca9b4
kubernetes-client-linux-arm64.tar.gz	d1615b3223c6e83422ed8409fc8d0a7a6069982d3413a482e12966b953520fe0
kubernetes-client-linux-arm.tar.gz	19133867e2d104db3e01212dbc4a702a315310a10e86076b6b80a16b94cf7954
kubernetes-client-linux-ppc64le.tar.gz	0f89e17eb881c7db39195bc94874e3ec54866d2f57eef1540b5d843bedbe4326
kubernetes-client-linux-s390x.tar.gz	3ed06cb89ffec011e4248c14d9e1c88c815b7363d1fdb217ed17e900f29960b
kubernetes-client-windows-386.tar.gz	87927cbe26cefa296e2752075d018a58826bc7fa141c4cbe56116a254a3470cc
kubernetes-client-windows-amd64.tar.gz	e97e7dafbf670140d3c4879a6738b970ac77d917861df3eea0c502238dd297b0

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	3aa82b838be450ce8dedbebfda45c453864c15aae6363ae5f1c0b0d285ffad2a
kubernetes-server-linux-arm64.tar.gz	0bdeac3524ab7ef366f3bb75e2fbff3db156dcba2b862e8b2de393e4ec4377c9
kubernetes-server-linux-arm.tar.gz	1f37886aba4027ec682afe5f02a4d66a6645af2476f2954933c1b437ec66dafa
kubernetes-server-linux-ppc64le.tar.gz	eb81d3cdd703790d5c96e24917183dc123aeabbe9a291c2dd86c68d21d9fd213
kubernetes-server-linux-s390x.tar.gz	a50a57c689583f97fd4ff7af766bf7ae79c9fd97e46720bc41f385f2c51e1f99

Changelog since v1.6.0-alpha.2

Other notable changes

- Fix AWS device allocator to only use valid device names ([#41455](#), [@gnufied](#))
- [Federation][Kubefed] Bug fix relating kubeconfig path in kubefed init ([#41410](#), [@irfanurrehman](#))
- The apiserver audit log (`/var/log/kube-apiserver-audit.log`) will be sent through fluentd if enabled. ([#41360](#), [@enisoc](#))
- Bump GCE ContainerVM to container-vm-v20170214 to address CVE-2016-9962. ([#41449](#), [@zmerlynn](#))
- Fixed issues [#39202](#), [#41041](#) and [#40941](#) that caused the iSCSI connections to be prematurely closed when deleting a pod with an iSCSI persistent volume attached and that prevented the use of newly created LUNs on targets with preestablished connections. ([#41196](#), [@CristianPop](#))
- The kube-apiserver [basic audit log](#) can be enabled in GCE by exporting the environment variable `ENABLE_APISERVER_BASIC_AUDIT=true` before running `cluster/kube-up.sh` . This will log to `/var/log/kube-apiserver-audit.log` and use the same `logrotate` settings as `/var/log/kube-apiserver.log` . ([#41211](#), [@enisoc](#))
- On kube-up.sh clusters on GCE, kube-scheduler now contacts the API on the secured port. ([#41285](#), [@liggitt](#))
- Default RBAC ClusterRole and ClusterRoleBinding objects are automatically updated at server start to add missing permissions and subjects (extra permissions and subjects are left in place). To prevent autoupdating a particular role or rolebinding, annotate it with `rbac.authorization.kubernetes.io/autoupdate=false` . ([#41155](#), [@liggitt](#))
- Make EnableCRI default to true ([#41378](#), [@yujuhong](#))
- `kubectl edit` now edits objects exactly as they were retrieved from the API. This allows using `kubectl edit` with third-party resources and extension API servers. Because client-side conversion is no longer done, the `--output-version` option is deprecated for `kubectl edit` . To edit using a particular API version, fully-qualify the resource, version, and group used to fetch the object (for example, `job.v1.batch/myjob`) ([#41304](#), [@liggitt](#))
- We change the default attach_detach_controller sync period to 1 minute to reduce the query frequency through cloud provider to check whether volumes are attached or not. ([#41363](#), [@jingxu97](#))
- RBAC `v1beta1` RoleBinding/ClusterRoleBinding subjects changed `apiVersion` to `apiGroup` to fully-qualify a subject. ServiceAccount subjects default to an apiGroup of `"` , User and Group subjects default to an apiGroup of `"rbac.authorization.k8s.io"` . ([#41184](#), [@liggitt](#))

- Add support for finalizers in federated configmaps (deletes configmaps from underlying clusters). ([#40464](#), [@csbell](#))
- Make DaemonSet controller respect node taints and pod tolerations. ([#41172](#), [@janetkuo](#))
- Added kubect! create role command ([#39852](#), [@xingzhou](#))
- If `experimentalCriticalPodAnnotation` feature gate is set to true, fluentd pods will not be evicted by the kubelet. ([#41035](#), [@vishh](#))

v1.6.0-alpha.2

[Documentation](#) & [Examples](#)

Downloads for v1.6.0-alpha.2

filename	sha256 hash
kubernetes.tar.gz	d1a5c7bc435c0f58dca9eab54e8155b6e4797d4b5d6b0cb8feab968dd3132165
kubernetes-src.tar.gz	8d09b973f3debfe3d10b0ad392e56141446bc0d04aac60df6d761189997d97ed

Client Binaries

filename	sha256 hash
kubernetes-client-darwin-386.tar.gz	b1a7d002768ff8282f8873fde6a0ed215d20fd72197d8e583c024b7cbb3eb8
kubernetes-client-darwin-amd64.tar.gz	b0f872bbefdc1ecc9585dfdeb9c7e094f7a16ebbe4db11c64c70d1ef7f93e361
kubernetes-client-linux-386.tar.gz	53be6adde2d13058d03d0f283ca166bb495cc49cd2e36339696dc46f85f78c8f
kubernetes-client-linux-amd64.tar.gz	6436463d51ed54b50023cd725b054fd2b039e391095d8a618e91979fc55d4ee0
kubernetes-client-linux-arm64.tar.gz	d6638c8950a9e03ed64c3f3e1ad82166642c02aeb8f7fb2079db1f137170a145
kubernetes-client-linux-arm.tar.gz	05d0e466a27fc9a5b6535cbd7683e08739cd37aa2c6213c000fdaa305e4eb888
kubernetes-client-linux-ppc64le.tar.gz	38971be682cbf1f194eeb9ad683272a58042f4f91992db6fc34720de28d88dd6
kubernetes-client-linux-s390x.tar.gz	774a002482d6b62338550b20d90b914a08481965ed1b78cd348535d90f88f344
kubernetes-client-windows-386.tar.gz	690ab995ac27c90c811578677fb8688d43198499bfc451a2f908ad7a76474ee8
kubernetes-client-windows-amd64.tar.gz	757fe9e2083e2da706b52c96da34548aa72bbbf50bb261c1198c80b36189c3

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	5aa3161a1030ddb02985171d4343a99d14ad6e09e130549b20fc96797588ff1e

kubernetes-server-linux-arm64.tar.gz	babce8c402c8e88310ba82315f758e981d4cfe20dcbf3047e55b279d5d4f3a33
kubernetes-server-linux-arm.tar.gz	4b1d4c4ba95d86481d32daf09e769f7f9e4e0d71e11d39a5a4e205804b023172
kubernetes-server-linux-ppc64le.tar.gz	070423e62a0dff7ef17e29a63ac2eda5a46b6e1badf67214c07970b83610bf6c
kubernetes-server-linux-s390x.tar.gz	3a826fef775819a4f03e7db91684db6edfdaad3e3eb366c4321bdc5ec0b0f25

Changelog since v1.6.0-alpha.1

Other notable changes

- Align the hyperkube image to support running binaries at /usr/local/bin/ like the other server images ([#41017](#), [@luxas](#))
- Native support for token based bootstrap flow. This includes signing a well known ConfigMap in the `kube-public` namespace and cleaning out expired tokens. ([#36101](#), [@jbeda](#))
- Reverts to looking up the current VM in vSphere using the machine's UUID, either obtained via sysfs or via the `vm-uuid` parameter in the cloud configuration file. ([#40892](#), [@robdaemon](#))
- This PR adds a manager to NodeController that is responsible for removing Pods from Nodes tainted with NoExecute Taints. This feature is beta (as the rest of taints) and enabled by default. It's gated by controller-manager enable-taint-manager flag. ([#40355](#), [@gmarek](#))
- The authentication.k8s.io API group was promoted to v1 ([#41058](#), [@liggitt](#))
- Fixes issue [#38418](#) which, under circumstance, could cause StatefulSet to deadlock. ([#40838](#), [@kow3ns](#))
 - Mediates issue [#36859](#). StatefulSet only acts on Pods whose identity matches the StatefulSet, providing a partial mediation for overlapping controllers.
- Introduces an new alpha version of the Horizontal Pod Autoscaler including expanded support for specifying metrics. ([#36033](#), [@DirectXMan12](#))
- Set all node conditions to Unknown when node is unreachable ([#36592](#), [@andrewsykim](#))
- [Federation] Add override flags options to kubefed init ([#40917](#), [@irfanurrehman](#))
- Fix for detach volume when node is not present/ powered off ([#40118](#), [@BaluDontu](#))
- Bump up GLBC version from 0.9.0-beta to 0.9.1 ([#41037](#), [@bprashanth](#))
- The deprecated flags `--config`, `--auth-path`, `--resource-container`, and `--system-container` were removed. ([#40048](#), [@mtaufen](#))
- Add `kubectl attach` support for multiple types ([#40365](#), [@shiywang](#))
- [Kubelet] Delay deletion of pod from the API server until volumes are deleted ([#41095](#), [@dashpole](#))
- remove the `create-external-load-balancer` flag in `cmd/expose.go` ([#38183](#), [@tianshapjq](#))
- The authorization.k8s.io API group was promoted to v1 ([#40709](#), [@liggitt](#))
- Bump GCI to gci-beta-56-9000-80-0 ([#41027](#), [@dchen1107](#))
- [Federation][kubefed] Add option to expose federation apiserver on nodeport service ([#40516](#), [@shashidharatd](#))
- Rename `--experimental-cgroups-per-qos` to `--cgroups-per-qos` ([#39972](#), [@derekwaynecarr](#))
- PV E2E: provide each spec with a fresh nfs host ([#40879](#), [@copejon](#))
- Remove the temporary fix for pre-1.0 mirror pods ([#40877](#), [@yujuhong](#))
- fix `--save-config` in create subcommand ([#40289](#), [@xilabao](#))
- We should mention the caveats of in-place upgrade in release note. ([#40727](#), [@Random-Liu](#))
- The SubjectAccessReview API passes subresource and resource name information to the authorizer to answer authorization queries. ([#40935](#), [@liggitt](#))
- When feature gate "ExperimentalCriticalPodAnnotation" is set, Kubelet will avoid evicting pods in "kube-system" namespace that contains a special annotation -

`scheduler.alpha.kubernetes.io/critical-pod` (#40655, @vishh)

- This feature should be used in conjunction with the rescheduler to guarantee availability for critical system pods - <https://kubernetes.io/docs/admin/rescheduler/>
- make tolerations respect wildcard key (#39914, @kevin-wangzefeng)
- [Federation][kubefed] Add option to disable persistence storage for etcd (#40862, @shashidharatd)
- Init containers have graduated to GA and now appear as a field. The beta annotation value will still be respected and overrides the field value. (#38382, @hodovska)
- apply falls back to generic 3-way JSON merge patch if no go struct is registered for the target GVK (#40666, @ymqytw)
- HorizontalPodAutoscaler is no longer supported in extensions/v1beta1 version. Use autoscaling/v1 instead. (#35782, @piosz)
- Port forwarding can forward over websockets or SPDY. (#33684, @fraenkel)
- Improve kubectl describe node output by adding closing paren (#39217, @luksa)
- Bump GCE ContainerVM to container-vm-v20170201 to address CVE-2016-9962. (#40828, @zmerlynn)
- Use full package path for definition name in OpenAPI spec (#40124, @mbohlool)
- kubectl apply now supports explicitly clearing values not present in the config by setting them to null (#40630, @liggitt)
- Fixed an issue where 'kubectl get --sort-by=' would return an error when the specified field were not present in at least one of the returned objects, even that being a valid field in the object model. (#40541, @fabianofranz)
- Add initial french translations for kubectl (#40645, @brendandburns)
- OpenStack-Heat will now look for an image named "CentOS-7-x86_64-GenericCloud-1604". To restore the previous behavior set OPENSTACK_IMAGE_NAME="CentOS7" (#40368, @sc68cal)
- Preventing nil pointer reference in client_config (#40508, @vjsamuel)
- The bash AWS deployment via kube-up.sh has been deprecated. See <http://kubernetes.io/docs/getting-started-guides/aws/> for alternatives. (#38772, @zmerlynn)
- Fix failing load balancers in Azure (#40405, @codablock)
- kubefed init creates a service account for federation controller manager in the federation-system namespace and binds that service account to the federation-system:federation-controller-manager role that has read and list access on secrets in the federation-system namespace. (#40392, @madhusudancs)
- Fixed an SELinux issue in kubeadm on Docker 1.12+ by moving etcd SELinux options from container to pod. (#40682, @dgoodwin)
- Juju kubernetes-master charm: improve status messages (#40691, @Cynerva)

v1.6.0-alpha.1

[Documentation](#) & [Examples](#)

Downloads for v1.6.0-alpha.1

filename	sha256 hash
kubernetes.tar.gz	abda73bc2a27ae16c66a5aea9e96cd59486ed8cf994afc55da35a3cea2edc1db
kubernetes-src.tar.gz	b429579ba83f9a3fa80e72ceb65b046659b17f16a0b7f70105e7096a441f32b9

Client Binaries

filename	sha256 hash

kubernetes-client-darwin-386.tar.gz	d5b8adee6169515324f4f420e65e9d4e14cca3402f58ec99660a1947fd79d3ea
kubernetes-client-darwin-amd64.tar.gz	6232a7e46b2cbd1e30a1f44c9b424448c5def11f5132c742bf62bac8a4f26fa2
kubernetes-client-linux-386.tar.gz	2974ed14b76885947c95b3c86fb8585aa08ccefe8cc11cd202dcc3cb8fcc0d1a
kubernetes-client-linux-amd64.tar.gz	3bcb40f4aa3a295ec23fe42a5e17b081ef8de174b7dfa03cb89c27a00ac16f5a
kubernetes-client-linux-arm64.tar.gz	f9a55bcb6af2a415d24d69ae919c56968f6b02369675fd7def63acbbe6534430
kubernetes-client-linux-arm.tar.gz	b0bd7070eab2f19b9bc1840fb4da5307c7ce274f2e28f76f94c714aa08f087bf
kubernetes-client-linux-ppc64le.tar.gz	39f38972f93f64542ae325d9c937c9d527968bc0830fdd38dd38dc246b6f0c56
kubernetes-client-linux-s390x.tar.gz	032e21fe0000333f36e29ddf24e207cfd6c92cb9a6d69cc0123c31aacd12338c
kubernetes-client-windows-386.tar.gz	84b7d58012760111067ec0907070cc2f6d4c95893e771533a9b335cc8d8c72b7
kubernetes-client-windows-amd64.tar.gz	e9ce76f48a4cf58b261aec38f076ed3b61c444c55c123f30099c1d1763d6191f

Server Binaries

filename	sha256 hash
kubernetes-server-linux-amd64.tar.gz	fafa4b93a522b9e73b6c31e42d32dc5eb3fccb5ca1548425da03726b48a19175
kubernetes-server-linux-arm64.tar.gz	f00f4874785d1c9cba4fd262e8086aa693027649da44b0eec69e96951e013913
kubernetes-server-linux-arm.tar.gz	e843a6357e0a2e441277e6b32d8d64a6b6fe367c3d223edec781c21d8b379ac6
kubernetes-server-linux-ppc64le.tar.gz	12b73f7cc4928543eee09af91d632bcf5c4ed56c44d48d62d0087c7fcbaa3e02
kubernetes-server-linux-s390x.tar.gz	aad15f260d166c2b295921468837efe4a51cb7a04bcacbb3faecc9b5979861e5

Changelog since v1.5.0

Action Required

- Promote certificates.k8s.io to beta and enable it by default. Users using the alpha certificates API should delete v1alpha1 CSRs from the API before upgrading and recreate them as v1beta1 CSR after upgrading. ([#39772](#), [@mikedanese](#))
- Switch default etcd version to 3.0.14. ([#36229](#), [@wojtekt](#))
 - Switch default storage backend flag in apiserver to `etcd3` mode.
- RBAC's special handling of the user `*` in RoleBinding and ClusterRoleBinding objects is deprecated and will be removed in v1beta1. To match all users, explicitly bind to the group `system:authenticated` and/or `system:unauthenticated`. Existing v1alpha1 bindings to the user `*` will be automatically converted to the group `system:authenticated`. ([#38981](#), [@liggitt](#))

- The 'endpoints.beta.kubernetes.io/hostnames-map' annotation is no longer supported. Users can use the 'Endpoints.subsets[].addresses[].hostname' field instead. ([#39284](#), [@bowei](#))
- `federation/deploy/deploy.sh` was an interim solution introduced in Kubernetes v1.4 to simplify the federation control plane deployment experience. Now that we have `kubefed`, we are deprecating `deploy.sh` scripts. ([#38902](#), [@madhusudancs](#))
- Cluster federation servers have changed the location in etcd where federated services are stored, so existing federated services must be deleted and recreated. Before upgrading, export all federated services from the federation server and delete the services. After upgrading the cluster, recreate the federated services from the exported data. ([#37770](#), [@enj](#))
- etcd2: watching from 0 returns all initial states as ADDED events ([#38079](#), [@hongchaodeng](#))

Other notable changes

- kube-up.sh on GCE now includes the bootstrap admin in the super-user group, and ensures the auth token file is correct on upgrades ([#39537](#), [@liggitt](#))
- genericapiserver: cut off more dependencies – episode 3 ([#40426](#), [@sttts](#))
- Adding vmdk file extension for vmDiskPath in vsphere DeleteVolume ([#40538](#), [@divyenpatel](#))
- Remove outdated net.experimental.kubernetes.io/proxy-mode and net.beta.kubernetes.io/proxy-mode annotations from kube-proxy. ([#40585](#), [@cblecker](#))
- Improve the ARM builds and make hyperkube on ARM working again by upgrading the Go version for ARM to go1.8beta2 ([#38926](#), [@luxas](#))
- Prevent hotloops on error conditions, which could fill up the disk faster than log rotation can free space. ([#40497](#), [@lavalamp](#))
- DaemonSet controller actively kills failed pods (to recreate them) ([#40330](#), [@janetkuo](#))
- forgiveness alpha version api definition ([#39469](#), [@kevin-wangzefeng](#))
- Bump up glbc version to 0.9.0-beta.1 ([#40565](#), [@bprashanth](#))
- Improve formatting of EventSource in kubectl get and kubectl describe ([#40073](#), [@matthyx](#))
- CRI: use more gogoprotobuf plugins ([#40397](#), [@yujuhong](#))
- Adds `shortNames` to the `APIResource` from discovery which is a list of recommended shortNames for clients like `kubectl`. ([#40312](#), [@p0lyn0mial](#))
- Use existing ABAC policy file when upgrading GCE cluster ([#40172](#), [@liggitt](#))
- Added support for creating HA clusters for centos using kube-up.sh. ([#39462](#), [@Shawyeok](#))
- azure: fix Azure Container Registry integration ([#40142](#), [@colemickens](#))
 - Splits Juju Charm layers into master/worker roles ([#40324](#), [@chuckbutler](#))
 - Adds support for 1.5.x series of Kubernetes
 - Introduces a tactic for keeping templates in sync with upstream eliminating template drift
 - Adds CNI support to the Juju Charms
 - Adds durable storage support to the Juju Charms
 - Introduces an e2e Charm layer for repeatable testing efforts and validation of clusters
- genericapiserver: more dependency cutoffs ([#40216](#), [@sttts](#))
- AWS: trust region if found from AWS metadata ([#38880](#), [@justinsb](#))
- Volumes and environment variables populated from ConfigMap and Secret objects can now tolerate the named source object or specific keys being missing, by adding `optional: true` to the volume or environment variable source specifications. ([#39981](#), [@fraenkel](#))
- kubectl create now accepts the label selector flag for filtering objects to create ([#40057](#), [@MrHohn](#))
- A new field `terminationMessagePolicy` has been added to containers that allows a user to request `FallbackToLogsOnError`, which will read from the container's logs to populate the termination message if the user does not write to the termination message log file. The termination message file is now properly readable for end users and has a maximum size (4k bytes) to prevent abuse. Each pod may have up

to 12k bytes of termination messages before the contents of each will be truncated. ([#39341](#), [@smarterclayton](#))

- Add a special purpose tool for editing individual fields in a ConfigMap with kubectl ([#38445](#), [@brendandburns](#))
- [Federation] Expose autoscaling apis through federation api server ([#38976](#), [@irfanurrehman](#))
- Powershell script to start kubelet and kube-proxy ([#36250](#), [@jbhurat](#))
- Reduce time needed to attach Azure disks ([#40066](#), [@codablock](#))
- fixing Cassandra shutdown example to avoid data corruption ([#39199](#), [@deimosfr](#))
- kubeadm: add optional self-hosted deployment for apiserver, controller-manager and scheduler. ([#40075](#), [@pires](#))
- kubelet tears down pod volumes on pod termination rather than pod deletion ([#37228](#), [@sjenning](#))
- The default client certificate generated by kube-up now contains the superuser `system:masters` group ([#39966](#), [@liggitt](#))
- CRI: upgrade protobuf to v3 ([#39158](#), [@feiskyer](#))
- Add SIGCHLD handler to pause container ([#36853](#), [@verb](#))
- Populate environment variables from a secrets. ([#39446](#), [@fraenkel](#))
- fluentd config for GKE clusters updated: detect exceptions in container log streams and forward them as one log entry. ([#39656](#), [@thomasschickinger](#))
- Made multi-scheduler graduated to Beta and then v1. ([#38871](#), [@k82cn](#))
- Fixed forming resolver search line for pods: exclude duplicates, obey libc limitations, logging and eventing appropriately. ([#29666](#), [@vefimova](#))
- Add authorization mode to kubeadm ([#39846](#), [@andrewrynhard](#))
- Update dependencies: aws-sdk-go to 1.6.10; also cadvisor ([#40095](#), [@dashpole](#))
- Fixes a bug in the OpenStack-Heat kubernetes provider, in the handling of differences between the Identity v2 and Identity v3 APIs ([#40105](#), [@sc68cal](#))
- Update GCE ContainerVM deployment to container-vm-v20170117 to pick up CVE fixes in base image. ([#40094](#), [@zmerlynn](#))
- AWS: Remove duplicate calls to DescribeInstance during volume operations ([#39842](#), [@gnufied](#))
- The `attributeRestrictions` field has been removed from the PolicyRule type in the rbac.authorization.k8s.io/v1alpha1 API. The field was not used by the RBAC authorizer. ([#39625](#), [@deads2k](#))
- Enable lazy inode table and journal initialization for ext3 and ext4 ([#38865](#), [@codablock](#))
- azure disk: restrict name length for Azure specifications ([#40030](#), [@colemickens](#))
- Follow redirects for streaming requests (exec/attach/port-forward) in the apiserver by default (alpha -> beta). ([#40039](#), [@timstclair](#))
- Use kube-dns:1.11.0 ([#39925](#), [@sadlil](#))
- Anonymous authentication is now automatically disabled if the API server is started with the AlwaysAllow authorizer. ([#38706](#), [@deads2k](#))
- genericapiserver: cut off kube pkg/version dependency ([#39943](#), [@sttts](#))
- genericapiserver: cut off pkg/serviceaccount dependency ([#39945](#), [@sttts](#))
- Move pkg/api/rest into genericapiserver ([#39948](#), [@sttts](#))
- genericapiserver: cut off pkg/apis/extensions and pkg/storage dependencies ([#39946](#), [@sttts](#))
- genericapiserver: cut off certificates api dependency ([#39947](#), [@sttts](#))
- Admission control support for versioned configuration files ([#39109](#), [@derekwaynecarr](#))
- Fix issue around merging lists of primitives when using PATCH or kubectl apply. ([#38665](#), [@ymqytw](#))
- Fixes API compatibility issue with empty lists incorrectly returning a null `items` field instead of an empty array. ([#39834](#), [@liggitt](#))
- [scheduling] Moved pod affinity and anti-affinity from annotations to api fields [#25319](#) ([#39478](#), [@rrati](#))
- PodSecurityPolicy resource is now enabled by default in the extensions API group. ([#39743](#), [@pweil-](#))
- add --controllers to controller manager ([#39740](#), [@deads2k](#))
- proxy/iptables: don't sync proxy rules if services map didn't change ([#38996](#), [@dcbw](#))

- Update amd64 kube-proxy base image to debian-iptables-amd64:v5 ([#39725](#), [@ixdy](#))
- Update dashboard version to v1.5.1 ([#39662](#), [@rf232](#))
- Fix kubect get -f -o so it prints all items in the file ([#39038](#), [@ncdc](#))
- Scheduler treats StatefulSet pods as belonging to a single equivalence class. ([#39718](#), [@foxish](#))
- --basic-auth-file supports optionally specifying groups in the fourth column of the file ([#39651](#), [@liggitt](#))
- To create or update an RBAC RoleBinding or ClusterRoleBinding object, a user must: ([#39383](#), [@liggitt](#))
 - Be authorized to make the create or update API request
 - Be allowed to bind the referenced role, either by already having all of the permissions contained in the referenced role, or by having the `bind` permission on the referenced role.
- Fixes an HPA-related panic due to division-by-zero. ([#39694](#), [@DirectXMan12](#))
- federation: Adding support for DeleteOptions.OrphanDependents for federated services. Setting it to false while deleting a federated service also deletes the corresponding services from all registered clusters. ([#36390](#), [@nikhiljindal](#))
- Update kube-proxy image to be based off of Debian 8.6 base image. ([#39695](#), [@ixdy](#))
- Update FitError as a message component into the PodConditionUpdater. ([#39491](#), [@jayunit100](#))
- rename kubernetes-discovery to kube-aggregator ([#39619](#), [@deads2k](#))
- Allow missing keys in templates by default ([#39486](#), [@ncdc](#))
- Caching added to the OIDC client auth plugin to fix races and reduce the time kubect commands using this plugin take by several seconds. ([#38167](#), [@ericchiang](#))
- AWS: recognize eu-west-2 region ([#38746](#), [@justinsb](#))
- Provide kubernetes-controller-manager flags to control volume attach/detach reconciler sync. The duration of the syncs can be controlled, and the syncs can be shut off as well. ([#39551](#), [@chrislovecnm](#))
- Generate OpenAPI definition for inlined types ([#39466](#), [@mbohlool](#))
- ShortcutExpander has been extended in a way that it will examine a ha... ([#38835](#), [@p0lyn0mial](#))
- fixes nil dereference when doing a volume type check on persistent volumes ([#39493](#), [@sjenning](#))
- Fix issue with PodDisruptionBudgets in which `minAvailable` specified as a percentage did not work with StatefulSet Pods. ([#39454](#), [@foxish](#))
- fix issue with kubect proxy so that it will proxy an empty path - e.g. <http://localhost:8001> ([#39226](#), [@luksa](#))
- Check if pathExists before performing Unmount ([#39311](#), [@rkouj](#))
- Adding kubect tests for federation ([#38844](#), [@nikhiljindal](#))
- Fix comment and optimize code ([#38084](#), [@tanshanshan](#))
- When using OIDC authentication and specifying --oidc-username-claim=email, an `"email_verified":true` claim must be returned from the identity provider. ([#36087](#), [@ericchiang](#))
- Allow pods to define multiple environment variables from a whole ConfigMap ([#36245](#), [@fraenkel](#))
- Refactor the certificate and kubeconfig code in the kubeadm binary into two phases ([#39280](#), [@luxas](#))
- Added support for printing in all supported --output formats to `kubectl create ...` and `kubectl apply ...` ([#38112](#), [@juanvallejo](#))
- genericapiserver: extract CA cert from server cert and SNI cert chains ([#39022](#), [@sttts](#))
- Endpoints, that tolerate unready Pods, are now listing Pods in state Terminating as well ([#37093](#), [@simonswine](#))
- DaemonSet ObservedGeneration ([#39157](#), [@lukaszo](#))
- The `--reconcile-cidr` kubelet flag was removed since it had been deprecated since v1.5 ([#39322](#), [@luxas](#))
- Add ready replicas in Deployments ([#37959](#), [@kargakis](#))
- Remove all MAINTAINER statements in Dockerfiles in the codebase as they are deprecated by docker ([#38927](#), [@luxas](#))
- Remove the deprecated vsphere kube-up. ([#39140](#), [@kerneltime](#))
- Kubect top now also accepts short forms for "node" and "pod" ("no", "po") ([#39218](#), [@luksa](#))
- Remove 'exec' network plugin - use CNI instead ([#39254](#), [@freehan](#))

- Add three more columns to `kubectl get deploy -o wide` output. ([#39240](#), [@xingzhou](#))
- Add path exist check in `getPodVolumePathListFromDisk` ([#38909](#), [@jingxu97](#))
- Begin paths for internationalization in `kubectl` ([#36802](#), [@brendandburns](#))
- Fixes an issue where commas were not accepted in `--from-literal` flags when creating secrets. Passing multiple values separated by a comma in a single `--from-literal` flag is no longer supported. Please use multiple `--from-literal` flags to provide multiple values. ([#35191](#), [@SamiHiltunen](#))
- Support loading UTF16 files if a byte-order-mark is present ([#39008](#), [@brendandburns](#))
- Fix `fsGroup` to `vSphere` ([#38655](#), [@abrarshivani](#))
- `ReplicaSet` has owner ref of the `Deployment` that created it ([#35676](#), [@krmayankk](#))
- Don't evict static pods ([#39059](#), [@bprashanth](#))
- Fixed a bug where the `--server`, `--token`, and `--certificate-authority` flags were not overriding the related in-cluster configs when provided in a `kubectl` call inside a cluster. ([#39006](#), [@fabianofranz](#))
- Make `fluentd` pods critical ([#39146](#), [@Crassirostris](#))
- assign `-998` as the `oom_score_adj` for critical pods (e.g. `kube-proxy`) ([#39114](#), [@dchen1107](#))
- delete continue in `monitorNodeStatus` ([#38798](#), [@NickrenREN](#))
- add create rolebinding ([#38991](#), [@deads2k](#))
- Add new command "`kubectl set selector`" ([#38966](#), [@kargakis](#))
- Federation: Add `batch/jobs` API objects to federation-apiserver ([#35943](#), [@jianhuiz](#))
- ABAC policies using `"user": "*" or "group": "*"` to match all users or groups will only match authenticated requests. To match unauthenticated requests, ABAC policies must explicitly specify `"group": "system:unauthenticated"` ([#38968](#), [@liggitt](#))
- To add local registry to `libvirt` coreos ([#36751](#), [@sdminonne](#))
- Add a `KUBERNETES_NODE_*` section to build `kubelet/kube-proxy` for windows ([#38919](#), [@brendandburns](#))
- Added `kubeadm` commands to manage bootstrap tokens and the duration they are valid for. ([#35805](#), [@dgoodwin](#))
- AWS: Recognize `ca-central-1` region ([#38410](#), [@justinsb](#))
- Unmount operation should not fail if volume is already unmounted ([#38547](#), [@rkouj](#))
- Changed default `scsi` controller type in `vSphere` Cloud Provider ([#38426](#), [@abrarshivani](#))
- Move non-generic apiserver code out of the generic packages ([#38191](#), [@sttts](#))
- Remove extensions/v1beta1 Jobs resource, and `job/v1beta1` generator. ([#38614](#), [@soltys](#))
- Admit critical pods in the `kubelet` ([#38836](#), [@bprashanth](#))
- Use `daemonset` in `docker` registry add on ([#35582](#), [@surajssd](#))
- Node affinity has moved from annotations to api fields in the pod spec. Node affinity that is defined in the annotations will be ignored. ([#37299](#), [@rrati](#))
- Since `kubernetes.tar.gz` no longer includes client or server binaries, `cluster/kube-{up,down,push}.sh` now automatically download released binaries if they are missing. ([#38730](#), [@ixdy](#))
- `genericapiserver`: turn `APIContainer.SecretRoutes` into a real `ServeMux` ([#38826](#), [@sttts](#))
- Migrated `fluentd` addon to `daemon set` ([#32088](#), [@piosz](#))
- AWS: Add sequential allocator for device names. ([#38818](#), [@jsafrane](#))
- Add 'X-Content-Type-Options: nosniff' to some error messages ([#37190](#), [@brendandburns](#))
- Display pod node selectors with `kubectl describe`. ([#36396](#), [@aveshagarwal](#))
- The main repository does not keep multiple releases of clientsets anymore. Please find previous releases at <https://github.com/kubernetes/client-go> ([#38154](#), [@caesarxuchao](#))
- Remove a release-note on multiple OpenAPI specs ([#38732](#), [@mbohlool](#))
- `genericapiserver`: unify `swagger` and `openapi` in config ([#38690](#), [@sttts](#))
- fix connection upgrades through `kubernetes-discovery` ([#38724](#), [@deads2k](#))
- Fixes bug in resolving client-requested API versions ([#38533](#), [@DirectXMan12](#))
- `apiserver(s)`: Replace `glog.Fatals` with `fmt.Errorf` ([#38175](#), [@sttts](#))
- Remove `Azure Subnet RouteTable` check ([#38334](#), [@mogthesprog](#))
- Ensure the GCI metadata files do not have newline at the end ([#38727](#), [@Amey-D](#))

- Significantly speed-up make ([#38700](#), [@sttts](#))
- add QoS pod status field ([#37968](#), [@sjenning](#))
- Fixed validation of multizone cluster for GCE ([#38695](#), [@jszczepkowski](#))
- Fixed detection of master during creation of multizone nodes cluster by kube-up. ([#38617](#), [@jszczepkowski](#))
- Update CHANGELOG.md to warn about anon auth flag ([#38675](#), [@erictune](#))
- Fixes NotAuthenticated errors that appear in the kubelet and kube-controller-manager due to never logging in to vSphere ([#36169](#), [@robdaemon](#))
- Fix an issue where AWS tear-down leaks an DHCP Option Set. ([#38645](#), [@zmerlynn](#))
- Issue a warning when using `kubectl apply` on a resource lacking the `LastAppliedConfig` annotation ([#36672](#), [@ymqytw](#))
- Re-add /healthz/ping handler in genericapiserver ([#38603](#), [@sttts](#))
- Fail kubelet if runtime is unresponsive for 30 seconds ([#38527](#), [@derekwaynecarr](#))
- Add support for Azure Container Registry, update Azure dependencies ([#37783](#), [@brendandburns](#))
- Fix panic in vSphere cloud provider ([#38423](#), [@BaluDontu](#))
- fix broken cluster/centos and enhance the style ([#34002](#), [@xiaoping378](#))
- Ability to quota storage by storage class ([#34554](#), [@derekwaynecarr](#))
- [Part 2] Adding s390x cross-compilation support for gcr.io images in this repo ([#36050](#), [@gajju26](#))
- `kubectl run --rm` no longer prints "pod xxx deleted" ([#38429](#), [@duglin](#))
- Bump GCE debian image to container-vm-v20161208 ([release notes](#)) ([#38432](#), [@timstclair](#))
- Kubelet: Add image cache. ([#38375](#), [@Random-Liu](#))
- Allow a selector when retrieving logs ([#32752](#), [@fraenkel](#))
- Fix unmountDevice issue caused by shared mount in GCI ([#38411](#), [@jingxu97](#))
- [Federation] Implement dry run support in kubefed init ([#36447](#), [@irfanurrehman](#))
- Fix space issue in volumePath with vSphere Cloud Provider ([#38338](#), [@BaluDontu](#))
- [Federation] Make federation etcd PVC size configurable ([#36310](#), [@irfanurrehman](#))
- Allow no ports when exposing headless service ([#32811](#), [@fraenkel](#))
- Wait for the port to be ready before starting ([#38260](#), [@fraenkel](#))
- Add Version to the resource printer for 'get nodes' ([#37943](#), [@ailusazh](#))
- contribute deis/registry-proxy as a replacement for kube-registry-proxy ([#35797](#), [@bacongobbler](#))
- [Part 1] Add support for cross-compiling s390x binaries ([#37092](#), [@gajju26](#))
- kernel memcg notification enabled via experimental flag ([#38258](#), [@derekwaynecarr](#))
- fix permissions when using fsGroup ([#37009](#), [@sjenning](#))
- Pipe get options to storage ([#37693](#), [@wojtek-t](#))
- add a configuration for kubelet to register as a node with taints ([#31647](#), [@mikedanese](#))
- Remove genericapiserver.Options.MasterServiceNamespace ([#38186](#), [@sttts](#))
- The `--long-running-request-regex` flag to kube-apiserver is deprecated and will be removed in a future release. Long-running requests are now detected based on specific verbs (watch, proxy) or subresources (proxy, portforward, log, exec, attach). ([#38119](#), [@liggitt](#))
- Better compat with very old iptables (e.g. CentOS 6) ([#37594](#), [@thockin](#))
- Fix GCI mounter issue ([#38124](#), [@jingxu97](#))
- Kubelet will no longer set hairpin mode on every interface on the machine when an error occurs in setting up hairpin for a specific interface. ([#36990](#), [@bboreham](#))
- fix mesos unit tests ([#38196](#), [@deads2k](#))
- Add `--controllers` flag to federation controller manager for enable/disable federation ingress controller ([#36643](#), [@kzwang](#))
- Allow backendpools in Azure Load Balancers which are not owned by cloud provider ([#36882](#), [@codablock](#))
- remove rbac super user ([#38121](#), [@deads2k](#))
- API server have two separate limits for read-only and mutating inflight requests. ([#36064](#), [@gmarek](#))
- check the value of min and max in kubectl ([#37789](#), [@yaritime](#))

- The glusterfs dynamic volume provisioner will now choose a unique GID for new persistent volumes from a range that can be configured in the storage class with the "gidMin" and "gidMax" parameters. The default range is 2000 - 2147483647 (max int32). ([#37886](#), [@obnox](#))
- Add kubectl create poddisruptionbudget command ([#36646](#), [@kargakis](#))
- Set kernel.softlockup_panic = 1 based on the flag. ([#38001](#), [@dchen1107](#))
- portforwardtester: avoid data loss during send+close+exit ([#37103](#), [@sttts](#))
- Enable containerized mounter only for nfs and glusterfs types ([#37990](#), [@jingxu97](#))
- Add flag to enable contention profiling in scheduler. ([#37357](#), [@gmarek](#))
- Add kubernetes-anywhere as a new e2e deployment option ([#37019](#), [@pipejakob](#))
- add create clusterrolebinding command ([#37098](#), [@deads2k](#))
- kubectl create service externalname ([#34789](#), [@AdoHe](#))
- Fix logic error in graceful deletion ([#37721](#), [@derekwaynecarr](#))
- Exit with error if is not the final parameter. ([#37723](#), [@mtaufen](#))
- Fix Service Update on LoadBalancerSourceRanges Field ([#37720](#), [@freehan](#))
- Bug fix. Incoming UDP packets not reach newly deployed services ([#32561](#), [@zreigz](#))
- GCI: Remove /var/lib/docker/network ([#37593](#), [@yujuhong](#))
- configure local-up-cluster.sh to handle auth proxies ([#36838](#), [@deads2k](#))
- Add `clusterid`, an optional parameter to storageclass. ([#36437](#), [@humblec](#))
- local-up-cluster: avoid sudo for control plane ([#37443](#), [@sttts](#))
- Add error message when trying to use clusterrole with namespace in kubectl ([#36424](#), [@xilabao](#))
- `kube-up.sh` / `kube-down.sh` no longer force update gcloud for provider=gce|gke. ([#36292](#), [@jlowdermilk](#))
- Fix issue when attempting to unmount a wrong vSphere volume ([#37413](#), [@BaluDontu](#))
- Fix the equality checks for numeric values in cluster/gce/util.sh. ([#37638](#), [@roberthbailey](#))
- kubelet: don't reject pods without adding them to the pod manager ([#37661](#), [@yujuhong](#))
- Modify GCI mounter to enable NFSv3 ([#37582](#), [@jingxu97](#))
- Fix photon controller plugin to construct with correct PdID ([#37167](#), [@luomiao](#))
- Collect logs for dead kubelets too ([#37671](#), [@mtaufen](#))
- Set Dashboard UI version to v1.5.0 ([#37684](#), [@rf232](#))
- When deleting an object with `--grace-period=0`, the client will begin a graceful deletion and wait until the resource is fully deleted. To force deletion, use the `--force` flag. ([#37263](#), [@smarterclayton](#))
- federation service controller: stop deleting services from underlying clusters when federated service is deleted. ([#37353](#), [@nikhiljindal](#))
- Fix nil pointer dereference in test framework ([#37583](#), [@mtaufen](#))
- Kubernetes now automatically installs a StorageClass object when deployed on ([#31617](#), [@jsafrane](#))
 - AWS, Google Compute Engine, Google Container Engine, and OpenStack using
 - the default kube-up.sh scripts. This StorageClass is marked as default so that
 - a PersistentVolumeClaim without a StorageClass annotation now results in
 - automatic provisioning of storage (GCE PersistentDisk on Google Cloud, AWS
 - EBS on AWS, and Cinder on OpenStack). In previous versions of Kubernetes
 - a PersistentVolumeClaim without a StorageClass annotation on these cloud
 - platforms would be satisfied by manually-created PersistentVolume objects.
 - Administrators can choose to disable this behavior by deleting the automatically
 - installed StorageClass API object. Alternatively, administrators may choose to
 - keep the automatically installed StorageClass and only disable the defaulting
 - behavior by removing the "is-default-class" annotation from the StorageClass
 - API object.
- Fix TestServiceAlloc flakes ([#37487](#), [@wojtek-t](#))
- Use gsed on the Mac ([#37562](#), [@roberthbailey](#))
- Try self-repair scheduler cache or panic ([#37379](#), [@wojtek-t](#))

- Fluentd/Elasticsearch add-on: correctly parse and index kubernetes labels ([#36857](#), [@Shrugs](#))
- Mention overflows when mistakenly call function FromInt ([#36487](#), [@xialonglee](#))
- Update doc for kubectl apply ([#37397](#), [@ymqytw](#))
- Removes shorthand flag -w from kubectl apply ([#37345](#), [@MrHohn](#))
- Curating Owners: pkg/api ([#36525](#), [@apelisse](#))
- Reduce verbosity of volume reconciler when attaching volumes ([#36900](#), [@codablock](#))
- Federated Ingress Proposal ([#29793](#), [@quinton-hoole](#))

Please see the [Releases Page](#) for older releases.

Release notes of older releases can be found in:

- [CHANGELOG-1.2.md](#)
- [CHANGELOG-1.3.md](#)
- [CHANGELOG-1.4.md](#)
- [CHANGELOG-1.5.md](#)