

- v1.15.12
  - Downloads for v1.15.12
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.11
  - Changes by Kind
    - \* Bug or Regression
    - \* Other (Cleanup or Flake)
- v1.15.11
  - Downloads for v1.15.11
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.10
  - Changes by Kind
    - \* Other (Bug, Cleanup or Flake)
- v1.15.10
  - Downloads for v1.15.10
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.9
  - Changes by Kind
    - \* Other (Bug, Cleanup or Flake)
- v1.15.9
  - Downloads for v1.15.9
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.8
- v1.15.8
  - Downloads for v1.15.8
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.7
    - \* Other notable changes
- v1.15.7
  - Downloads for v1.15.7
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.6
    - \* Other notable changes
- v1.15.6

- Downloads for v1.15.6
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.5
    - \* Other notable changes
- v1.15.5
  - Downloads for v1.15.5
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.4
    - \* Other notable changes
- v1.15.4
  - Downloads for v1.15.4
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.3
    - \* Other notable changes
- v1.15.3
  - Downloads for v1.15.3
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.2
    - \* Other notable changes
- v1.15.2
  - Downloads for v1.15.2
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.1
- v1.15.1
  - Downloads for v1.15.1
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.0
    - \* Other notable changes
- v1.15.0
  - Downloads for v1.15.0
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
- Kubernetes v1.15 Release Notes

- 1.15 What’s New
  - \* Continuous Improvement
  - \* Extensibility
- Extensibility around core Kubernetes APIs
  - \* CustomResourceDefinitions Pruning
  - \* CustomResourceDefinition Defaulting
  - \* CustomResourceDefinition OpenAPI Publishing
- Cluster Lifecycle Stability and Usability Improvements
- Continued improvement of CSI
  - \* Additional Notable Feature Updates
- Known Issues
- Urgent Upgrade Notes
  - \* (No, really, you MUST read this before you upgrade)
    - API Machinery
    - Apps
    - Auth
    - AWS
    - Azure
    - CLI
    - Lifecycle
    - Network
    - Node
    - Storage
  - \* Deprecations and Removals
  - \* Metrics Changes
    - Added metrics
    - Deprecated/changed metrics
  - \* Notable Features
    - Stable
    - Beta
    - Alpha
- v1.15.0-beta.1
  - Downloads for v1.15.0-beta.1
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.0-alpha.3
    - \* Action Required
    - \* Other notable changes
- v1.15.0-alpha.3
  - Downloads for v1.15.0-alpha.3
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.0-alpha.2
    - \* Other notable changes

- v1.15.0-alpha.2
  - Downloads for v1.15.0-alpha.2
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.15.0-alpha.1
    - \* Other notable changes
- v1.15.0-alpha.1
  - Downloads for v1.15.0-alpha.1
    - \* Client Binaries
    - \* Server Binaries
    - \* Node Binaries
  - Changelog since v1.14.0
    - \* Action Required
    - \* Other notable changes

## v1.15.12

Documentation

### Downloads for v1.15.12

filename	sha512 hash
kubernetes.tar.gz	32543275f6a2e01b23566eb3b72e2be220812208b2bee3ff0daa2fae751a374
kubernetes-src.tar.gz	b59132d3e1eb57663fa4aaf732b8c4280234af0286df6c7632da7287e9c7329

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	e87b279de3ff4155f7258723589ef9e4e91eafbed962e95f3a00f6a7338d058
kubernetes-client-darwin-amd64.tar.gz	a2cef929980394145af8ebea63a3ba71c73d8788e46ff523c20287052c6ef0b
kubernetes-client-linux-386.tar.gz	7c74395ee8ad4700ce143a5e8d06f07280905ddd2bbe59b765f589936476ac2
kubernetes-client-linux-amd64.tar.gz	316dcb768c0963259f685a4c433150dca3191379a8f2789f39ff50c47b995f7
kubernetes-client-linux-arm.tar.gz	0ccfa59ff829f406b25ad03c5040904ed7fcf622e2034e420c20fabbf5b67a
kubernetes-client-linux-arm64.tar.gz	f651ff6adc72ac9bc691274fd6397b4744535ba7a8d4dd1fae1f4a4f4346345
kubernetes-client-linux-ppc64le.tar.gz	d4128aab6954be4539ad119376a642b3e7fb994d50236317cab1a2e74ff6026

filename	sha512 hash
kubernetes-client-linux-s390x.tar.gz	70e627bab491c3ec56b31a07ddfe1596bcba78db46ed8c159af15b1fb9aeb14
kubernetes-client-windows-386.tar.gz	83904a579a0f8051959efe43c84c177ebb4f71ccd715d9ddfb688d79f0aab83
kubernetes-client-windows-amd64.tar.gz	9c3572c0d9e66c4e5363525f3ed8faeb9e97df0d8d6737865e1a4a8d40663cb

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	f573716e9e5b8e3960adb7cc6c37a81dc826fd7a595902c0e758a86176c1752
kubernetes-server-linux-arm.tar.gz	72386115fde83e86e38d1777de04de7022df04e857979002d34a2610efe8ddc
kubernetes-server-linux-arm64.tar.gz	033a07c2fda8218e7ec9d9869fda0813681fc6d66d6c714c38323ac6a4ff412
kubernetes-server-linux-ppc64le.tar.gz	526459d2abbbdf2a906c25667f3a6b61044feb894bef36cbb0b08f9258a4c139
kubernetes-server-linux-s390x.tar.gz	3a8de1b8a323a01fea48a954d3498d59010f4601713ab8dbcbebbb6110c1b5e

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	b125ebc957bb56878b50275e52c5d4b8f1122f21c56e3132d91fe96259fc631
kubernetes-node-linux-arm.tar.gz	074bf07b1f5d95650b70f59eb3288ba87b1010332ec97d2af1da75450de04a3
kubernetes-node-linux-arm64.tar.gz	9bdb9d5636d8f4f856472cf86a252571cc1f9bddf48bb7cb6d16ceadbf76ff7
kubernetes-node-linux-ppc64le.tar.gz	e05f4a19767038ac29a936d009d0444e54930903b97c4d8db467e21dde50805
kubernetes-node-linux-s390x.tar.gz	08ab9b8f53d0fc06c0897fd7214327411495af4ce81a3ecbabe1e6e22fb05d8
kubernetes-node-windows-amd64.tar.gz	455830f75a1da055424b274a1d9dd006ba871c792378f3d5f9dc56feb360016

## Changelog since v1.15.11

### Changes by Kind

#### Bug or Regression

- Client-go: resolves an issue with informers falling back to full list requests when timeouts are encountered, rather than re-establishing a watch. (#89978, @liggitt) [SIG API Machinery and Testing]
- Fix invalid VMSS updates due to incorrect cache (#89002, @ArchangelSDY) [SIG Cloud Provider]
- Fix the VMSS name and resource group name when updating Azure VMSS for LoadBalancer backendPools (#89337, @feiskyer) [SIG Cloud Provider]
- Fix: check disk status before delete azure disk (#88360, @andyzhangx) [SIG Cloud Provider]
- Fixed a data race in kubelet image manager that can cause static pod workers to silently stop working. (#88915, @roycaiHW) [SIG Node]
- Fixed an issue that could cause the kubelet to incorrectly run concurrent pod reconciliation loops and crash. (#89055, @tedyu) [SIG Node]
- Fixes conversion error for HorizontalPodAutoscaler objects with invalid annotations (#89969, @liggitt) [SIG Autoscaling]
- Fixes conversion error in multi-version custom resources that could cause metadata.generation to increment on no-op patches or updates of a custom resource. (#88995, @liggitt) [SIG API Machinery]
- For GCE cluster provider, fix bug of not being able to create internal type load balancer for clusters with more than 1000 nodes in a single zone. (#89902, @wojtek-t) [SIG Cloud Provider, Network and Scalability]
- For volumes that allow attaches across multiple nodes, attach and detach operations across different nodes are now executed in parallel. (#89241, @verult) [SIG Apps, Node and Storage]
- Kubelet metrics gathered through metrics-server or prometheus should no longer timeout for Windows nodes running more than 3 pods. (#87730, @marosset) [SIG Node, Testing and Windows]

#### Other (Cleanup or Flake)

- Build: Bump kube-cross to v1.12.17-2 (#90760, @justaugustus) [SIG Release]
- Reduce event spam during a volume operation error. (#89794, @msau42) [SIG Storage]

## v1.15.11

Documentation

### Downloads for v1.15.11

filename	sha512 hash
kubernetes.tar.gz	7834a01bf5e4cc5d93791f0dce512ff8f40c92e588c980567fb6d715bb707a
kubernetes-src.tar.gz	e6cd82ae8e257328c64e518bd9056b91b5827f9f4e31071c2bf2175f83848b

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	48f7e3346abb3c5fabcd4789ff335a2816d5251444c096b2153df0791bb7d9d
kubernetes-client-darwin-amd64.tar.gz	24a13ccab183a425e633710703878e80498057d751412a6a864de4890978f4
kubernetes-client-linux-386.tar.gz	e976b23e3f2093dfd7bbb0db6877d33103627e8d1ef5a37bbb673b103898fcb
kubernetes-client-linux-amd64.tar.gz	af50d838bf27758169368bd2129249ff3b617df98b43c9e7ba1a63a73613ed1
kubernetes-client-linux-arm.tar.gz	c2b389290c20b33856b0bd598793768a28406701533e2ce6b622ca3c05f145e
kubernetes-client-linux-arm64.tar.gz	5cab716ed8354e51edf41e2a2e83674d95ba43bebe9e3fa8be1b556528c82fa
kubernetes-client-linux-ppc64le.tar.gz	5079afde78b02e6a785a764834b070d360245a817f4e475bac5f5a60628500c
kubernetes-client-linux-s390x.tar.gz	06bc06766c45fee752b76793c4f955dbadb27702689c0f98639bb58b97f1652
kubernetes-client-windows-386.tar.gz	8719e4edd7d4c79254ee3cf551ac37d4d91072a99b3a4d574b2aa266a664f5e
kubernetes-client-windows-amd64.tar.gz	fb66bbef53dac95c82d77fed9f0b46d9f42d21f26de9f9f1575cbda43dcc74

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	ec7f5d443e9135f9561c78ffadf8d4234cd05e8676d1a442deed444f82b49e4
kubernetes-server-linux-arm.tar.gz	807fd30aea7998a442c79535cecbce7a0d8a0b0aefb52c77230b8c87aa17342
kubernetes-server-linux-arm64.tar.gz	948b44fafd47793f03ecafe44de68d3a470a47a50f3321914ceada260dae2f1
kubernetes-server-linux-ppc64le.tar.gz	ee3ad93e4707046e50c833915a465dafbc9980ee27160434298431668e32775
kubernetes-server-linux-s390x.tar.gz	2e468e85c33fc228e1abc945cb6b0f964b6d8ae9279ccf425b56674105f1716

## Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	cd128ef0c9b1f8db22b54b6f6369e54e9dfbffe9e41e8063bda7b69fd1e0670
kubernetes-node-linux-arm.tar.gz	d4f22417cf17fbfe5e051874ec68fa9a99918b0b08eebe57e208cb7f54aab39
kubernetes-node-linux-arm64.tar.gz	72656759519ebc4631270f67d466e011f911c480ac6dec65006384b8a951508
kubernetes-node-linux-ppc64le.tar.gz	cbf4e915a8f7e16e2c81ccb2989f78cd0c7fb91a7a87948442be9b250a53ca7
kubernetes-node-linux-s390x.tar.gz	1d75676fd3f70922a499d6578d8c44c0aa61c60aa23f866c6ba086778ada590
kubernetes-node-windows-amd64.tar.gz	b7448e795a80f0b911319c590c7a51964df4d5d3d594d53c9c515f8f4cd43c0

## Changelog since v1.15.10

### Changes by Kind

#### Other (Bug, Cleanup or Flake)

- Add delays between goroutines for vm instance update (#88094, @aramase) [SIG Cloud Provider]
- Bump debian-base to v1.0.1 and debian-iptables to v1.0.3 (#88882, @tallclair) [SIG API Machinery, Cluster Lifecycle, Release and Testing]
- Fix handling of aws-load-balancer-security-groups annotation. Security-Groups assigned with this annotation are no longer modified by kubernetes which is the expected behaviour of most users. Also no unnecessary Security-Groups are created anymore if this annotation is used. (#88691, @Elias481) [SIG Cloud Provider]
- Fix route conflicted operations when updating multiple routes together (#88209, @feiskyer) [SIG Cloud Provider]
- Fix the problem where couple nodes becoming NotReady at the same time could cause master instability or even complete outage in large enough clusters. (#88962, @mborsz) [SIG Apps]
- Fix: add remediation in azure disk attach/detach (#88444, @andyzhangx) [SIG Cloud Provider]
- Fix: azure file mount timeout issue (#88610, @andyzhangx) [SIG Cloud Provider and Storage]
- Fix: corrupted mount point in csi driver (#88569, @andyzhangx) [SIG Storage]
- Fix: get azure disk lun timeout issue (#88158, @andyzhangx) [SIG Cloud Provider and Storage]
- Fixed `threadSafeMap` high memory usage caused by indices that have



churn of high-cardinality keys. E.g. namespaces (#88005, @patrickshan) [SIG API Machinery]

- Fixes issue where you can't attach more than 15 GCE Persistent Disks to c2, n2, m1, m2 machine types. (#88602, @yuga711) [SIG Storage]
- Fixes kubelet crash in client certificate rotation cases (#88079, @liggitt) [SIG API Machinery, Auth and Node]
- Get-kube.sh uses the gcloud's current local GCP service account for auth when the provider is GCE or GKE instead of the metadata server default (#88383, @BenTheElder) [SIG Cluster Lifecycle]
- Limit number of instances in a single update to GCE target pool to 1000. (#87881, @wojtek-t) [SIG Cloud Provider, Network and Scalability]
- Update golang to go1.12.17 (#88551, @justaugustus) [SIG Release and Testing]

## v1.15.10

Documentation

### Downloads for v1.15.10

filename	sha512 hash
kubernetes.tar.gz	92b18c5b54b10772ba22e10205242fbb565aeb3b4e9ff9c732caa6ebc4bca6b
kubernetes-src.tar.gz	1d4d3ce7e29b7dda6473f39d30b969081cfd24568720183a123f818df34d8f6

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	f6c331d8fe4b7e1dc8c8b103b2fb10663d8547690ea8afbfff6f35d7b6db0f8c
kubernetes-client-darwin-amd64.tar.gz	4d07a3c1764312d6b8b6732c3c94e90bf88fb7b0e5572191fbdd2106e9d380a
kubernetes-client-linux-386.tar.gz	9648e98c7d802e79c271e17a8b808ea070b957beafbb955a7e877abf04b70e0
kubernetes-client-linux-amd64.tar.gz	02037072280ca4697acc6ea9f75e8f21050b740268861cbd9d2aa0b811d7812
kubernetes-client-linux-arm.tar.gz	e0839df03e8bc56102e05c0e65ab7fbf56f95dd5eefc488843744f22956ab14
kubernetes-client-linux-arm64.tar.gz	c0403fec42e345791cdb813943411b9f9f3cccb55db3d8e5a6185d1619b01a5
kubernetes-client-linux-ppc64le.tar.gz	81c4c7bb734532795a24d4dd2a37fa2dc74283e4061fdda418902b27be394ba
kubernetes-client-linux-s390x.tar.gz	93d20c013acaceedc4010f18aa58664c3c53a1180f64390cdb4b3486e006de8

filename	sha512 hash
kubernetes-client-windows-386.tar.gz	abf261a3d462f1de66481ee0f14a7bea32e6637ef1fb0836770438e9d445f91
kubernetes-client-windows-amd64.tar.gz	046768f1f657da26464c641903cfc58b9c0bad6b5aedcba1528ec6be114aa9

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	c158dee03c28d75cf9f76da945a7adef96024239aa6a9a458d8fbc0ee40574
kubernetes-server-linux-arm.tar.gz	843d67662d31b0e5539763626be484841f8fd2bfed620a5211d32e898dc73a
kubernetes-server-linux-arm64.tar.gz	574671ac6f4df9d08ee910316d435127201c13497c9312f6face1eca1f819a
kubernetes-server-linux-ppc64le.tar.gz	6b7162583bbcf84f8d6a3a90e92ee522386a6109e8c7e816b9459da6a69033
kubernetes-server-linux-s390x.tar.gz	716d6963ab4f6aea2f32c84a7032151d3e04d53effc908a6fa19c6c7d66df3a

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	64c656a1a90167e8c91725e25b4571c5efccee4a4bfe2307857c78c15446b9
kubernetes-node-linux-arm.tar.gz	f67af32b05aae4ed98c242939216ffb4d5ea5095869f82ad96f76ca9726a2b
kubernetes-node-linux-arm64.tar.gz	bacb548a2d65ab22bfd50756df323770d0a8e5dab8b2fcd9e374280ac5ea87
kubernetes-node-linux-ppc64le.tar.gz	4e77cf4eb7798af37898eac8b6fe256b6e0a50ab3016c9b87afde7eb540372
kubernetes-node-linux-s390x.tar.gz	2d8b7edfdb995546d8c2eb13d9eef9d7c54cab977af561f42595b4a3dd57ae
kubernetes-node-windows-amd64.tar.gz	56a0b5f6edc1ac885d2f67d3bc07ca0247a1e5cdb32dc659e659aa4f70d497

## Changelog since v1.15.9

### Changes by Kind

#### Other (Bug, Cleanup or Flake)

- Fix the bug PIP's DNS is deleted if no DNS label service annotation isn't set. (#87310, @nilo19) [SIG Cloud Provider]

- Fix: set nil cache entry based on old cache (#87593, @aramase) [SIG Cloud Provider]
- Fixed a bug which could prevent a provider ID from ever being set for node if an error occurred determining the provider ID when the node was added. (#87043, @zjs) [SIG Apps and Cloud Provider]
- Fixed the following
  - AWS Cloud Provider attempts to delete LoadBalancer security group it didn't provision
  - AWS Cloud Provider creates default LoadBalancer security group even if annotation [service.beta.kubernetes.io/aws-load-balancer-security-groups] is present (#87208, @bhagwat070919) [SIG Cloud Provider]
- Kubelet metrics have been changed to buckets. For example the exec/{podNamespace}/{podID}/{containerName} is now just exec. (#87913, @cheftako) [SIG Node]
- Openstack: Do not delete managed LB in case of security group reconciliation errors (#82264, @multi-io) [SIG Cloud Provider]
- Reverted a kubectrl azure auth module change where oidc claim spn: prefix was omitted resulting a breaking behavior with existing Azure AD OIDC enabled api-server (#87507, @weinong) [SIG API Machinery, Auth and Cloud Provider]
- The client label for apiserver\_request\_count and apiserver\_request\_total now no-opts and merely records an empty string. (#87673, @logicalhan) [SIG API Machinery, Instrumentation and Scalability]

## v1.15.9

Documentation

### Downloads for v1.15.9

filename	sha512 hash
kubernetes.tar.gz	0dddd6fe4c0912340f36bb6f09769e5ce2ede2879324973ab574bf92563e94876e66827282b4904cda34341930b27ae85561127a8c0365163ba39ee6289d88
kubernetes-src.tar.gz	76e66827282b4904cda34341930b27ae85561127a8c0365163ba39ee6289d88

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	e485484ecf0c01f7bde6dde4ea56e97f3ef70c95790cdd4571c2c10f5393683
kubernetes-client-darwin-amd64.tar.gz	ed95d30c7f73722b270c85670f7873a90149760cf503f23aff62d84d4189bce
kubernetes-client-linux-386.tar.gz	f6207ad0792dd1991e5024138eb4a9f0a74a36e921384b350d6cb2dd4884bd5

filename	sha512 hash
kubernetes-client-linux-amd64.tar.gz	ca3b41e6374f442ba680f0b738c7a7cb10168868f15772e09b3ebc3686bb69e
kubernetes-client-linux-arm.tar.gz	ed618f116312a31a371bfeaa34fb0565d4789b32fe4f9911d54a27d7459991f
kubernetes-client-linux-arm64.tar.gz	ed0e24f50198fa017755c1e0c297839b1a93663d8df6d0adedaaa7982cbe130
kubernetes-client-linux-ppc64le.tar.gz	25d5aa5de3a2243441bd4e255ba7d2f3c5ac30692c7ac0f565fe9ea3fc4c883
kubernetes-client-linux-s390x.tar.gz	469349b3bcb2212d0327ab6f0c6aceb34a75b4c23b36ec18121969b0413658
kubernetes-client-windows-386.tar.gz	d3619ebee5b84a82532a9e13847a20dcb58b59c4168f05e49927eeb4dc72de
kubernetes-client-windows-amd64.tar.gz	6cd71eec1841dd1bc0c21a87101b0e1b1c55b554833ae38fe158565ab50834

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	6f56b112d8a1c03b07c6a160a7c80b039b30c3486d1c465b5ee3eb91566139c
kubernetes-server-linux-arm.tar.gz	118f4ca5c1d34b0ac011b5cb587f318fea62dda4a79071062b6146e119ef94
kubernetes-server-linux-arm64.tar.gz	b17a941d61e632e20dbeed7cb90e07d41f29b3c7fbb2eff4c721e4f86f948f
kubernetes-server-linux-ppc64le.tar.gz	6cce1f0b5d11824c4c236c08ebf276eec3263b1667a44f697dd129cf562ae7
kubernetes-server-linux-s390x.tar.gz	07952b71be443419149e29f3118bdf5ff2f4f1b5db6d36709f66876c91abcb

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	52687f9a0101c748d81117a26c07dff6038cfbd2418051244ab080a9e910b2c
kubernetes-node-linux-arm.tar.gz	8ae25a51cd70bca12308e03515cd718397ae6cf1d9fc396f2c70b57920c0d7b
kubernetes-node-linux-arm64.tar.gz	06b9b9b45e01f07bb8da53c3189cddf987a1b473c9c6a69b5508ca33f52323c
kubernetes-node-linux-ppc64le.tar.gz	0ae11f5874e6d887d8d7b5daccd84f04e2e72708a237d859dd43d868883ab0

filename	sha512 hash
kubernetes-node-linux-s390x.tar.gz	34504afc96e73a42149ec05f9da25060b13203f6f902c374ba943add6864e79
kubernetes-node-windows-amd64.tar.gz	b3141cc3b5792f7ef3a22fa6ae44e707a658341ffdf926ed0f2f292a0b296a

## Changelog since v1.15.8

No notable changes for this release

## v1.15.8

[Documentation](#)

## Downloads for v1.15.8

filename	sha512 hash
kubernetes.tar.gz	b546b43b3920d5d62a1a326ebf26a57e927c88b583a517eb8774a3ab5578081
kubernetes-src.tar.gz	fd86c5ad94d1ec1d380be9adbaba3863fe2eba0e5a98480e2f4992befa762f3

## Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	5af004e95d7225e3e38870275b29ea7dc4ec1a8f6306aea6cc56a3751f3bd0
kubernetes-client-darwin-amd64.tar.gz	d54c2ad8a2c8de58e9f6eca6221ee147fe310557af008ca28b09e16bb61e683
kubernetes-client-linux-386.tar.gz	526dbe8b0863638f0a2af962aaf64c4cce7d093ebc4e2204289d40e322b4204
kubernetes-client-linux-amd64.tar.gz	10d39ac0c3f562ba5bf834a0e16f35849105b1e59083bb965f6ce319b4f5836
kubernetes-client-linux-arm.tar.gz	bbcc781d60fef758e37e64d372f3b03d6c45169bd38109981e201df9ad67e1c
kubernetes-client-linux-arm64.tar.gz	846c77e8f63e6a842d4be4c3283163b0ea2da9eb65d95ca9bac35a506646b27
kubernetes-client-linux-ppc64le.tar.gz	9d6250508e4cd2d1a42100bc30511324c8aec561e7c1754344f3ddc208e491a
kubernetes-client-linux-s390x.tar.gz	975bfebe781c6915e8677783dc4b9609b9dd6141a4c7bb406b25c07dbadd853
kubernetes-client-windows-386.tar.gz	e8ba0b456417afa0ec6c957e6c8619449d650dcc5e0a1f2add0f5c3ead03080

filename	sha512 hash
kubernetes-client-windows-amd64.tar.gz	b2c5425ad6d2d5e6e2728797d292421109d31f37ff358f2578a6425ca89f47f

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	f7f615c1988e9c669b49dbec550ad8b04d357bfa9a0c3eea4a67a205cacf12f
kubernetes-server-linux-arm.tar.gz	fa65f20d5fb35c6e831b982cc09ba2020736f0a525e63a71d909c62c3897f5f
kubernetes-server-linux-arm64.tar.gz	3e10fb3777ee48e067cc2b2476a3a63062b014e315aa799193301b26018ac33
kubernetes-server-linux-ppc64le.tar.gz	e637da491cfd9b67ae032ba28d350414477093e23465df450cb5842ab6b0f8b
kubernetes-server-linux-s390x.tar.gz	83d8432208802f2e6f9cafbcb9ff6075db9cd5f365aa2c72cfd1ed5ee674d97f

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	bcbdb08530b98c9823995f88de508dfa3dd54105a0ca3d4d5fdf5b58ec053f7
kubernetes-node-linux-arm.tar.gz	5c52d529bc2b343e1d5105c11cf9d8d64357c35aa2856811da710568683a502
kubernetes-node-linux-arm64.tar.gz	0334d7fe95fe97f398e0b0b4319ff5b18b32e6b2f1712e2e8d7fb59f262ee41
kubernetes-node-linux-ppc64le.tar.gz	3a6c94f95e933e72db54a32e09101fa7a10487fc65c395527333fdc1127832a
kubernetes-node-linux-s390x.tar.gz	8fa3c9df91f5b797eef32c50fe2122c0e4bcb25c8cfd5ee6c9a96e6097b609f
kubernetes-node-windows-amd64.tar.gz	81bd3ed9229a1df226344e77f1c2fb09a069cefa36a6b79ae9ead1a6cb3a8aa

## Changelog since v1.15.7

### Other notable changes

- Fixed a regression where the kubelet would fail to update the ready status of pods. (#86195, @tedyu)
- Fix nil pointer dereference in azure cloud provider (#85975, @ldx)
- fix: azure disk could not mounted on Standard\_DC4s/DC2s instances (#86612, @andyzhangx)

- Filter published OpenAPI schema by making nullable, required fields non-required in order to avoid kubectrl to wrongly reject null values. (#85722, @sttts)
- Fixes an issue with kubelet-reported pod status on deleted/recreated pods. (#86320, @liggitt)
- Fixes issue where AAD token obtained by kubectrl is incompatible with on-behalf-of flow and oidc. (#86412, @weinong)
  - The audience claim before this fix has “spn:” prefix. After this fix, “spn:” prefix is omitted.
- Fix LoadBalancer rule checking so that no unexpected LoadBalancer updates are made (#85990, @feiskyer)
- cherry pick of #85885: Provider/Azure: Add cache for VMSS. (#86048, @nilo19)

## v1.15.7

Documentation

### Downloads for v1.15.7

filename	sha512 hash
kubernetes.tar.gz	bb28f98cbb5031cb73952d7ecefafc56f91fcb0266270236f4746d5d1ed14c
kubernetes-src.tar.gz	6feb7d83934131bbaf89beeca90ab3d6c7371e3f504b251caf8fcc68e4b1ef0

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	e0419273142d4c6ba6a3c1194b7f89bb06602fa15dca1c13985063241c81c10
kubernetes-client-darwin-amd64.tar.gz	23abbf86264965379f5f0835c3304cfff0b261952a2e6e5373d2c3c9e61d07f1
kubernetes-client-linux-386.tar.gz	1b1ac4c29ceb32fdf0ce113b45b0cc28a30b07d2de0835baff234a7be258d17
kubernetes-client-linux-amd64.tar.gz	d815361bdb3a9e8032b8c5c1e0da81d7dd7645cdb0fef6699cab6b379bee59a
kubernetes-client-linux-arm.tar.gz	6911ad6f772ec7a702399eb2830c11cead2dec9dd39f10fc544a0c1f13b704
kubernetes-client-linux-arm64.tar.gz	82c82040a21d450f487db5e9afc6b4acf7711c6f1a2ac55386f16320f276f4
kubernetes-client-linux-ppc64le.tar.gz	2a26af462a295f67af03364fb60d7e97077f54bc69fe7dc494a90553a8d322
kubernetes-client-linux-s390x.tar.gz	ca2e8c09b61051d372fbe7701fc5326ca7bf69b7aaf338b38544ab12fe8be07

filename	sha512 hash
kubernetes-client-windows-386.tar.gz	f12dc441a8a3213d2239c10ff572daf18f35db6a16f9974e13bdaa10c5c60a5
kubernetes-client-windows-amd64.tar.gz	12b98ac3fcc850f0e9ee6d78245c33c4d021d2a0565e2479efb42c0b767e923

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	1f3fabaabfcee57a083a99ca8a31bd2246db912f3ffd7800166ffa59999b45e
kubernetes-server-linux-arm.tar.gz	53286d3c6b47622aa8235f96f59cad9005cef9550b13aa3a6f718512dc8da76
kubernetes-server-linux-arm64.tar.gz	b4b8f81bb84c29c658255ba9eb1fdd281f8911efe1b6dd698f9dbe46ca90786
kubernetes-server-linux-ppc64le.tar.gz	5f063a48215aede437eb267eb5d95f47a388195d3f5ff2a5f80cffb8e038a83
kubernetes-server-linux-s390x.tar.gz	fbf090cd77da53d1441c0ebcce508f3e233eb83936e6690f06a786969c164ba

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	3be351060e6f9bd1a6a35fd3194f34a43204e942bab304b7a4f8b987dc573e6
kubernetes-node-linux-arm.tar.gz	39c562d303d3570312170bf1257c74fe42ffae67bbb38b582d36e44b4b1832a
kubernetes-node-linux-arm64.tar.gz	062e0798974cad1604a9abcfdc1acfb6ebb4bfaac02e0b266bc688cbf985c75
kubernetes-node-linux-ppc64le.tar.gz	a12b77f963e1f21ae8a807b2543ea464d05989cdbea9311abeaeb74b49fd91b
kubernetes-node-linux-s390x.tar.gz	4bb6efaeabaaff971b913660681cd22ad3d1b40aa63f192e34eca58e39b3e601
kubernetes-node-windows-amd64.tar.gz	79079d90bd78c005a497ee9714780a295e145f6a1c0a3ed2c59f8155aa67790

## Changelog since v1.15.6

### Other notable changes

- Change GCP ILB firewall names to contain the “k8s-fw-” prefix like the rest of the firewall rules. This is needed for consistency and also for other



components to identify the firewall rule as k8s/service-controller managed. (#84622, @prameshj)

- azure: update disk lock logic per vm during attach/detach to allow concurrent updates for different nodes. (#85115, @aramase)
- Ensure health probes are created for local traffic policy UDP services on Azure (#85327, @nilo19)
- fix vmss dirty cache issue in disk attach/detach on vmss node (#85158, @andyzhangx)
- fix race condition when attach/delete azure disk in same time (#84917, @andyzhangx)
- fix azure load balancer update dns label issue (#85318, @nilo19)

## v1.15.6

Documentation

### Downloads for v1.15.6

filename	sha512 hash
kubernetes.tar.gz	ef796ccc8146a516802fff3c7bd119939c99d3b577a43fba1f11c9bdf348f79
kubernetes-src.tar.gz	db1a2c886fe467ce87b2b06335c7012aa20913d08b8484c2220278dbd822c2a

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	bef653803ad4db495473addc62800cf2fe4de9a03eb73fb0a1fcde8c31c41b5
kubernetes-client-darwin-amd64.tar.gz	42a63e2cc626fbe30de7ce118afa9b0bcb58d85f7dc909eec8afc4a331a09db
kubernetes-client-linux-386.tar.gz	a0ddf21c66033dc5a76a3eae46beffe3d91c89635a59c90af24b87a9b57bf72
kubernetes-client-linux-amd64.tar.gz	32292b73d40c01a55e9d820c8a2d69f7ae68efd86954eb25a824bc4730146f
kubernetes-client-linux-arm.tar.gz	a5ce6a8613b432b87c08685a92ab14e1b62a8c296603bf2d6a40a330a74c6e7
kubernetes-client-linux-arm64.tar.gz	337c2bdc9a4fdf2335fbf71a6e588c75e67a68f901f6b2b77249f67336f4db7
kubernetes-client-linux-ppc64le.tar.gz	e5dd9a8fdb59f1901dd1da2527105788e511b443a669cf9a7a35d9064eb7c33
kubernetes-client-linux-s390x.tar.gz	685a6c8b86d79c49fe547d78b437de61610006f270667a45d7b3702575e71a1
kubernetes-client-windows-386.tar.gz	55a4f3d344b672250b72f8b8ea25a12196b246d641db6ddb7e89d53f3cdf812

filename	sha512 hash
kubernetes-client-windows-amd64.tar.gz	7ebd7307d0f261822a74dcdba7183382f86210a6dc32914fdf2b0391c08d8ea

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	3fcabc3ec6ca882e7e7f3a5b4cb0b3179efc9c043ff719e5023fef5221b12190
kubernetes-server-linux-arm.tar.gz	17c9fca684cd620bd9846c61cdc608e26cb0986a0c6bb31d54105d50edb9b8c
kubernetes-server-linux-arm64.tar.gz	398d0ded499f6028ec7e1d891f0e2d0968f4cd8e31ec403e1757b4ec14dd699
kubernetes-server-linux-ppc64le.tar.gz	ed81cec528e6e181c38768b188ddb636aad9da9e5086b43435979764a50071e
kubernetes-server-linux-s390x.tar.gz	3f4f768c68181960d6127d6225fd19bbbbb84d95441c0698d389528e88f38fe

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	f2a951a28bde4e2d04cbc654cca9672223670fba7ca12ca457cd1ad0a50ad7e
kubernetes-node-linux-arm.tar.gz	1de988d7d0afa9878eb5a84c7bbeaf8051e982ba4ea5353074a9ba42d5a15a0
kubernetes-node-linux-arm64.tar.gz	1a8e945c50593fac840a83a3961e623a1a7d6e440a71136f541de1c56b7e8c4
kubernetes-node-linux-ppc64le.tar.gz	5f2c16e5832f8b8de611850d540b994744dfb88e7e0b94247f6a9af14c0cd4a
kubernetes-node-linux-s390x.tar.gz	cd7d6ede713b30fcabc6faf9b4dd52a56abf6aff03990dffdf91ad3866644d7
kubernetes-node-windows-amd64.tar.gz	023cd1ffbf941c0fffc5710bb7f9b9ac72b1f37d2440f3c5d418580430f566c

## Changelog since v1.15.5

### Other notable changes

- Fix kubelet metrics gathering on non-English Windows hosts (#84156, @wawa0210)
- kube-apiserver: Fixed a regression accepting patch requests > 1MB (#84963, @liggitt)

- kube-apiserver: fixed a bug that could cause a goroutine leak if the apiserver encountered an encoding error serving a watch to a websocket watcher (#84693, @tedyu)
- azure: Add allow unsafe read from cache (#83685, @aramase)
- Adds a metric apiserver\_request\_error\_total to kube-apiserver. This metric tallies the number of request\_errors encountered by verb, group, version, resource, subresource, scope, component, and code. (#84777, @RainbowMango)
- Add data cache flushing during unmount device for GCE-PD driver in Windows Server. (#83591, @jingxu97)
- fix: make azure disk URI as case insensitive (#79020, @andyzhangx)
- Fixed an issue with informers missing an **Added** event if a recently deleted object was immediately recreated at the same time the informer dropped a watch and relisted. (#83911, @matte21)
- Fixed binding of block PersistentVolumes / PersistentVolumeClaims when BlockVolume feature is off. (#84049, @jsafrane)
- CSI detach timeout increased from 10 seconds to 2 minutes (#84321, @cduchesne)
- Update to use go1.12.12 (#84064, @cblecker)
- Fix handling tombstones in pod-disruption-budget controller. (#83951, @zouyee)

## v1.15.5

Documentation

### Downloads for v1.15.5

filename	sha512 hash
kubernetes.tar.gz	7b887b5c134fd865b5c0f805c4632cce2dcdcf31708c226c1c70754703c86bc1
kubernetes-src.tar.gz	b5e7f4feed29436432be1d6b7c65070fcb71cb067263bd21189085c1b2d7e89

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	5fd269a04ac6931c9787e59b4496f37a78a9e7fb373a10512f6f9c2787048
kubernetes-client-darwin-amd64.tar.gz	3c3e06baf0d21dc50490f498d0f3423e72d3b776908bad6267c9810ac70692
kubernetes-client-linux-386.tar.gz	4c8ac716cf142c64b85c322e7bf9553a7c765aa6b767c2a031b10981fb1e3c2
kubernetes-client-linux-amd64.tar.gz	e462587773345695e3d2e2faba53d0bf4a57ab6fe5ae69e5f253fe8529247d

filename	sha512 hash
kubernetes-client-linux-arm.tar.gz	abfe254507f521d5e46c61300409dee1014000a24f2e2449aef80359176b1a5
kubernetes-client-linux-arm64.tar.gz	df3c40eea79393a39c78a907dfd8b0e1bb2132a3a15b05756c948db69a73542
kubernetes-client-linux-ppc64le.tar.gz	cd80c98a7d8233982580e92d3005cb96b5c7db16d488432002cb6cfd423835b
kubernetes-client-linux-s390x.tar.gz	9a2c8ed471e064d3fa3c078f53cfffba45dfb220d0913449fb3811fe31a8aa938
kubernetes-client-windows-386.tar.gz	222ee8635eeebc7369c249e1e6fb68a676aba85a4ef2e0a7ebfbf53fb588f14
kubernetes-client-windows-amd64.tar.gz	25fb582717855b90d0e346413ea919e6b58b22930455542a77029a0ac1abae1

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	2b2cb8393aa321ca6d522fe0770d8e3ccae33d44f0e4f62702dfbc9bcc54314
kubernetes-server-linux-arm.tar.gz	c8a75b43ed8c5262adf965a611310f0164cfa05d856e887397e2fcf8fe3fe4a
kubernetes-server-linux-arm64.tar.gz	9c3618f36b965793106c61d0ffba4e75013b606795d445c2f28769e71ccf0db
kubernetes-server-linux-ppc64le.tar.gz	c2a05ac20eb19ee659fa151c044860034f715c0949c3f453c76a47a2a205830
kubernetes-server-linux-s390x.tar.gz	27816977520f1350421d9a8f091eb6491fe7057a97ec53e67f293d1c3f95074

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	1067b5037cd242c9a184237efefa0cd940fb77240fd3025bf44337a609d14f5
kubernetes-node-linux-arm.tar.gz	9941e468249996be1ef363f16ebd546c087617ac2adba16dc99f94c5417cdc0
kubernetes-node-linux-arm64.tar.gz	d4f4e19fbc10873e3731f1eade9457aebe782d3076464bade444757480be492
kubernetes-node-linux-ppc64le.tar.gz	5f44f0ce888d170b883f5b8de8a2875d17e7a380053d3281f03736c7edbf623
kubernetes-node-linux-s390x.tar.gz	117e0f97c65ba9fd9657b0a174ee090b07ada2db9448d9f319f8128d6734ad

filename	sha512 hash
kubernetes-node-windows-amd64.tar.gz	cbed2e03cc6949962009794ef553df7e14476dccbadbe41d838db5da4de039a

## Changelog since v1.15.4

### Other notable changes

- Fixes kube-proxy bug accessing self nodeip:port on windows (#83027, @liggitt)
- Fixed panic when accessing CustomResources of a CRD with x-kubernetes-int-or-string. (#83790, @sttts)
- Update Azure load balancer to prevent orphaned public IP addresses (#82890, @chewong)
- Update Cluster Autoscaler to 1.15.2 (<https://github.com/kubernetes/autoscaler/releases/tag/cluster-autoscaler-1.15.2>) (#82831, @krzysztof-jastrzebski)
- Fixes a goroutine leak in kube-apiserver when a request times out. (#83333, @lavalamp)
- Fix aggressive VM calls for Azure VMSS (#83102, @feiskyer)
- Fixes a flaw (CVE-2019-11253) in json/yaml decoding where large or malformed documents could consume excessive server resources. Request bodies for normal API requests (create/delete/update/patch operations of regular resources) are now limited to 3MB. (#83261, @liggitt)
- Update to go 1.12.10 (#83139, @cblecker)
- Resolves bottleneck in internal API server communication that can cause increased goroutines and degrade API Server performance (#80465, @answer1991)
- fix: azure disk detach failure if node not exists (#82640, @andyzhangx)
- Fix the dns suffix search list for GCE window clusters. (#82314, @lzanag)

## v1.15.4

Documentation

### Downloads for v1.15.4

filename	sha512 hash
kubernetes.tar.gz	c882035a4936764d0b2416c30027f0a3be826a26a399739dc52646b1cdb3303
kubernetes-src.tar.gz	829cc4d193e790f42d2e828585c5bcc2e945bf1ce47c105da12b072e01ad38b

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	fe56031d4647b51fb44811b0823f06eaa48662a95d009db5f775c4d307438a
kubernetes-client-darwin-amd64.tar.gz	a9e0fa063e5461a59f0bdeb35e39497bddb11b32b13d7e759cadb9b186b788b
kubernetes-client-linux-386.tar.gz	d13308032cf7b5a16765af01a50f97ffd6c15451bee0a6c8bad189998fcfe8a
kubernetes-client-linux-amd64.tar.gz	5e4a94e161e60b0ff73658576c64ffde17261f9fadbc9588b9791bc248715f6
kubernetes-client-linux-arm.tar.gz	7ca4da92a0132ed917d02c0f91069499a13b43a969168b5bad0be58a7de448b
kubernetes-client-linux-arm64.tar.gz	a0d063f35a906274dd6eca7beb19f7e151292d91ee49543b73bd29069dae48a
kubernetes-client-linux-ppc64le.tar.gz	60d455d89cc96dadf932207f37ff418b750f3e2a708b25f4bea0bc9b663fc4d
kubernetes-client-linux-s390x.tar.gz	f2b41735ea308b351c11335395e2f3ec94fbd3e1af9da879ffbe7c713cbe711
kubernetes-client-windows-386.tar.gz	b557ac04721426d4b81a661e249baeb2e3190ed9a99a9c21bf1bb76a3d12694
kubernetes-client-windows-amd64.tar.gz	d4fb6cdd738c36a5bbab6dfa32fd231411a5a2388747a8be8d0a4da37b39b6a

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	8535926b955a1e8dc42509850c92230e75a671c9a86abfbbe8ce3334cf6fcb5
kubernetes-server-linux-arm.tar.gz	2405c211e938ca4f16cc1f74d764b8775d5d6bf7803c3d61f5eb551210712c7
kubernetes-server-linux-arm64.tar.gz	c5c532062a4aa4a775e19417f3bfc641154720df693b7f2f448d74dc7dee39c
kubernetes-server-linux-ppc64le.tar.gz	3268e74365835fab3c1dd62684a85461c83bda04e0009bd57c994b0985d0195
kubernetes-server-linux-s390x.tar.gz	ff4a984698d8a3811302aed9f22bcef33d2e713f602c845bf37ea0c29d29a75

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	a505862c2a55dcffa48297c156cebe7a23d459b9f75bd37ffe02e35f0a3d343

filename	sha512 hash
kubernetes-node-linux-arm.tar.gz	0f7046eaa400aebcc068507a4a9658b39a78aca4c3394498012e9de565cf5e2
kubernetes-node-linux-arm64.tar.gz	2af0516a43625d753d97964d056ceeacc6499f3848f8593ed7030e10625b7a5
kubernetes-node-linux-ppc64le.tar.gz	66ab2b8f1c74f2369593bc9cd68496b8d84be1ea3393146b09c6d78088a0d19
kubernetes-node-linux-s390x.tar.gz	e34db3069b38d6a984a998c1af763c2658ce74e025ac4a88b6218f4aaab49b3
kubernetes-node-windows-amd64.tar.gz	cbc0141b474e53fa7dbe453813f414f32def24c4f9cdadc6ad9438371d85b3

## Changelog since v1.15.3

### Other notable changes

- Restores compatibility with kubectl client-side validation when structural schemas are present in a CRD which sets spec.preserveUnknownFields=true (#82666, @liggitt)
- Fix a bug in apiserver that could cause a valid update request to be rejected with a precondition check failure. (#82303, @roycai hw)
- openapi now advertises correctly supported patch types for custom resources (#81515, @liggitt)
- kubectl cp now safely allows unpacking of symlinks that may point outside the destination directory (#82384, @tallclair)
- fix azure disk naming matching issue due to case sensitive comparison (#81720, @andyzhangx)
- Fix `kubectl logs -f` for windows server containers. (#81747, @Random-Liu)
- Fix VMSS LoadBalancer backend pools so that the network won't be broken when instances are upgraded to latest model (#81411, @nilo19)
- fix: detach azure disk issue using dangling error (#81266, @andyzhangx)
- Fixed a bug in the CSI metrics that does not return not supported error when a CSI driver does not support metrics. (#79851, @jparklab)
- Fix a bug in server printer that could cause kube-apiserver to panic. (#79349, @roycai hw)
- Fix a bug in the IPVS proxier where virtual servers are not cleaned up even though the corresponding Service object was deleted. (#80942, @gongguan)
- remove iSCSI volume storage cleartext secrets in logs (#81215, @zouyee)

## v1.15.3

Documentation

## Downloads for v1.15.3

filename	sha512 hash
kubernetes.tar.gz	dd9f121bd8c6eadf004b9720d72c338e4d0711bd48ee5763e5f26c576c0743e
kubernetes-src.tar.gz	2f2a304c11e2aaf68e339c970ebd919fa1ce5913e3a6f47ac51be080de9300a

## Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	04c08da4d25b8a7b80e0211050928458d7bae9d721f96353a886332d60db0a
kubernetes-client-darwin-amd64.tar.gz	d340c797d6a49c7034046a7004285d29066c11ac77fc492651849d101e5e57b
kubernetes-client-linux-386.tar.gz	16b00092144f04b75b7c7d5b7e9dc1ba5b8038ba68b0ef2edb17e508d87a7e7
kubernetes-client-linux-amd64.tar.gz	93049dcadbe401fc2ed2f53ace598aa4bd183142ec2b7451d2a53e61c4bbc64
kubernetes-client-linux-arm.tar.gz	6798e066a13ca70bae62540f7387ad803f2431c67b6e0d1d9f21233b5ca045c
kubernetes-client-linux-arm64.tar.gz	edda1fd33dc78c3557a146c3976d19b88082ea86bdd3f0de6f63c8dec899d6f1
kubernetes-client-linux-ppc64le.tar.gz	8fd023b0c546eca42a53ead1c246d093f9303ac22baf34b6b9910d6d146fdea
kubernetes-client-linux-s390x.tar.gz	fd15210ef272e65e25e64d9fc0dc62780cb69fc6a6063062d0f3d5e9ed89b4c
kubernetes-client-windows-386.tar.gz	3688147e3ace45f3e0f5227867dea59ebd3f33e9a973f015257b79aec02bdbc
kubernetes-client-windows-amd64.tar.gz	78f42ce023bef618cb116f713f0f9e5b2ff8402c2e4ce3ab306a598b642ffa0

## Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	33f048c350fa0e92857cf8ff61ac7971ad263eb5d4976bd7a2dbe303b6a523b
kubernetes-server-linux-arm.tar.gz	acce3e4902dc26c799915cfc607f47a40106982fb2ec2f6b7eed54df30b0cfa
kubernetes-server-linux-arm64.tar.gz	2ea339786c9cc452fa429584715d3034d9a65379f30e467a349f865b2533d2c
kubernetes-server-linux-ppc64le.tar.gz	cd64d5331d41213d4101885b6ad6a22438a025c9f752db4333b5728e85d4b50



filename	sha512 hash
kubernetes-server-linux-s390x.tar.gz	0d028067e32a6532c7377010031bc0d166d24bde0f1bd04c53beb3f8272e872

## Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	77d7031a5d9f3e4ba5aa66b011982152898b68cc97eca1e9b6f6f5dad4e722f
kubernetes-node-linux-arm.tar.gz	d94894a86051c63e5d5c768059c9a1ce88bed6105222e498110dac7980d0ff
kubernetes-node-linux-arm64.tar.gz	9d79049451b2dc3030a1edb62ea826b05a78dad2ffbe9623fe1a8bf235bb29
kubernetes-node-linux-ppc64le.tar.gz	c8cad37ce2f67415bbd21bec8e019ef0bb790ebd083d67f62066643d4a5af3
kubernetes-node-linux-s390x.tar.gz	a8a1bde2451de413a429c15693299525eda1057b1d879899f4f02b6b46af55
kubernetes-node-windows-amd64.tar.gz	6010f63e040a6b8f8a8047a4c4a2e1b293ac3a514f2cf3202d494985e9fe0f

## Changelog since v1.15.2

### Other notable changes

- Update golang/x/net dependency to bring in fixes for CVE-2019-9512, CVE-2019-9514 (#81522, @cblecker)
- Update to use go 1.12.8 (#81390, @cblecker)
- Update to use go 1.12.9 (#81489, @BenTheElder)
- cpuUsageNanoCores is now reported in the Kubelet summary API on Windows nodes (#80176, @liyanhui1228)
- API: the metadata.selfLink field is deprecated in individual and list objects. It will no longer be returned starting in v1.20, and the field will be removed entirely in v1.21. (#80978, @wojtek-t)
- Fix Azure client requests stuck issues on http.StatusTooManyRequests (HTTP Code 429). (#81279, @feiskyer)
- Update the GCE windows node image to include hot fixes since July. (#81233, @YangLu1031)
- switch to VM Update call in attach/detach disk operation, original CreateOrUpdate call may lead to orphaned VMs or blocked resources (#81208, @andyzhangx)
- Fix conflicted cache when the requests are canceled by other Azure operations. (#81282, @feiskyer)
- update to use go 1.12.7 (#80134, @tao12345666333)
- Fix public IP not found issues for VMSS nodes (#80703, @feiskyer)

- Fixes validation of VolumeAttachment API objects created with inline volume sources. (#80945, @tedyu)
- Fix kubelet errors in AArch64 with huge page sizes smaller than 1MiB (#78495, @odinuge)
- kube-addon-manager has been updated to v9.0.2 to fix a bug in leader election (<https://github.com/kubernetes/kubernetes/pull/80575>) (#80861, @mborsz)
- Fix a bug that ListOptions.AllowWatchBookmarks wasn't propagating correctly in kube-apiserver. (#80157, @wojtek-t)
- Pass-through volume MountOptions to global mount (NodeStageVolume) on the node for CSI (#80191, @davidz627)
- Fix error in `kubeadm join --discovery-file` when using discovery files with embedded credentials (#80675, @fabriziopandini)
- make node lease renew interval more heuristic based on node-status-update-frequency in kubelet (#80173, @gaorong)
- Bugfix: csi plugin supporting raw block that does not need attach mounted failed (#79920, @cwdsuzhou)
- Reduces GCE PD Node Attach Limits by 1 since the node boot disk is considered an attachable disk (#80923, @davidz627)

## v1.15.2

Documentation

### Downloads for v1.15.2

filename	sha512 hash
kubernetes.tar.gz	0c8b0614236666c1025551bc0fc239b412348998352458ab94a63e67bcb0357
kubernetes-src.tar.gz	2aa692bedd5f68e41c51025f9f5824e2ad494fd079bfc2901f3c6e4c3434137

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	fff381fc2708f8ef47607e146942af09daecce1f36a1856e34669c158efd9af
kubernetes-client-darwin-amd64.tar.gz	655bddb7749c10c5c15004879d31cb129d051245cdc0d098d7a8ee100b8e010
kubernetes-client-linux-386.tar.gz	a527dd9ee0487060eff7dcece01e8e2bb59cf568719258323410884100d7e5b
kubernetes-client-linux-amd64.tar.gz	8a5f25e74a317169687abd65c499fc4f7cc2ff0824a7a9830acd38bfeec9923
kubernetes-client-linux-arm.tar.gz	57bed3825c618309effff69119d39a8e51827da0f39a40778d174ba2c3cf94

filename	sha512 hash
kubernetes-client-linux-arm64.tar.gz	45fcdc5deffd958320ade3f69d15937c64d4bee88dd25d11947b8a74c012c78
kubernetes-client-linux-ppc64le.tar.gz	a7e0b68ec91902896540ce715cee9ed88237870c32582593725f8c42e31308a
kubernetes-client-linux-s390x.tar.gz	f0182c00864eb6bd3c878c2910b4fecf321241cd943c8cf56545e2d65f7ad74
kubernetes-client-windows-386.tar.gz	b23f31c300bdac3dcee745e2ea4aaea8ba15128f4a0b7690c07353165776093
kubernetes-client-windows-amd64.tar.gz	0833e95864c562a1a5a7bd3d6f1005251e21a24e03483bbba1c4ae96c2c4470

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	faa734636ca18ae8786552eab317c0288cf958525df9236ce9b734d5b13809c
kubernetes-server-linux-arm.tar.gz	bd539e5789eef3123c62c368b4733b5a1eb23e651b8d1a93bf3fba00fc5f0e9
kubernetes-server-linux-arm64.tar.gz	05267d81e27dc7508e315b4b815d5c4c879729b5e60db9e5c9fa0f19f3b7518
kubernetes-server-linux-ppc64le.tar.gz	709a9fc6ec1ee0b8b35bfc84bff1084aab83264140d1cce2e264bbcf0030014
kubernetes-server-linux-s390x.tar.gz	6efefb71811db1a992d87336b05094362f52b7bc978b506a7cd432e8a3ccda4

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	ad85793c65b8a520090594bf4a0dd4992ae824d24b5968a40b0bf98cbf8662a
kubernetes-node-linux-arm.tar.gz	d6ea163d4afdf0184100f048bc517f3d0705e3aeb763ff8decfb0e8be518daa
kubernetes-node-linux-arm64.tar.gz	a1e9fe0a8033191b432c22a401d01c5c5d516efeff1958ce7e520228a92bd35
kubernetes-node-linux-ppc64le.tar.gz	1f4dcc0e9aa13c8fe43f821e54c380f8f91765f1d2987be8eded6d2d2f7b678
kubernetes-node-linux-s390x.tar.gz	9f58799e9d89810a4a1bb2579445ef584f795e1250338807bc082e6fa4d0c80
kubernetes-node-windows-amd64.tar.gz	3750fbcf32e00ad6510b2ade2b6dff7ea26aaadc986cc565c22c254bf5726e1

## Changelog since v1.15.1

- Fix CVE-2019-11249: Incomplete fixes for CVE-2019-1002101 and CVE-2019-11246, kubectrl cp potential directory traversal (#80436)
- Fix CVE-2019-11247: API server allows access to custom resources via wrong scope (#80750)

See also the security announcement for this release.

## v1.15.1

Documentation

## Downloads for v1.15.1

filename	sha512 hash
kubernetes.tar.gz	75cdef9f2e7e246a7833b454282858574bea37aea207d967599f49777e29980
kubernetes-src.tar.gz	52ead4397b3fbcaca927e82ed70bc8a7dae2ce806c60499618a415ca6f697d

## Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	d331d981b3cce9cd60a43f6a30482b4d7178f07d940b9a0644b3651bb2516a
kubernetes-client-darwin-amd64.tar.gz	64740289806c40337c019605697e667b16120b44459ce13fb7f8c2db754e5e1
kubernetes-client-linux-386.tar.gz	2ebc06c0c63ee4c0ef4bf30661fb639979cd81374e907ce8c2289303d874680
kubernetes-client-linux-amd64.tar.gz	b1830b66e69b96ca092da19adb97cc61b8af70b4d512c7ba8a3ec64c7f41d80
kubernetes-client-linux-arm.tar.gz	4d16fc26fd980c95f29cdc6b7b7a05c92e7ce2347aa06871c35b856b74d5000
kubernetes-client-linux-arm64.tar.gz	fa1e5355768d4dcd7c2dcf6364e31b8ba5b9dd9b9f67eca04a8f60f334ab82a
kubernetes-client-linux-ppc64le.tar.gz	4a60ebd26393fa0d404e51fa6cfdc79e1d141bbada74578ff68f5426b770983
kubernetes-client-linux-s390x.tar.gz	b50dd9f013c028395f21d487f8157a2093c13b178ade5751fd3afed745ba028
kubernetes-client-windows-386.tar.gz	83838859a420d4eb6fdebcbf8c10e2e2162cb51088cd6e735ea692abc8642992
kubernetes-client-windows-amd64.tar.gz	50b2aff80ecee3a01a76345b90ef9e8c13002ae0ebd51289d80af654954a641

## Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	5080c5f955c27b678b173af0f34b1dcac00437b7b93f368fd7315a1e61eb35e
kubernetes-server-linux-arm.tar.gz	e1983d3dd28d915d2d2bc232f1205d8b1ffe1c6afd7be6f488eaab121df31e9
kubernetes-server-linux-arm64.tar.gz	d59bbab5acadd6918341b37f1edbaadb4745d960b0a81e817a87f6aadaa1bd7
kubernetes-server-linux-ppc64le.tar.gz	6be4abc81ab762fbeb3872b598b654bb5d8d14c4f47746c939543aa63d5ca39e
kubernetes-server-linux-s390x.tar.gz	67ae29519a5864bff4afbd7000a603db1571b14af82dad041808384ea3d0f61

## Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	e29961aa6519d0bb6d2e41ba599abde1f0a19736a5fcce939e236cba91e70b0
kubernetes-node-linux-arm.tar.gz	4e74ff45c833b762dcf3495349ae91ad77939df685f5bd4b47ff21c7aa1751c
kubernetes-node-linux-arm64.tar.gz	86bd8ce2ef600b8fd2d7ae2cf5f6128d66fb1409a0d9df6698e2fbfb12eb2e1
kubernetes-node-linux-ppc64le.tar.gz	fb1f00a87d39aad6cb44cd5ae334217cb57eb68d8003844ecc6cd043826f3c8
kubernetes-node-linux-s390x.tar.gz	b333913b7736ba367dac8dcd95673f71820f198442adddff5a4454dc0e3996c
kubernetes-node-windows-amd64.tar.gz	d064ae274f10cda36a70d332623f7f7c464b0f161d9954e66dd9892f95c5901

## Changelog since v1.15.0

### Other notable changes

- kubeadm: implement support for concurrent add/remove of stacked etcd members (#79677, @neolit123)
- Fixes a bug in openapi published for custom resources using x-kubernetes-preserve-unknown-fields extensions, so that kubectl will allow sending unknown fields for that portion of the object. (#79636, @liggitt)
- Resolves an issue serving aggregated APIs backed by services that respond to requests to / with non-2xx HTTP responses (#79895, @deads2k)
- changes timeout value in csi plugin from 15s to 2min which fixes the timeout issue (#79529, @andyzhangx)

- kubeadm: fix the bug that “--cri-socket” flag does not work for `kubeadm reset` (#79498, @SataQiu)
- fix kubelet fail to delete orphaned pod directory when the kubelet’s pods directory (default is “/var/lib/kubelet/pods”) symbolically links to another disk device’s directory (#79094, @gaorong)
- Fix possible fd leak and closing of dirs in `doSafeMakeDir` (#79534, @odinuge)
- Default `resourceGroup` should be used when the value of annotation `azure-load-balancer-resource-group` is an empty string. (#79514, @feiskyer)
- The CRD handler now properly re-creates stale CR storage to reflect CRD update. (#79114, @roycaiHW)
- fix pod stuck issue due to corrupt mnt point in flexvol plugin, call `Unmount` if `PathExists` returns any error (#75234, @andyzhangx)
- Fix a bug where kubelet would not retry pod sandbox creation when the restart policy of the pod is `Never` (#79451, @yujuhong)
- Remove pids cgroup controller requirement when related feature gates are disabled (#79073, @rafatio)
- Fix remove the etcd member from the cluster during a kubeadm reset. (#79326, @bradbeam)

## v1.15.0

Documentation

### Downloads for v1.15.0

filename	sha512 hash
kubernetes.tar.gz	cb03adc8bee094b93652a19cb77ca4b7b0b2ec201cf9c09958128eb93b4c717
kubernetes-src.tar.gz	a682c88539b46741f6f3b2fa27017d52e88149e0cf0fe49c5a84ff30018cfa3

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	bb14d564f5c2e4da964f6dcaf4026ac7371b35ecf5d651d226fb7cc0c3f194
kubernetes-client-darwin-amd64.tar.gz	8c218437588d960f6782576038bc63af5623e66291d37029653d4bdbba5e19b
kubernetes-client-linux-386.tar.gz	6a17e7215d0eb9ca18d4b55ee179a13f1f111ac995aad12bf2613b9dbee1a6a
kubernetes-client-linux-amd64.tar.gz	0906a8f7de1e5c5efd124385fdee376893733f343d3e8113e4f0f02dfae6a11
kubernetes-client-linux-arm.tar.gz	1d3418665b4998d6fff1c137424eb60302129098321052d7c5cee5a0e2a562d

filename	sha512 hash
kubernetes-client-linux-arm64.tar.gz	986d6bec386b3bb427e49cd7e41390c7dc5361da4f2f7fc2a823507f83579ea
kubernetes-client-linux-ppc64le.tar.gz	81315af33bc21f9f8808b125e1f4c7a1f797c70f01098fe1fe8dba73d05d890
kubernetes-client-linux-s390x.tar.gz	485978a24ba97a2a2cac162a6984d4b5c32dbe95882cf18d2fd2bf74477f683
kubernetes-client-windows-386.tar.gz	9a1b5d0f6fbfc85269e9bd7e08be95eeb9a11f43ea38325b8a736e768f3e85
kubernetes-client-windows-amd64.tar.gz	f2f0221c7d364e3e71b2d9747628298422441c43b731d58c14d7a0ed292e5f1

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	fee0200887c7616e3706394b0540b471ad24d57bb587a3a7154adfc212c7a2
kubernetes-server-linux-arm.tar.gz	2d329ec0e231dbd4ec750317fc45fb8a966b9a81b45f1af0dde3ca0d1ae66a5
kubernetes-server-linux-arm64.tar.gz	0fb64d934d82c17eee15e1f97fc5eeeb4af6e042c30abe41a4d245cde1d9d83
kubernetes-server-linux-ppc64le.tar.gz	5cac4b5951692921389db280ec587037eb3bb7ec4ccf08599ecee2fa39c2a59
kubernetes-server-linux-s390x.tar.gz	39a33f0bb0e06b34779d741e6758b6f7d385e0b933ab799b233e3d4e317f76b

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	73abf50e44319763be3124891a1db36d7f7b38124854a1f223ebd91dce8e848
kubernetes-node-linux-arm.tar.gz	b7ddb82efa39ba5fce5b4124d83279357397a1eb60be24aa19ccbd8263e5e63
kubernetes-node-linux-arm64.tar.gz	458f20f7e9ca2ebddef8738de6a2baa8b8d958b22a935e4d7ac099b07bed911
kubernetes-node-linux-ppc64le.tar.gz	d4d5bfe9b9d56495b00322f62aed0f76029d774bff5004d68e85a0db4fb3b4c
kubernetes-node-linux-s390x.tar.gz	b967034c8db871a7f503407d5a096fcd6811771c9a294747b0a028659af5821
kubernetes-node-windows-amd64.tar.gz	dd021d8f2a3d9ddf6e88bce678c28cc0f38165a5d7a388df952d900dcfd1d0

# Kubernetes v1.15 Release Notes

## 1.15 What's New

A complete changelog for the release notes is now hosted in a customizable format at <https://relnotes.k8s.io/>. Check it out and please give us your feedback!

Kubernetes 1.15 consists of **25 enhancements**: 2 moving to stable, 13 in beta, and 10 in alpha. The main themes of this release are:

### Continuous Improvement

- Project sustainability is not just about features. Many SIGs have been working on improving test coverage, ensuring the basics stay reliable, and stability of the core feature set and working on maturing existing features and cleaning up the backlog.

### Extensibility

- The community has been asking for continuing support of extensibility, so this cycle features more work around CRDs and API Machinery. Most of the enhancements in this cycle were from SIG API Machinery and related areas.

### Extensibility around core Kubernetes APIs

**CustomResourceDefinitions Pruning** To enforce both data consistency and security, Kubernetes performs pruning, or the automatic removal of unknown fields in objects sent to a Kubernetes API. An “unknown” field is one that is not specified in the OpenAPI validation schema. This behavior is already in place for native resources and ensures only data structures specified by the CRD developer are persisted to etcd. It will be available as a beta feature in Kubernetes 1.15.

Pruning is activated by setting `spec.preserveUnknownFields: false` in the CustomResourceDefinition. A future `apiextensions.k8s.io/v1` variant of CRDs will enforce pruning.

Pruning requires that CRD developer provides complete, structural validation schemas, either at the top-level or for all versions of the CRD.

**CustomResourceDefinition Defaulting** CustomResourceDefinitions also have new support for defaulting, with defaults specified using the `default` keyword in the OpenAPI validation schema. Defaults are set for unspecified fields in an object sent to the API, and when reading from etcd.

Defaulting will be available as alpha in Kubernetes 1.15 and requires structural schemas.



**CustomResourceDefinition OpenAPI Publishing** OpenAPI specs for native types have long been served at /openapi/v2, and they are consumed by a number of components, notably kubectl client-side validation, kubectl explain and OpenAPI based client generators.

With Kubernetes 1.15 as beta, OpenAPI schemas are also published for CRDs, as long as their schemas are structural.

These changes are reflected in the following Kubernetes enhancements: (#383), (#575 ), (#492 ), (#598 ), (#692 ), (#95 ), (#995 ), (#956 )

### **Cluster Lifecycle Stability and Usability Improvements**

Work on making Kubernetes installation, upgrade and configuration even more robust has been a major focus for this cycle for SIG Cluster Lifecycle (see the May 6, 2019 Community Update). Bug fixes across bare metal tooling and production-ready user stories, such as the high availability use cases have been given priority for 1.15.

kubeadm, the cluster lifecycle building block, continues to receive features and stability work required for bootstrapping production clusters efficiently. kubeadm has promoted high availability (HA) capability to beta, allowing users to use the familiar `kubeadm init` and `kubeadm join` commands to configure and deploy an HA control plane. An entire new test suite has been created specifically for ensuring these features will stay stable over time.

Certificate management has become more robust in 1.15, with kubeadm now seamlessly rotating all your certificates (on upgrades) before they expire. Check the kubeadm documentation for information on how to manage your certificates.

The kubeadm configuration file API is moving from v1beta1 to v1beta2 in 1.15.

These changes are reflected in the following Kubernetes enhancements: (#357 ), (#970 )

### **Continued improvement of CSI**

In Kubernetes v1.15, SIG Storage continued work to enable migration of in-tree volume plugins to the Container Storage Interface (CSI). SIG Storage worked on bringing CSI to feature parity with in-tree functionality, including functionality like resizing, inline volumes, and more. SIG Storage introduces new alpha functionality in CSI that doesn't exist in the Kubernetes Storage subsystem yet, like volume cloning.

Volume cloning enables users to specify another PVC as a “DataSource” when provisioning a new volume. If the underlying storage system supports this functionality and implements the “CLONE\_VOLUME” capability in its CSI driver, then the new volume becomes a clone of the source volume.

These changes are reflected in the following Kubernetes enhancements: (#625)

## Additional Notable Feature Updates

- Support for go modules in Kubernetes Core.
- Continued preparation for cloud provider extraction and code organization. The cloud provider code has been moved to `kubernetes/legacy-cloud-providers` for easier removal later and external consumption.
- `Kubectl get` and `describe` now works with extensions
- Nodes now support third party monitoring plugins.
- A new Scheduling Framework for schedule plugins is now Alpha.
- Continued deprecation of `extensions/v1beta1`, `apps/v1beta1`, and `apps/v1beta2` APIs; these extensions will be retired in 1.16!

Check the release notes website for the complete changelog of notable features and fixes.

## Known Issues

- Concurrently joining control-plane nodes does not work as expected in `kubeadm 1.15.0`. The feature was planned for release in 1.15.0, but a fix may come in a follow up patch release.
- Using `--log-file` is known to be problematic in 1.15. This presents as things being logged multiple times to the same file. The behaviour and details of this issue, as well as some preliminary attempts at fixing it are documented [here](#)

## Urgent Upgrade Notes

(No, really, you **MUST** read this before you upgrade)

### API Machinery

- `k8s.io/kubernetes` and published components (such as `k8s.io/client-go` and `k8s.io/api`) now contain go module files including dependency version information. See `go-modules` for details on consuming `k8s.io/client-go` using go modules. ([#74877](#), [@liggitt](#))

### Apps

- Hyperkube short aliases have been removed from source code, because hyperkube docker image currently creates these aliases. ([#76953](#), [@Rand01ph](#))

### Auth

- The Rancher credential provider has now been removed. This only affects you if you are using the downstream Rancher distro. ([#77099](#), [@dims](#))

## AWS

- The `system:aws-cloud-provider` cluster role, deprecated in v1.13, is no longer auto-created. Deployments using the AWS cloud provider should grant required permissions to the `aws-cloud-provider` service account in the `kube-system` namespace as part of deployment. (#66635, @wgliang)

## Azure

- Kubelet can now run without identity on Azure. A sample cloud provider configuration is: `{"vmType": "vmss", "useInstanceMetadata": true, "subscriptionId": "<subscriptionId>"}` (#77906, @feiskyer)
- Multiple Kubernetes clusters can now share the same resource group
  - When upgrading from previous releases, issues will arise with public IPs if multiple clusters share the same resource group. To solve these problems, make the following changes to the cluster: Recreate the relevant LoadBalancer services, or add a new tag `'kubernetes-cluster-name: '` manually for existing public IPs. Configure each cluster with a different cluster name using `kube-controller-manager --cluster-name=<cluster-name>` (#77630, @feiskyer)
- The cloud config for Azure cloud provider can now be initialized from Kubernetes secret `azure-cloud-provider` in `kube-system` namespace
  - the secret is a serialized version of `azure.json` file with key `cloud-config`. And the secret name is `azure-cloud-provider`.
  - A new option `cloudConfigType` has been added to the cloud-config file. Supported values are: `file`, `secret` and `merge` (`merge` is the default value).
  - To allow Azure cloud provider to read secrets, the RBAC rules should be configured.

## CLI

- `kubect1 scale job`, deprecated since 1.10, has been removed. (#78445, @soltys)
- The deprecated `--pod/-p` flag for `kubect1 exec` has been removed. The flag has been marked as deprecated since k8s version v1.12. (#76713, @prksu)

## Lifecycle

- Support for deprecated old kubeadm v1alpha3 config has been totally removed. (#75179, @roster)
- `kube-up.sh` no longer supports “centos” and “local” providers. (#76711, @dims)

## Network

- The deprecated flag `--conntrack-max` has been removed from kube-proxy. Users of this flag should switch to `--conntrack-min` and `--conntrack-max-per-core` instead. (#78399, @rikatz)
- The deprecated kube-proxy flag `--cleanup-iptables` has been removed. (#78344, @aramase)

## Node

- The deprecated kubelet security controls `AllowPrivileged`, `HostNetworkSources`, `HostPIDSources`, and `HostIPCSources` have been removed. Enforcement of these restrictions should be done through admission control (such as `PodSecurityPolicy`) instead. (#77820, @dims)
- The deprecated Kubelet flag `--allow-privileged` has been removed. Remove any use of the flag from your kubelet scripts or manifests. (#77820, @dims)
- The kubelet now only collects cgroups metrics for the node, container runtime, kubelet, pods, and containers. (#72787, @dashpole)

## Storage

- The `Node.Status.Volumes.Attached.DevicePath` field is now unset for CSI volumes. You must update any external controllers that depend on this field. (#75799, @msau42)
- CSI alpha CRDs have been removed (#75747, @msau42)
- The `StorageObjectInUseProtection` admission plugin is enabled by default, so the default enabled admission plugins are now `NamespaceLifecycle`, `LimitRanger`, `ServiceAccount`, `PersistentVolumeLabel`, `DefaultStorageClass`. Please note that if you previously had not set the `--admission-control` flag, your cluster behavior may change (to be more standard). (#74610, @oomichi)

## Deprecations and Removals

- `kubect1`
  - `kubect1 convert`, deprecated since v1.14, will be removed in v1.17.
  - The `--export` flag for the `kubect1 get` command, deprecated since v1.14, will be removed in v1.18.
  - The `--pod/-p` flag for `kubect1 exec`, deprecated since 1.12, has been removed.
  - `kubect1 scale job`, deprecated since 1.10, has been removed. (#78445, @soltys)
- kubelet
  - The `beta.kubernetes.io/os` and `beta.kubernetes.io/arch` labels, deprecated since v1.14, are targeted for removal in v1.18.
  - The `--containerized` flag, deprecated since v1.14, will be removed in a future release.

- cAdvisor json endpoints have been deprecated. (#78504, @dashpole)
- kube-apiserver
  - The `--enable-logs-handler` flag and log-serving functionality is deprecated, and scheduled to be removed in v1.19. (#77611, @rohit-sardesai83)
- kube-proxy
  - The deprecated `--cleanup-iptables` has been removed,. (#78344, @aramase)
- API
  - Ingress resources will no longer be served from `extensions/v1beta1` in v1.19. Migrate use to the `networking.k8s.io/v1beta1` API, available since v1.14. Existing persisted data can be retrieved via the `networking.k8s.io/v1beta1` API.
  - NetworkPolicy resources will no longer be served from `extensions/v1beta1` in v1.16. Migrate use to the `networking.k8s.io/v1` API, available since v1.8. Existing persisted data can be retrieved via the `networking.k8s.io/v1` API.
  - PodSecurityPolicy resources will no longer be served from `extensions/v1beta1` in v1.16. Migrate to the `policy/v1beta1` API, available since v1.10. Existing persisted data can be retrieved via the `policy/v1beta1` API.
  - DaemonSet, Deployment, and ReplicaSet resources will no longer be served from `extensions/v1beta1`, `apps/v1beta1`, or `apps/v1beta2` in v1.16. Migrate to the `apps/v1` API, available since v1.9. Existing persisted data can be retrieved via the `apps/v1` API.
  - PriorityClass resources will no longer be served from `scheduling.k8s.io/v1beta1` and `scheduling.k8s.io/v1alpha1` in v1.17. Migrate use to the `scheduling.k8s.io/v1` API, available since v1.14. Existing persisted data can be retrieved via the `scheduling.k8s.io/v1` API.
  - The `export` query parameter for list API calls, deprecated since v1.14, will be removed in v1.18.
  - The `series.state` field in the `events.k8s.io/v1beta1` Event API is deprecated and will be removed in v1.18 (#75987, @yastij)
- kubeadm
  - The `kubeadm upgrade node config` and `kubeadm upgrade node experimental-control-plane` commands are deprecated in favor of `kubeadm upgrade node`, and will be removed in a future release. (#78408, @fabriziopandini)
  - The flag `--experimental-control-plane` is now deprecated in favor of `--control-plane`. The flag `--experimental-upload-certs` is now deprecated in favor of `--upload-certs` (#78452, @fabriziopandini)
  - `kubeadm config upload` has been deprecated, as its replacement is now graduated. Please use `kubeadm init phase upload-config` instead. (#77946, @Klaven)
- The following features are now GA, and the associated feature gates are

deprecated and will be removed in v1.17:

- `GCERegionalPersistentDisk`

## Metrics Changes

### Added metrics

- The metric `kube_proxy_sync_proxy_rules_last_timestamp_seconds` is now available, indicating the last time that kube-proxy successfully applied proxying rules. (#74027, @squeed)
- `process_start_time_seconds` has been added to kubelet's `/metrics/probes` endpoint (#77975, @logicalhan)
- Scheduler: added metrics to record the number of pending pods in different queues (#75501, @Huang-Wei)
- Exposed CSI volume stats via kubelet volume metrics (#76188, @humblec)
- Added a new `storage_operation_status_count` metric for kube-controller-manager and kubelet to count success and error statuses. (#75750, @msau42)

### Deprecated/changed metrics

- kubelet probe metrics are now of the counter type rather than the gauge type, and the `prober_probe_result` has been replaced by `prober_probe_total`. (#76074, @danielqsj)
- The `transformer_failures_total` metric is deprecated in favor of `transformation_operation_total`. The old metric will continue to be populated but will be removed in a future release. (#70715, @immutableT)
- Introducing new semantic for metric `volume_operation_total_seconds` to be the end to end latency of volume provisioning/deletion. Existing metric “`storage_operation_duration_seconds`” will remain untouched, however it is exposed to the following potential issues:
  1. For volumes provisioned/deleted via external provisioner/deleter, `storage_operation_duration_seconds` will NOT wait for the external operation to be done before reporting latency metric (effectively close to 0). This will be fixed by using `volume_operation_total_seconds` instead
  2. if there's a transient error happened during “provisioning/deletion”, i.e., a volume is still in-use while a `deleteVolume` has been called, original `storage_operation_duration_seconds` will NOT wait until a volume has been finally deleted before reporting an inaccurate latency metric. The newly implemented metric `volume_operation_total_seconds`, however, waits until a provisioning/deletion operation has been fully executed.

Potential impacts: If an SLO/alert has been defined based on `volume_operation_total_seconds`, it might get violated because of

the more accurate metric might be significantly larger than previously reported. The metric is defined to be a histogram and the new semantic could change the distribution. (#78061, @yuxiangqian)

- Implement the scheduling framework with **Reserve**, **Prebind**, **Permit**, **Post-bind**, **Queue sort** and **Unreserve** extension points. (#77567, @wgliang) (#77559, @ahg-g) (#77529, @draveness) (#77598, @danielqsj) (#77501, @JieJih) (#77457, @danielqsj)
- Replaced `*_admission_latencies_milliseconds_summary` and `*_admission_latencies_milliseconds` metrics because they were reporting seconds rather than milliseconds. They were also subject to multiple naming guideline violations (units should be in base units and “duration” is the best practice labelling to measure the time a request takes). Please convert to use `*_admission_duration_seconds` and `*_admission_duration_seconds_summary`, as these now report the unit as described, and follow the instrumentation best practices. (#75279, @danielqsj)
- Fixed admission metrics histogram bucket sizes to cover 25ms to ~2.5 seconds. (#78608, @jpbetz)
- Fixed incorrect prometheus azure metrics. (#77722, @andyzhangx)
- `kubectl scale job`, deprecated since 1.10, has been removed. (#78445, @soltys)

## Notable Features

### Stable

- The kube-apiserver’s `watch` can now be enabled for events using the `--watch-cache-sizes` flag. (#74321, @yastij)

### Beta

- Admission webhooks can now register for a single version of a resource (for example, `apps/v1 deployments`) and be called when any other version of that resource is modified (for example `extensions/v1beta1 deployments`). This allows new versions of a resource to be handled by admission webhooks without needing to update every webhook to understand the new version. See the API documentation for the `matchPolicy: Equivalent` option in `MutatingWebhookConfiguration` and `ValidatingWebhookConfiguration` types. (#78135, @liggitt)
- Third party device monitoring is now beta, and enabled by default (Kubelet-PodResources). (#77274, @RenaudWasTaken)
- The `CustomResourcePublishOpenAPI` feature is now beta and enabled by default. `CustomResourceDefinitions` with structural schemas now publish schemas in the OpenAPI document served at `/openapi/v2`.

CustomResourceDefinitions with non-structural schemas have a `NonStructuralSchema` condition added with details about what needs to be corrected in the validation schema. (#77825, @roycaiwh)

- Online volume expansion (`ExpandInUsePersistentVolumes`) is now a beta feature. As such, it is enabled by default. (#77755, @gnufied)
- The `SupportNodePidsLimit` feature is now beta, and enabled by default. It is no longer necessary to set the feature gate `SupportNodePidsLimit=true`. (#76221, @RobertKrawitz)
- kubeadm now includes the ability to specify certificate encryption and decryption keys for the upload and download certificate phases as part of the new v1beta2 kubeadm config format. (#77012, @rosti)
- You can now use kubeadm's `InitConfiguration` and `JoinConfiguration` to define which preflight errors will be ignored. (#75499, @marccarre)
- CustomResourcesDefinition conversion via Web Hooks is promoted to beta. Note that you must set `spec.preserveUnknownFields` to `false`. (#78426, @sttts)
- Group Managed Service Account support has moved to a new API for beta. Special annotations for Windows GMSA support have been deprecated. (#75459, @wk8)
- The `storageVersionHash` feature is now beta. `StorageVersionHash` is a field in the discovery document of each resource. It enables clients to detect whether the storage version of that resource has changed. Its value must be treated as opaque by clients. Only equality comparison on the value is valid. (#78325, @caesarxuchao)
- Ingress objects are now persisted in etcd using the `networking.k8s.io/v1beta1` version (#77139, @cmluciano)
- NodeLocal DNSCache graduating to beta. (#77887, @prameshj)

## Alpha

- You can now create a non-preempting Pod priority (`NonPreemptingPriority`). If set on a class, the pod will continue to be prioritized above queued pods of a lesser class, but will not preempt running pods. (#74614, @denkens)
- kubelet now allows the use of XFS quotas (on XFS and suitably configured ext4fs filesystems) to monitor storage consumption for ephemeral storage. This method of monitoring consumption, which is currently available only for `emptyDir` volumes, is faster and more accurate than the old method of walking the filesystem tree. Note that it does not enforce limits, it only monitors consumption. To utilize this functionality, set the feature gate `LocalStorageCapacityIsolationFSQuotaMonitoring=true`. For ext4fs filesystems, create the filesystem with `mkfs.ext4 -O project <block_device>` and run `tune2fs -Q prjquotablock device`; XFS filesystems need no additional preparation. The filesystem must be mounted with `optionprojectin/etc/fstab`. If the primary partition is the root filesystem, add `rootflags=pquota` to the



GRUB config file. (#66928, @RobertKrawitz)

- Finalizer Protection for Service LoadBalancers (ServiceLoadBalancerFinalizer) has been added as an Alpha feature, which is disabled by default. This feature ensures the Service resource is not fully deleted until the correlating load balancer resources are deleted. (#78262, @MrHohn)
- Inline CSI ephemeral volumes can now be controlled with PodSecurityPolicy when the CSIInlineVolume alpha feature is enabled. (#76915, @vladimirvivien)
- Kubernetes now includes an alpha field, `AllowWatchBookmarks`, in `ListOptions` for requesting the watching of bookmarks from apiserver. The implementation in apiserver is hidden behind the feature gate `WatchBookmark`. (#74074, @wojtek-t)

### Staging Repositories

- The CRI API is now available in the `k8s.io/cri-api` staging repository. (#75531, @dims)
- Support for the Azure File plugin has been added to `csi-translation-lib` (CSIMigrationAzureFile). (#78356, @andyzhangx)
- Added support for Azure Disk plugin to `csi-translation-lib` (CSIMigrationAzureDisk) (#78330, @andyzhangx)

### CLI Improvements

- Added `kubeadm upgrade node`. This command can be used to upgrade both secondary control-plane nodes and worker nodes. The `kubeadm upgrade node config` and `kubeadm upgrade node experimental-control-plane` commands are now deprecated. (#78408, @fabriziopandini)
- The `kubect1 top` command now includes a `--sort-by` option to sort by memory or cpu. (#75920, @artmello)
- `kubect1 rollout restart` now works for DaemonSets and StatefulSets. (#77423, @apelisse)
- `kubect1 get --watch=true` now prints custom resource definitions with custom print columns. (#76161, @liggitt)
- Added `kubeadm alpha certs certificate-key` command to generate secure random key to use on `kubeadm init --experimental-upload-certs` (#77848, @yagonobre)
- Kubernetes now supports printing the `volumeMode` using `kubect1 get pv/pvc -o wide` (#76646, @cwdsuzhou)
- Created a new `kubect1 rollout restart` command that does a rolling restart of a deployment. (#76062, @apelisse)
- `kubect1 exec` now allows using the resource name to select a matching pod and `--pod-running-timeout` flag to wait till at least one pod is running. (#73664, @prksu)
- `kubeadm alpha certs renew` and `kubeadm upgrade` now supports re-

newal of certificates embedded in KubeConfig files managed by kubeadm; this does not apply to certificates signed by external CAs. (#77180, @fabriziopandini)

- Kubeadm: a new command `kubeadm alpha certs check-expiration` was created in order to help users in managing expiration for local PKI certificates (#77863, @fabriziopandini)

## Misc

- Service account controller clients to now use the TokenRequest API, and tokens are periodically rotated. (#72179, @WanLinghao)
- Added `ListPager.EachListItem` utility function to client-go to enable incremental processing of chunked list responses (#75849, @jpbetz)
- Object count quota is now supported for namespaced custom resources using the `count/<resource>.<group>` syntax. (#72384, @zhouhaibing089)
- Added completed job status in Cron Job event. (#75712, @danielqsj)
- Pod disruption budgets can now be updated and patched. (#69867, @davidmccormick)
- Add CRD `spec.preserveUnknownFields` boolean, defaulting to true in v1beta1 and to false in v1 CRDs. If false, fields not specified in the validation schema will be removed when sent to the API server or when read from etcd. (#77333, @sttts)
- Added `RuntimeClass` restrictions and defaulting to `PodSecurityPolicy`. (#73795, @tallclair)
- Kubelet plugin registration now has retry and exponential backoff logic for when registration of plugins (such as CSI or device plugin) fail. (#73891, @taragu)
- proxy/transport now supports Content-Encoding: deflate (#76551, @JieJih)
- Admission webhooks are now properly called for `scale` and `deployments/rollback` subresources. (#76849, @ligitt)

## API Changes

- CRDs get support for x-kubernetes-int-or-string to allow faithful representation of IntOrString types in CustomResources. (#78815, @sttts)
- Introduced the `v1beta2` config format to kubeadm. (#76710, @roster)
- Resource list requests for `PartialObjectMetadata` now correctly return list metadata like the resourceVersion and the continue token. (#75971, @smarterclayton)
- Added a condition `NonStructuralSchema` to `CustomResourceDefinition` listing Structural Schema violations as defined in the KEP. CRD authors should update their validation schemas to be structural in order to participate in future CRD features. (#77207, @sttts)
- Promoted `meta.k8s.io/v1beta1 Table` and `PartialObjectMetadata` to v1. (#77136, @smarterclayton)

- Introduced the flag `--ipvs-strict-arp` to configure stricter ARP sysctls, defaulting to false to preserve existing behaviors. This was enabled by default in 1.13.0, which impacted a few CNI plugins. (#75295, @lbernail)
- CRD validation schemas should not specify `metadata` fields other than `name` and `generateName`. A schema will not be considered structural (and therefore ready for future features) if `metadata` is specified in any other way. (#77653, @sttts)

## Other notable changes

### API Machinery

- Added port configuration to Admission webhook configuration service reference.
- Added port configuration to AuditSink webhook configuration service reference.
- Added port configuration to CRD Conversion webhook configuration service reference.
- Added port configuration to kube-aggregator service reference. (#74855, @mbohlool)
- Implemented deduplication logic for `v1beta1.Event` API (#65782, @yastij)
- Added `objectSelector` to admission webhook configurations. `objectSelector` is evaluated the `oldObject` and `newObject` that would be sent to the webhook, and is considered to match if either object matches the selector. A null object (`oldObject` in the case of create, or `newObject` in the case of delete) or an object that cannot have labels (like a `DeploymentRollback` or a `PodProxyOptions` object) is not considered to match. Use the object selector only if the webhook is opt-in, because end users may skip the admission webhook by setting the labels. (#78505, @caesarxuchao)
- Watch will now support converting response objects into `Table` or `PartialObjectMetadata` forms. (#71548, @smarterclayton)
- In CRD webhook conversion, Kubernetes will now ignore changes to metadata other than for labels and annotations. (#77743, @sttts)
- Added `ListMeta.RemainingItemCount`. When responding to a `LIST` request, if the server has more data available, and if the request does not contain label selectors or field selectors, the server sets the `ListOptions.RemainingItemCount` to the number of remaining objects. (#75993, @caesarxuchao)
- Clients may now request that API objects are converted to the `v1.Table` and `v1.PartialObjectMetadata` forms for generic access to objects. (#77448, @smarterclayton)

- Fixed a spurious error where update requests to the status subresource of multi-version custom resources would complain about an incorrect API version. (#78713, @liggitt)
- Fixed a bug in apiserver storage that could cause just-added finalizers to be ignored immediately following a delete request, leading to premature deletion. (#77619, @caesarxuchao)
- API requests rejected by admission webhooks which specify an http status code < 400 are now assigned a 400 status code. (#77022, @liggitt)
- Fixed a transient error API requests for custom resources could encounter while changes to the CustomResourceDefinition were being applied. (#77816, @liggitt)
- Added name validation for dynamic client methods in client-go (#75072, @lblackstone)
- CustomResourceDefinition with invalid regular expression in the pattern field of OpenAPI v3 validation schemas are no longer considered structural. (#78453, @sttts)
- API paging is now enabled by default in k8s.io/apiserver recommended options, and in k8s.io/sample-apiserver (#77278, @liggitt)
- Increased verbose level for local openapi aggregation logs to avoid flooding the log during normal operation (#75781, @roycai hw)
- k8s.io/client-go/dynamic/dynamicinformer.NewFilteredDynamicSharedInformerFactory now honours the **namespace** argument. (#77945, @michaelfig)
- client-go and kubectl no longer write cached discovery files with world-accessible file permissions. (#77874, @yuchengwu)
- Fixed an error with stuck informers when an etcd watch receives update or delete events with missing data. (#76675, @ryanmcnamara)
- **DelayingQueue.ShutDown()** can now be invoked multiple times without causing a closed channel panic. (#77170, @smarterclayton)
- When specifying an invalid value for a label, it was not always clear which label the value was specified for. Starting with this release, the label's key is included in such error messages, which makes debugging easier. (#77144, @kenegozi)
- Fixed a regression error when proxying responses from aggregated API servers, which could cause watch requests to hang until the first event was received. (#75887, @liggitt)
- Fixed a bug where dry-run is not honored for pod/eviction sub-resource. (#76969, @apelisse)

- DeleteOptions parameters for deletecollection endpoints are now published in the OpenAPI spec. (#77843, @roycaiwh)
- Active watches of custom resources now terminate properly if the CRD is modified. (#78029, @liggitt)
- Fixed a potential deadlock in the resource quota controller. Enabled recording partial usage info for quota objects specifying multiple resources, when only some of the resources' usage can be determined. (#74747, @liggitt)
- Updates that remove remaining `metadata.finalizers` from an object that is pending deletion (non-nil `metadata.deletionTimestamp`) and has no graceful deletion pending (nil or 0 `metadata.deletionGracePeriodSeconds`) now results in immediate deletion of the object. (#77952, @liggitt)
- client-go: The `rest.AnonymousClientConfig(*rest.Config)` helper method no longer copies custom `Transport` and `WrapTransport` fields, because those can be used to inject user credentials. (#75771, @liggitt)
- Validating admission webhooks are now properly called for CREATE operations on the following resources: pods/binding, pods/eviction, bindings (#76910, @liggitt)
- Removed the function `Parallelize`, please convert to use the function `ParallelizeUntil`. (#76595, @danielqsj)

## Apps

- Users can now specify a `DataSource/Kind` of type `PersistentVolumeClaim` in their PVC spec. This can then be detected by the external csi-provisioner and plugins if capable. (#76913, @j-griffith)
- Fixed bug in `DaemonSetController` causing it to stop processing some `DaemonSets` for 5 minutes after node removal. (#76060, @krzysztof-jastrzebski)
- `StatefulSet` controllers no longer force a resync every 30 seconds when nothing has changed. (#75622, @jonsabo)
- Enhanced the daemonset sync logic to avoid a problem where pods are thought to be unavailable when the controller's clock is slower than the node's clock. (#77208, @DaiHao)
- Fixed a bug that caused a `DaemonSet` rolling update to hang when its pod gets stuck at terminating. (#77773, @DaiHao)
- Route controller now respects rate limiting to the cloud provider on deletion; previously it was only for create. (#78581, @andrewsykim)
- Removed extra pod creation expectations when daemonset fails to create pods in batches. (#74856, @draveness)
- Resolved spurious rollouts of workload controllers when upgrading the API server, due to incorrect defaulting of an `alpha procMount` field in pods.

(#78885, @liggitt)

## Auth

- Fixed OpenID Connect (OIDC) token refresh when the client secret contains a special character. (#76914, @tsuna)
- Improved `kubectl auth can-i` command by warning users when they try to access a resource out of scope. (#76014, @WanLinghao)
- Validating admission webhooks are now properly called for CREATE operations on the following resources: tokenreviews, subjectaccessreviews, localsubjectaccessreviews, selfsubjectaccessreviews, selfsubjectrulesreviews (#76959, @sbezverk)

## Autoscaling

- Horizontal Pod Autoscaling can now scale targets up even when one or more metrics are invalid/unavailable, as long as one metric indicates a scale up should occur. (#78503, @gjtempleton)

## AWS

- Kubernetes will now use the zone from the node for topology aware aws-ebs volume creation to reduce unnecessary cloud provider calls. (#78276, @zhan849)
- Kubernetes now supports configure accessLogs for AWS NLB. (#78497, @M00nF1sh)
- Kubernetes now supports update LoadBalancerSourceRanges for AWS NLB (#74692, @M00nF1sh)
- Kubernetes now supports configure TLS termination for AWS NLB (#74910, @M00nF1sh)
- Kubernetes will now consume the AWS region list from the AWS SDK instead of a hard-coded list in the cloud provider. (#75990, @mcrute)
- Limit use of tags when calling EC2 API to prevent API throttling for very large clusters. (#76749, @mcrute)
- The AWS credential provider can now obtain ECR credentials even without the AWS cloud provider or being on an EC2 instance. Additionally, AWS credential provider caching has been improved to honor the ECR credential timeout. (#75587, @tiffanyfay)

## Azure

- Kubernetes now supports specifying the Resource Group of the Route Table when updating the Pod network route on Azure. (#75580, @suker200)
- Kubernetes now uses instance-level update APIs for Azure VMSS loadbalancer operations. (#76656, @feiskyer)
- Users can now specify azure file share name in the azure file plugin, making it possible to use existing shares or specify a new share name. (#76988,

@andyzhangx)

- You can now run `kubelet` with no Azure identity. A sample cloud provider configuration is: `{"vmType": "vmss", "useInstanceMetadata": true, "subscriptionId": "<subscriptionId>"}` (#77906, @feiskyer)
- Fixed some service tags not supported issues for Azure LoadBalancer service. (#77719, @feiskyer)
- Fixed an issue where `pull image` fails from a cross-subscription Azure Container Registry when using MSI to authenticate. (#77245, @norshtein)
- Azure cloud provider can now be configured by Kubernetes secrets and a new option `cloudConfigType` has been introduced. Candidate values are `file`, `secret` or `merge` (default is `merge`). Note that the secret is a serialized version of `azure.json` file with key `cloud-config`. And the secret name is `azure-cloud-provider` in `kube-system` namespace. (#78242, @feiskyer)

## CLI

- Fixed `kubectl exec` usage string to correctly reflect flag placement. (#77589, @solytsh)
- Fixed `kubectl describe cronjobs` error of `Successful Job History Limit`. (#77347, @danielqsj)
- In the `kubectl describe` output, the fields with names containing special characters are now displayed as-is without any pretty formatting, avoiding awkward outputs. (#75483, @gsadhani)
- Fixed incorrect handling by `kubectl` of custom resources whose Kind is "Status". (#77368, @liggitt)
- Report cp errors consistently, providing full message whether copying to or from a pod. (#77010, @solytsh)
- Preserved existing namespace information in manifests when running `set ... --local` commands. (#77267, @liggitt)
- Support for parsing more v1.Taint forms has been added. For example, `key:effect`, `key=:effect-` are now accepted. (#74159, @dlipovetsky)

## Cloud Provider

- The GCE-only flag `cloud-provider-gce-lb-src-cidrs` is now optional for external cloud providers. (#76627, @timoreimann)
- Fixed a bug where `cloud-controller-manager` initializes nodes multiple times. (#75405, @tghartland)

## Cluster Lifecycle

- `kubeadm upgrade` now renews all the certificates used by a component before upgrading the component itself, with the exception of certificates signed by external CAs. User can eventually opt-out of certificate renewal during upgrades by setting the new flag `--certificate-renewal` to `false`. (#76862, @fabriziopandini)

- kubeadm still generates RSA keys when deploying a node, but also accepts ECDSA keys if they already exist in the directory specified in the `--cert-dir` option. (#76390, @rojkov)
- kubeadm now implements CRI detection for Windows worker nodes (#78053, @ksubrmnn)
- Added `--image-repository` flag to kubeadm config images. (#75866, @jmkeyes)
- kubeadm: The kubeadm reset command has now been exposed as phases. (#77847, @yagonobre)
- kubeadm: Improved resiliency when it comes to updating the `kubeadm-config` configmap upon new control plane joins or resets. This allows for safe multiple control plane joins and/or resets. (#76821, @ereslibre)
- kubeadm: Bumped the minimum supported Docker version to 1.13.1 (#77051, @chenzhiwei)
- Reverted the CoreDNS version to 1.3.1 for kubeadm (#78545, @neolit123)
- kubeadm: Fixed the machine readability of `kubeadm token create --print-join-command` (#75487, @displague)
- kubeadm `alpha certs renew --csr-only` now reads the current certificates as the authoritative source for certificates attributes (same as `kubeadm alpha certs renew`). (#77780, @fabriziopandini)
- kubeadm: You can now delete multiple bootstrap tokens at once. (#75646, @bart0sh)
- util/initsystem: Added support for the OpenRC init system (#73101, @oz123)
- Default TTL for DNS records in kubernetes zone has been changed from 5s to 30s to keep consistent with old dnsmasq based kube-dns. The TTL can be customized with command `kubect1 edit -n kube-system configmap/coredns`. (#76238, @Dieken)
- Communication between the etcd server and kube-apiserver on master is now overridden to use HTTPS instead of HTTP when mTLS is enabled in GCE. (#74690, @wenjiaswe)

## GCP

- [stackdriver addon] Bumped prometheus-to-sd to v0.5.0 to pick up security fixes. [fluentd-gcp addon] Bumped fluentd-gcp-scaler to v0.5.1 to pick up security fixes. [fluentd-gcp addon] Bumped event-exporter to v0.2.4



- to pick up security fixes. [fluentd-gcp addon] Bumped prometheus-to-sd to v0.5.0 to pick up security fixes. [metatada-proxy addon] Bumped prometheus-to-sd v0.5.0 to pick up security fixes. (#75362, @serathius)
- [fluentd-gcp addon] Bump fluentd-gcp-scaler to v0.5.2 to pick up security fixes. (#76762, @serathius)
- The GCERegionalPersistentDisk feature gate (GA in 1.13) can no longer be disabled. The feature gate will be removed in v1.17. (#77412, @liggitt)
- GCE/Windows: When the service cannot be stopped Stackdriver logging processes are now force killed (#77378, @yujuhong)
- Reduced GCE log rotation check from 1 hour to every 5 minutes. Rotation policy is unchanged (new day starts, log file size > 100MB). (#76352, @jpbetz)
- GCE/Windows: disabled stackdriver logging agent to prevent node startup failures (#76099, @yujuhong)
- API servers using the default Google Compute Engine bootstrapping scripts will have their insecure port (:8080) disabled by default. To enable the insecure port, set `ENABLE_APISERVER_INSECURE_PORT=true` in kube-env or as an environment variable. (#77447, @dekkagaijin)
- Fixed a NPD bug on GCI, so that it disables glog writing to files for log-counter. (#76211, @wangzhen127)
- Windows nodes on GCE now have the Windows firewall enabled by default. (#78507, @pjh)
- Added `CNI_VERSION` and `CNI_SHA1` environment variables in `kube-up.sh` to configure CNI versions on GCE. (#76353, @Random-Liu)
- GCE clusters will include some IP ranges that are not used on the public Internet in the list of non-masq IPs. Bumped ip-masq-agent version to v2.3.0 with flag `nomasq-all-reserved-ranges` turned on. (#77458, @grayluck)
- GCE/Windows: added support for the stackdriver logging agent (#76850, @yujuhong)
- GCE Windows nodes will rely solely on kubernetes and kube-proxy (and not the GCE agent) for network address management. (#75855, @pjh)
- Ensured that the `node-role.kubernetes.io/master` taint is applied to the master with NoSchedule on GCE. (#78183, @cheftako)
- Windows nodes on GCE now use a known-working 1809 image rather than the latest 1809 image. (#76722, @pjh)
- kube-up.sh scripts now disable the KubeletPodResources feature for Windows nodes, due to issue #78628. (#78668, @mtaufen)

## Instrumentation

- [metrics-server addon] Restored the ability to connect to nodes via IP addresses. (#76819, @serathius)
- If a pod has a running instance, the stats of its previously terminated instances will not show up in the kubelet summary stats any more for CRI runtimes such as containerd and cri-o. This keeps the behavior consistent

with Docker integration, and fixes an issue that some container Prometheus metrics don't work when there are summary stats for multiple instances of the same pod. (#77426, @Random-Liu)

## Network

- Ingress objects are now persisted in etcd using the network-ing.k8s.io/v1beta1 version (#77139, @cmluciano)
- Transparent kube-proxy restarts when using IPVS are now allowed. (#75283, @lbernail)
- Packets considered INVALID by conntrack are now dropped. In particular, this fixes a problem where spurious retransmits in a long-running TCP connection to a service IP could result in the connection being closed with the error "Connection reset by peer" (#74840, @anfernee)
- kube-proxy no longer automatically cleans up network rules created by running kube-proxy in other modes. If you are switching the kube-proxy mode (EG: iptables to IPVS), you will need to run `kube-proxy --cleanup`, or restart the worker node (recommended) before restarting kube-proxy. If you are not switching kube-proxy between different modes, this change should not require any action. (#76109, @vllry)
- kube-proxy: HealthzBindAddress and MetricsBindAddress now support ipv6 addresses. (#76320, @JieJih)
- The userspace proxy now respects the IPTables proxy's minSyncInterval parameter. (#71735, @dcbw)
- iptables proxier: now routes local traffic to LB IPs to service chain (#77523, @andrewsykim)
- IPVS: Disabled graceful termination for UDP traffic to solve issues with high number of UDP connections (DNS / syslog in particular) (#77802, @lbernail)
- Fixed a bug where kube-proxy returns error due to existing ipset rules using a different hash type. (#77371, @andrewsykim)
- Fixed spurious error messages about failing to clean up iptables rules when using iptables 1.8. (#77303, @danwinship)
- Increased log level to 2 for IPVS graceful termination (#78395, @andrewsykim)
- kube-proxy: os exit when CleanupAndExit is set to true (#76732, @JieJih)
- Kubernetes will now allow trailing dots in the externalName of Services of type ExternalName. (#78385, @thz)

## Node

- The dockershim container runtime now accepts the **docker** runtime handler from a RuntimeClass. (#78323, @tallclair)
- The init container can now get its own field value as environment variable values using downwardAPI support. (#75109, @yuchengwu)
- UpdateContainerResources is no longer recorded as a **container\_status** operation. It now uses the label **update\_container**. (#75278, @Nessex)
- kubelet: fix fail to close kubelet->API connections on heartbeat failure when bootstrapping or client certificate rotation is disabled (#78016, @gaorong)
- Set selinux label at plugin socket directory (#73241, @vikaschoudhary16)
- Fixed detection of non-root image user ID. (#78261, @tallclair)
- Signal handling is now initialized within hyperkube commands that require it, such as apiserver and kubelet. (#76659, @S-Chan)
- The Kubelet now properly requests protobuf objects where they are supported from the apiserver, reducing load in large clusters. (#75602, @smarterclayton)

## OpenStack

- You can now define a kubeconfig file for the OpenStack cloud provider. (#77415, @Fedosin)
- OpenStack user credentials can now be read from a secret instead of a local config file. (#75062, @Fedosin)

## Release

- Removed hyperkube short aliases from source code because hyperkube docker image currently create these aliases. (#76953, @Rand01ph)

## Scheduling

- Tolerations with the same key and effect will be merged into one that has the value of the latest toleration for best effort pods. (#75985, @ravisantoshgudimetla)
- Achieved 2X performance improvement on both required and preferred PodAffinity. (#76243, @Huang-Wei)
- Fixed a scheduler racing issue to ensure low priority pods are unschedulable on the node(s) where high priority pods have **NominatedNodeName** set to the node(s). (#77990, @Huang-Wei)

## Storage

- Fixed issue with kubelet waiting on invalid devicepath on AWS (#78595, @gnufied)

- StorageOS volumes now show correct mount information (node and mount time) in the StorageOS administration CLI and UI. (#78522, @croomes)
- Fixed issue in Portworx volume driver causing controller manager to crash. (#76341, @harsh-px)
- For an empty regular file, `stat --printf %F` will now display **regular empty file** instead of **regular file**. (#62159, @dixudx)
- You can now have different operation names for different storage operations. This still prevents two operations on same volume from happening concurrently but if the operation changes, it resets the exponential backoff. (#75213, @gnufied)
- Reduced event spam for `AttachVolume` storage operation. (#75986, @mucahitkurt)
- Until this release, the iscsi plugin was waiting 10 seconds for a path to appear in the device list. However this timeout is not enough, or is less than the default device discovery timeout in most systems, which prevents certain devices from being discovered. This timeout has been raised to 30 seconds, which should help to avoid mount issues due to device discovery. (#78475, @humblec)
- Added a field to store CSI volume expansion secrets (#77516, @gnufied)
- Fixed a bug in block volume expansion. (#77317, @gnufied)
- Count PVCs that are unbound towards attach limit. (#73863, @gnufied)

## VMware

- SAML token delegation (required for Zones support in vSphere) is now supported (#78876, @dougmn)
- vSphere SAML token auth is now supported when using Zones (#75515, @dougmn)

## Windows

- Kubectl port-forward for Windows containers was added in v1.15. To use it, you'll need to build a new pause image including WinCAT. (#75479, @benmoss)
- We're working to simplify the Windows node join experience with better scripts and kubeadm. Scripts and doc updates are still in the works, but some of the needed improvements are included in 1.15. These include:
  - Windows kube-proxy will wait for HNS network creation on start (#78612, @ksubrmnn)
  - kubeadm: implemented CRI detection for Windows worker nodes (#78053, @ksubrmnn)
- Worked toward support for Windows Server version 1903, including adding Windows support for preserving the destination IP as the VIP when loadbalancing with DSR. (#74825, @ksubrmnn)
- Bug fix: Windows Kubelet nodes will now correctly search the default location for Docker credentials (%USERPROFILE%\docker\config.json) when

pulling images from a private registry. (<https://kubernetes.io/docs/concepts/containers/images/#configuring-nodes-to-authenticate-to-a-private-registry>) (#78528, @bclau)

## Dependencies

### Changed

- The default Go version was updated to 1.12.5. (#78528)
- cri-tools has been updated to v1.14.0. (#75658)
- Cluster Autoscaler has been updated to v1.15.0. (#78866)
- Kibana has been upgraded to v6.6.1. (#71251)
- CAdvisor has been updated to v0.33.2. (#76291)
- Fluentd-gcp-scaler has been upgraded to v0.5.2. (#76762)
- Fluentd in fluentd-elasticsearch has been upgraded to v1.4.2. (#76854)
- fluentd-elasticsearch has been updated to v2.5.2. (#76854)
- event-exporter has been updated to v0.2.5. (#77815)
- es-image has been updated to Elasticsearch 6.7.2. (#77765)
- metrics-server has been updated to v0.3.3. (#77950)
- ip-masq-agent has been updated to v2.4.1. (#77844)
- addon-manager has been updated to v9.0.1 (#77282)
- go-autorest has been updated to v11.1.2 (#77070)
- klog has been updated to 0.3.0 (#76474)
- k8s-dns-node-cache image has been updated to v1.15.1 (#76640, @george-angel)

### Unchanged

- Default etcd server version remains unchanged at v3.3.10. The etcd client version was updated to v3.3.10. (#71615, #70168, #76917)
- The list of validated docker versions remains unchanged.
  - The current list is 1.13.1, 17.03, 17.06, 17.09, 18.06, 18.09. (#72823, #72831)
- CNI remains unchanged at v0.7.5. (#75455)
- CSI remains unchanged at v1.1.0. (#75391)
- The dashboard add-on remains unchanged at v1.10.1. (#72495)
- kube-dns is unchanged at v1.14.13 as of Kubernetes 1.12. (#68900)
- Influxdb is unchanged at v1.3.3 as of Kubernetes 1.10. (#53319)
- Grafana is unchanged at v4.4.3 as of Kubernetes 1.10. (#53319)
- The fluent-plugin-kubernetes\_metadata\_filter plugin in fluentd-elasticsearch is unchanged at v2.1.6. (#71180)
- fluentd-gcp is unchanged at v3.2.0 as of Kubernetes 1.13. (#70954)
- OIDC authentication is unchanged at coreos/go-oidc v2 as of Kubernetes 1.10. (#58544)
- Calico is unchanged at v3.3.1 as of Kubernetes 1.13. (#70932)
- crictl on GCE was updated to v1.14.0. (#75658)
- CoreDNS is unchanged at v1.3.1 as of Kubernetes 1.14. (#78691)
- GLBC remains unchanged at v1.2.3 as of Kubernetes 1.12. (#66793)

- Ingress-gce remains unchanged at v1.2.3 as of Kubernetes 1.12. (#66793)
- v1.15.0-rc.1
- v1.15.0-beta.2
- v1.15.0-beta.1
- v1.15.0-alpha.3
- v1.15.0-alpha.2
- v1.15.0-alpha.1

## v1.15.0-rc.1

Documentation

### Downloads for v1.15.0-rc.1

filename	sha512 hash
kubernetes.tar.gz	45733de20d0e46a0937577912d945434fa12604bd507f7a6df9a28b9c60b769
kubernetes-src.tar.gz	63394dee48a5c69cecd26c2a8e54e6ed5c422a239b78a267c47b640f7c6774a

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	6af05492d75b4e2b510381dd7947afd104bf412cfcfff86ccf5ec1f1071928b
kubernetes-client-darwin-amd64.tar.gz	72e4ac298a6fc0b64673243fd0e02fe8d51d534dca6361690f204d43ae87ca
kubernetes-client-linux-386.tar.gz	06f96a3b48a92ec45125fbcff64ed13466be9c0aa418dfe64e158b7a122de4
kubernetes-client-linux-amd64.tar.gz	ba97ccad5c572e264bccf97c69d93d49f4da02512a7e3fbfa01d5569e15cca
kubernetes-client-linux-arm.tar.gz	6155c5775ebe937dabcfefb53983358e269fb43396b15a170214be0b3f682f78
kubernetes-client-linux-arm64.tar.gz	ff6ef9f14be3c01f700546d949cfb2da91400f93bc4c8d0dc82cea442bf205
kubernetes-client-linux-ppc64le.tar.gz	09dbec3378130acd52aee71ba0ac7ad3942ac1b05f17886868bb499c32abd8
kubernetes-client-linux-s390x.tar.gz	8f1c211ef5764c57965d3ca197c93f8dcd768f7eb0ee9d5524f0867a8650ef8
kubernetes-client-windows-386.tar.gz	4bea6bd88eb41c7c1f0d495da6d0c7f39b55f2ccbbc0939ccd97a470aef637
kubernetes-client-windows-amd64.tar.gz	235e83e4bcf9535fb41a5d18dae145545ca4a7703ec6f7d6b3d0c3887c6981b

## Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	7de5aa86903ae91e97ce3017d815ab944b2ce36b2a64b0d8222e49887013596
kubernetes-server-linux-arm.tar.gz	05d42c2a72c7ec54adc4e61bccae842fbab3e6f4f06ac3123eb6449fe782869
kubernetes-server-linux-arm64.tar.gz	143152305c6b9a99d95da4e6ed479ab33b1c4a58f5386496f9b680bf7d601d8
kubernetes-server-linux-ppc64le.tar.gz	7cf9084939319cf9ab67989151dd3384fffb4eb2c2575c8654c3afac65cabe27
kubernetes-server-linux-s390x.tar.gz	aaca5140e6bfeb67259d47e28da75da9a8f335ed4b61580d9f13061c4010a77

## Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	ec53dc1eb78be6e80470c5606b515e6859a245136e6b19a6bbb1f18dbc0aa19
kubernetes-node-linux-arm.tar.gz	369e6a6f1f989af3863bc645019448964f0f1f28ace15680a888bc6e8b91923
kubernetes-node-linux-arm64.tar.gz	c3ffd6c293feec6739881bf932c4fb5d49c01698b16bf950d63185883fcada
kubernetes-node-linux-ppc64le.tar.gz	edeafe6bf1deeee4dd0174bdd3a09ece5a9a895667fcf60691a8b81ba5f99e
kubernetes-node-linux-s390x.tar.gz	3d10142101327ee9a6d754488c3e9e4fd0b5f3a43f3ef4a19c5d9da993fbab
kubernetes-node-windows-amd64.tar.gz	514d09f3936af68746fc11e3b83f82c744ddab1c8160b59cb1b42ea8417dc09

## Changelog since v1.15.0-beta.2

### Other notable changes

- Resolves spurious rollouts of workload controllers when upgrading the API server, due to incorrect defaulting of an alpha procMount field in pods (#78885, @liggitt)
- vSphere: allow SAML token delegation (required for Zones support) (#78876, @dougmn)
- Update Cluster Autoscaler to 1.15.0; changelog: <https://github.com/kubernetes/autoscaler/releases/tag/cluster-autoscaler-1.15.0> (#78866, @losipiuk)
- Revert the CoreDNS version to 1.3.1 (#78691, @rajansandeep)
- CRDs get support for x-kubernetes-int-or-string to allow faithful representation of IntOrString types in CustomResources. (#78815, @sttts)

- fix: retry detach azure disk issue (#78700, @andyzhangx)
  - try to only update vm if detach a non-existing disk when got <200, error> after detach disk operation
- Fix issue with kubelet waiting on invalid devicepath on AWS (#78595, @gnufied)
- Fixed a spurious error where update requests to the status subresource of multi-version custom resources would complain about an incorrect API version. (#78713, @liggitt)
- Fix admission metrics histogram bucket sizes to cover 25ms to ~2.5 seconds. (#78608, @jpbetz)
- Revert Promotion of resource quota scope selector to GA (#78696, @ravisantoshgudimetla)

## v1.15.0-beta.2

Documentation

### Downloads for v1.15.0-beta.2

filename	sha512 hash
kubernetes.tar.gz	e6c98ae93c710bb655e9b55d5ae60c56001fefb0fce74c624c18a032b94798
kubernetes-src.tar.gz	c9666ddb858631721f15e988bb5c30e222f0db1c38a6d67721b9ddcfac870d

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	084e37b2d5d06aab37b34aba012eb6c2bb4d33bef433bef0340e306def8fdd
kubernetes-client-darwin-amd64.tar.gz	7319108bb6e7b28575d64dad3f397de30eb6f4f3ae1bef2001a2e84f98cb6
kubernetes-client-linux-386.tar.gz	5c4c8993c3a57f08cf08232ce5f3ecd5a2acffe9f5bc779fd00a4042a2d209
kubernetes-client-linux-amd64.tar.gz	607cd737c944d186c096d38bc256656b6226534c36ffcaab981df0a755e62f
kubernetes-client-linux-arm.tar.gz	9a0aac4210c453311d432fab0925cb9b275efa2d01335443795c35e4d7dde2
kubernetes-client-linux-arm64.tar.gz	6f416001e9fb42e1720302a6a46cee94952a2a825281ac7c5d6cce549f81b3
kubernetes-client-linux-ppc64le.tar.gz	4c0e4451b6bfd08cdb851ef8e68d5206cbd55c60a65bb95e2951ab22f2f2d4
kubernetes-client-linux-s390x.tar.gz	d5c47fe6e79e73b426881e9ee00291952d70c65bfdbb69216e84b86ddaf2ff



filename	sha512 hash
kubernetes-client-windows-386.tar.gz	d906d737a90ca0287156e42569479c9918f89f9a02e6fb800ea250a8c2a7a47
kubernetes-client-windows-amd64.tar.gz	7b0c9f14600bdfb77dc2935ba0c3407f7d5720a3a0b7ca9a18fe3fabb87a227

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	636ebe9044f0033e3eff310e781d395f31a871a53e322932f331d2496975148
kubernetes-server-linux-arm.tar.gz	ff656458f1d19345538a4145b97821403f418a06503ef94f6c0d0662f671b54
kubernetes-server-linux-arm64.tar.gz	a95199a2b2f81c38c6c14791668598986595bedd41c9e9b2e94add0e93c5d0
kubernetes-server-linux-ppc64le.tar.gz	856d949df9494576e2dbd3b99d8097e97e8c4d2d195404f8307285303ff94ab
kubernetes-server-linux-s390x.tar.gz	7215091725f742977120f2ee4f4bc504dcff75d7258b7e90fcb4e41a2527d6

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	47b8c18afaa5f81b82a42309e95cf6b3f849db18bc2e8aeaaaa54ee219b5c4
kubernetes-node-linux-arm.tar.gz	64d5ad334f9448c3444cd90b0a6a7f07d83f4fb307e850686eb14b13f8926f8
kubernetes-node-linux-arm64.tar.gz	62d1e7fb2f1f271ca349d29bc43f683e7025107d893e974131063403746bb58
kubernetes-node-linux-ppc64le.tar.gz	215a2e3a40c88922427d73af3d38b6a2827c2a699a76fa7acf1a171814d36c0
kubernetes-node-linux-s390x.tar.gz	d75f2a2fb430e7e7368f456590698fe04930c623269ffba88dd546a45ac9dd
kubernetes-node-windows-amd64.tar.gz	c8eeb1d9ada781a97dc368d308fb040124f644225579f18bb41bff0f354d65e

## Changelog since v1.15.0-beta.1

### Action Required

- **ACTION REQUIRED:** The deprecated flag `--conntrack-max` has been removed from kube-proxy. Users of this flag should switch to `--conntrack-min` and `--conntrack-max-per-core` instead. (#78399, @rikatz)

- ACTION REQUIRED: kubeadm: the mixture of “-config” and “-certificate-key” is no longer allowed. The InitConfiguration and JoinConfiguration objects now support the “certificateKey” field and this field should be used instead of the command line argument in case a configuration file is already passed. (#78542, @neolit123)
- ACTION REQUIRED: Azure cloud provider could now be configured by Kubernetes secrets and a new option `cloudConfigType` is introduced, whose candidate values are `file`, `secret` and `merge` (default is `merge`). Note that the secret is a serialized version of `azure.json` file with key `cloud-config`. And the secret name is `azure-cloud-provider` in `kube-system` namespace. To allow Azure cloud provider read this secret, the RBAC permission referred here should also be assigned to service account `kube-system:azure-cloud-provider`. (#78242, @feiskyer)

### Other notable changes

- `kube-up.sh` scripts now disable the `KubeletPodResources` feature for Windows nodes, due to issue #78628. (#78668, @mtaufen)
- StorageOS volumes now show correct mount information (node and mount time) in the StorageOS administration CLI and UI. (#78522, @croomes)
- Horizontal Pod Autoscaling can now scale targets up even when one or more metrics are invalid/unavailable as long as one metric indicates a scale up should occur. (#78503, @gjtempleton)
- kubeadm: revert the CoreDNS version to 1.3.1 (#78545, @neolit123)
- Move online volume expansion to beta (#77755, @gnufied)
- Fixes a memory leak in Kubelet on Windows caused by not not closing containers when fetching container metrics (#78594, @benmoss)
- Windows kube-proxy will wait for HNS network creation on start (#78612, @ksubrmnn)
- Fix error handling for loading `initCfg` in kubeadm upgrade and apply (#78611, @odinuge)
- Route controller now respects rate limiting to the cloud provider on deletion, previously it was only for create. (#78581, @andrewsykim)
- Windows Kubelet nodes will now correctly search the default location for Docker credentials (“%USERPROFILE%.docker\*” Windows nodes on GCE now have the Windows firewall enabled by default. (#78507, @pjh)
- Added `objectSelector` to admission webhook configurations. `objectSelector` is evaluated the `oldObject` and `newObject` that would be sent to the webhook, and is considered to match if either object matches the selector. A null object (`oldObject` in the case of create, or `newObject` in the case of delete) or an object that cannot have labels (like a `DeploymentRollback` or a `PodProxyOptions` object) is not considered to match. Use the object selector only if the webhook is opt-in, because end users may skip the admission webhook by setting the labels. (#78505, @caesarxuchao)
- Deprecate kubelet `cAdvisor` json endpoints (#78504, @dashpole)
- Supports configure `accessLogs` for AWS NLB (#78497, @M00nF1sh)

- Till this release, iscsi plugin was waiting 10 seconds for a path to appear in the device list. However this timeout is not enough or less than default device discovery timeout in most of the systems which cause certain device to be not accounted for the volume. This timeout has been lifted to 30seconds from this release and it should help to avoid mount issues due to device discovery. (#78475, @humblec)
- Remove deprecated `-pod/-p` flag from `kubectl exec`. The flag has been marked as deprecated since k8s version v1.12 (#76713, @prksu)
- CustomResourceDefinition with invalid regular expression in the pattern field of OpenAPI v3 validation schemas are not considere structural. (#78453, @sttts)
- Fixed panic in kube-proxy when parsing iptables-save output (#78428, @luksa)
- Remove deprecated flag `-cleanup-iptables` from kube-proxy (#78344, @aramase)
- The `storageVersionHash` feature is beta now. “StorageVersionHash” is a field in the discovery document of each resource. It allows clients to detect if the storage version of that resource has changed. Its value must be treated as opaque by clients. Only equality comparison on the value is valid. (#78325, @caesarxuchao)
- Use zone from node for topology aware aws-ebs volume creation to reduce unnecessary cloud provider calls (#78276, @zhan849)
- Finalizer Protection for Service LoadBalancers is now added as Alpha (disabled by default). This feature ensures the Service resource is not fully deleted until the correlating load balancer resources are deleted. (#78262, @MrHohn)
- Introducing new semantic for metric “volume\_operation\_total\_seconds” to be the end to end latency of volume provisioning/deletion. Existing metric “storage\_operation\_duration\_seconds” will remain untouched however exposed to the following potential issues: (#78061, @yuxiangqian)
  - 1. for volume’s provisioned/deleted via external provisioner/deleter, “storage\_operation\_duration\_seconds” will NOT wait for the external operation to be done before reporting latency metric (effectively close to 0). This will be fixed by using “volume\_operation\_total\_seconds” instead
  - 2. if there’s a transient error happened during “provisioning/deletion”, i.e., a volume is still in-use while a `deleteVolume` has been called, original “storage\_operation\_duration\_seconds” will NOT wait until a volume has been finally deleted before reporting a not accurate latency metric. The newly implemented metric “volume\_operation\_total\_seconds”, however, wait until a provisioning/deletion operation has been fully executed.
  - Potential impacts:
    - If an SLO/alert has been defined based on “volume\_operation\_total\_seconds”, it might get violated because of the more accurate metric might be significantly larger than previously reported. The metric is defined to

- be a histogram and the new semantic could change the distribution.
- metrics added to kubelet endpoint 'metrics/probes': (#77975, @logicalhan)
  - process\_start\_time\_seconds
- NodeLocal DNSCache graduating to beta. (#77887, @prameshj)
- Kubelet will attempt to use wincat.exe in the pause container for port forwarding when running on Windows (#75479, @benmoss)
- iptables proxier: route local traffic to LB IPs to service chain (#77523, @andrewsykim)
- When the number of jobs exceeds 500, cronjob should schedule without error. (#77475, @liucimin)
- Enable 3rd party device monitoring by default (#77274, @Renaud-WasTaken)
- This change enables a user to specify a DataSource/Kind of type “PersistentVolumeClaim” in their PVC spec. This can then be detected by the external csi-provisioner and plugins if capable. (#76913, @j-griffith)
- proxy/transport: Support Content-Encoding: deflate (#76551, @JieJih)
- Add `--sort-by` option to `kubectl top` command (#75920, @artmello)
- Introduce Topolgy into the runtimeClass API (#75744, @yastij)
- Kubelet plugin registration now has retry and exponential backoff logic for when registration of plugins (like CSI or device plugin) fail. (#73891, @taragu)
- Windows support for preserving the destination IP as the VIP when loadbalancing with DSR. (#74825, @ksubrmnn)
- Add NonPrempting field to the PriorityClass. (#74614, @denkensk)
- The kubelet only collects metrics for the node, container runtime, kubelet, pods, and containers. (#72787, @dashpole)
- Improved README for k8s.io/sample-apiserver (#73447, @MikeSpreitzer)
- kubeadm: flag “`--experimental-control-plane`” is now deprecated. use “`--control-plane`” instead (#78452, @fabriziopandini)
  - kubeadm: flag “`--experimental-upload-certs`” is now deprecated. use “`--upload-certs`” instead
- Promote resource quota scope selector to GA (#78448, @ravisantoshgudimetla)
- `kubectl scale job`, deprecated since 1.10, has been removed (#78445, @solysh)
- CustomResourcesDefinition conversion via webhooks is promoted to beta. It requires that `spec.preserveUnknownFields` is set to false. (#78426, @sttts)
- kubeadm: a new command `kubeadm upgrade node` is introduced for upgrading nodes (both secondary control-plane nodes and worker nodes) (#78408, @fabriziopandini)
  - The command `kubeadm upgrade node config` is now deprecated; use `kubeadm upgrade node` instead.
  - The command `kubeadm upgrade node experimental-control-plane` is now deprecated; use `kubeadm upgrade node` instead.
- Increase log level to 2 for IPVS graceful termination (#78395, @an-

- drewsykim)
- Add support for Azure File plugin to csi-translation-lib (#78356, @andyzhangx)
  - refactor AWS NLB securityGroup handling (#74692, @M00nF1sh)
  - Handle resize operation for volume plugins migrated to CSI (#77994, @gnufied)
  - Inline CSI ephemeral volumes can now be controlled with PodSecurityPolicy when the CSIInlineVolume alpha feature is enabled (#76915, @vladimirvivien)
  - Add support for Azure Disk plugin to csi-translation-lib (#78330, @andyzhangx)
  - Ensures that the node-role.kubernetes.io/master taint is applied to the master with NoSchedule on GCE. (#78183, @cheftako)
  - Add Post-bind extension point to the scheduling framework (#77567, @wgliang)
  - Add CRD support for default values in OpenAPI v3 validation schemas. **default** values are set for object fields which are undefined in request payload and in data read from etcd. Defaulting is alpha and disabled by default, if the feature gate CustomResourceDefaulting is not enabled. (#77558, @sttts)
  - kubeadm: v1beta2 InitConfiguration no longer embeds ClusterConfiguration it it. (#77739, @rosti)
  - kube-apiserver: the **--enable-logs-handler** flag and log-serving functionality is deprecated, and scheduled to be removed in v1.19. (#77611, @rohitsardesai83)
  - Fix vSphere SAML token auth when using Zones (#78137, @dougml)
  - Admission webhooks can now register for a single version of a resource (for example, **apps/v1 deployments**) and be called when any other version of that resource is modified (for example **extensions/v1beta1 deployments**). This allows new versions of a resource to be handled by admission webhooks without needing to update every webhook to understand the new version. See the API documentation for the **matchPolicy: Equivalent** option in MutatingWebhookConfiguration and ValidatingWebhookConfiguration types. (#78135, @liggitt)
  - Add **kubeadm alpha certs certificate-key** command to generate secure random key to use on **kubeadm init --experimental-upload-certs** (#77848, @yagonobre)
  - IPVS: Disable graceful termination for UDP traffic to solve issues with high number of UDP connections (DNS / syslog in particular) (#77802, @lbernail)
  - In CRD webhook conversion ignore changes to metadata other than for labels and annotations. (#77743, @sttts)
  - Allow trailing dots in the externalName of Services of type ExternalName. (#78385, @thz)
  - Fix a bug where kube-proxy returns error due to existing ipset rules using a different hash type. (#77371, @andrewsykim)

- kubeadm: implement CRI detection for Windows worker nodes (#78053, @ksubrmnn)

## v1.15.0-beta.1

Documentation

### Downloads for v1.15.0-beta.1

filename	sha512 hash
kubernetes.tar.gz	c0dcbe90feaa665613a6a1ca99c1ab68d9174c5bcd3965ff9b8d9bad345dfa3
kubernetes-src.tar.gz	b79bc690792e0fbc380e47d6708250211a4e742d306fb433a1b6b50d5cea792

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	b79ca71cf048515084cffd9459153e6ad4898f123fda1b6aa158e5b59033e97
kubernetes-client-darwin-amd64.tar.gz	699a76b03ad3d1a38bd7e1ffb7765526cc33fb40b0e7dc0a782de3e9473e0e
kubernetes-client-linux-386.tar.gz	5fa8bc2cbd6c9f6a8c9fe3fa96cad85f98e2d21132333ab7068b73d2c7cd27a
kubernetes-client-linux-amd64.tar.gz	3dfbd496cd8bf9348fd2532f4c0360fe58ddfaab9d751f81cfbf9d9ddb8a347
kubernetes-client-linux-arm.tar.gz	4abcac1fa5c1ca5e9d245e87ca6f601f7013b6a7e9a9d8dae7b322e62c8332a
kubernetes-client-linux-arm64.tar.gz	22e2d6fc8eb1f64528215901c7cc8a016dda824557667199b9c9d5478f16390
kubernetes-client-linux-ppc64le.tar.gz	8d6f283020d76382e00b9e96f1c880654196aead67f17285ad1faf7ca7d1d2
kubernetes-client-linux-s390x.tar.gz	3320edd26be88e9ba60b5fbb326a0e42934255bb8f1c2774eb2d309318e6db
kubernetes-client-windows-386.tar.gz	951d1c9b2e68615b6f26b85e27895a6dfea948b7e4c566e27b11fde8f325921
kubernetes-client-windows-amd64.tar.gz	2f049941d3902b2915bea5430a29254ac0936e4890c742162993ad13a6e6e3

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	9049dc0680cb96245473422bb2c5c6ca8b1930d7e0256d993001f5de95f4c99
kubernetes-server-linux-arm.tar.gz	38f08b9e78ea3cbe72b473cda1cd48352ee879ce0cd414c0decf2abce63bab6
kubernetes-server-linux-arm64.tar.gz	6cd0166162fc13c9d47cb441e8dd3ff21fae6d2417d3eb780b24ebcd615ac08
kubernetes-server-linux-ppc64le.tar.gz	79570f97383f102be77478a4bc19d0d2c2551717c5f37e8aa159a0889590fc2
kubernetes-server-linux-s390x.tar.gz	7e1371631373407c3a1b231d09610d1029d1981026f02206a11fd5847128740

## Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	819bc76079474791d468a2945c9d0858f066a54b54fcc8a84e3f9827707d6f5
kubernetes-node-linux-arm.tar.gz	1054e793d5a38ac0616cc3e56c85053beda3f39bc3dad965d73397756e3d78e
kubernetes-node-linux-arm64.tar.gz	8357b8ee1ff5b2705fea1f70fdb3a10cb09ed1e48ee0507032dbadfb68b44b5
kubernetes-node-linux-ppc64le.tar.gz	cf62d7a660dd16ee56717a786c04b457478bf51f262fefad2d1500035ccf5bb7
kubernetes-node-linux-s390x.tar.gz	60f3eb8bfe3694f5def28661c62b67a56fb5d9efad7cf5eb5dc7e76f8a15be62
kubernetes-node-windows-amd64.tar.gz	66fb625fd68a9b754e63a3e1369a21e6d2116120b5dc5aae837896f21072ce4

## Changelog since v1.15.0-alpha.3

### Action Required

- ACTION REQUIRED: Deprecated Kubelet security controls AllowPrivileged, HostNetworkSources, HostPIDSources, HostIPCSources have been removed. Enforcement of these restrictions should be done through admission control instead (e.g. PodSecurityPolicy). (#77820, @dims)
  - ACTION REQUIRED: The deprecated Kubelet flag `--allow-privileged` has been removed. Remove any use of `--allow-privileged` from your kubelet scripts or manifests.
- Fix public IPs issues when multiple clusters are sharing the same resource group. (#77630, @feiskyer)
  - action required:
    - \* If the cluster is upgraded from old releases and the same resource group would be shared by multiple clusters, please recreate those

LoadBalancer services or add a new tag 'kubernetes-cluster-name:' manually for existing public IPs.

- \* For multiple clusters sharing the same resource group, they should be configured with different cluster name by `kube-controller-manager --cluster-name=<cluster-name>`

## Other notable changes

- fix azure retry issue when return 2XX with error (#78298, @andyzhangx)
- The dockershim container runtime now accepts the `docker` runtime handler from a RuntimeClass. (#78323, @tallclair)
- GCE: Disable the Windows defender to work around a bug that could cause nodes to crash and reboot (#78272, @yujuhong)
- The CustomResourcePublishOpenAPI feature is now beta and enabled by default. CustomResourceDefinitions with structural schemas now publish schemas in the OpenAPI document served at `/openapi/v2`. CustomResourceDefinitions with non-structural schemas have a `NonStructuralSchema` condition added with details about what needs to be corrected in the validation schema. (#77825, @roycaiwh)
- kubeadm's ignored pre-flight errors can now be configured via `InitConfiguration` and `JoinConfiguration`. (#75499, @marccarre)
- Fix broken detection of non-root image user ID (#78261, @tallclair)
- kubelet: fix fail to close kubelet->API connections on heartbeat failure when bootstrapping or client certificate rotation is disabled (#78016, @gaorong)
- remove `vm sizelist` call in azure disk `GetVolumeLimits` which happens in kubelet finally (#77851, @andyzhangx)
- reverts an aws-ebs volume provisioner optimization as we need to further discuss a viable optimization (#78200, @zhan849)
- API changes and deprecating the use of special annotations for Windows GMSA support (version beta) (#75459, @wk8)
- apiextensions: publish (only) structural OpenAPI schemas (#77554, @sttts)
- Set selinux label at plugin socket directory (#73241, @vikaschoudhary16)
- Fix a bug that causes DaemonSet rolling update to hang when its pod gets stuck at terminating. (#77773, @DaiHao)
- Kubeadm: a new command `kubeadm alpha certs check-expiration` was created in order to help users in managing expiration for local PKI certificates (#77863, @fabriziopandini)
- kubeadm: fix a bug related to volume unmount if the kubelet run directory is a symbolic link (#77507, @cuericlee)
- n/a (#78059, @figo)
- Add configuration options for the scheduling framework and its plugins. (#77501, @JieJih)
- Publish `DeleteOptions` parameters for `deletecollection` endpoints in OpenAPI spec (#77843, @roycaiwh)



- CoreDNS is now version 1.5.0 (#78030, @rajansandeep)
  - A **ready** plugin has been included to report pod readiness
  - The **proxy** plugin has been deprecated. The **forward** plugin is to be used instead.
  - CoreDNS fixes the logging now that kubernetes' client lib switched to klog from glog.
- Upgrade Azure network API version to 2018-07-01, so that EnableTcpReset could be enabled on Azure standard loadbalancer (SLB). (#78012, @feiskyer)
- Fixed a scheduler racing issue to ensure low priority pods to be unschedulable on the node(s) where high priority pods have **NominatedNodeName** set to the node(s). (#77990, @Huang-Wei)
- Support starting Kubernetes on GCE using containerd in COS and Ubuntu with **KUBE\_CONTAINER\_RUNTIME=containerd**. (#77889, @Random-Liu)
- DelayingQueue.ShutDown() is now able to be invoked multiple times without causing a closed channel panic. (#77170, @smarterclayton)
- For admission webhooks registered for DELETE operations on k8s built APIs or CRDs, the apiserver now sends the existing object as admission-Request.Request.OldObject to the webhook. (#76346, @caesarxuchao)
  - For custom apiservers they uses the generic registry in the apiserver library, they get this behavior automatically.
- Expose CSI volume stats via kubelet volume metrics (#76188, @humblec)
- Active watches of custom resources now terminate properly if the CRD is modified. (#78029, @liggitt)
- Add CRD spec.preserveUnknownFields boolean, defaulting to true in v1beta1 and to false in v1 CRDs. If false, fields not specified in the validation schema will be removed when sent to the API server or when read from etcd. (#77333, @sttts)
- Updates that remove remaining **metadata.finalizers** from an object that is pending deletion (non-nil metadata.deletionTimestamp) and has no graceful deletion pending (nil or 0 metadata.deletionGracePeriodSeconds) now results in immediate deletion of the object. (#77952, @liggitt)
- Deprecates the kubeadm config upload command as it's replacement is now graduated. Please see **kubeadm init phase upload-config** (#77946, @Klaven)
- k8s.io/client-go/dynamic/dynamicinformer.NewFilteredDynamicSharedInformerFactory now honours namespace argument (#77945, @michaelfig)
- **kubectl rollout restart** now works for daemonsets and statefulsets. (#77423, @apelisse)
- Fix incorrect azuredisk lun error (#77912, @andyzhangx)
- Kubelet could be run with no Azure identity now. A sample cloud provider configure is: {"vmType": "vmss", "useInstanceMetadata": true} (#77906, @feiskyer)
- client-go and kubectl no longer write cached discovery files with world-accessible file permissions (#77874, @yuchengwu)
- kubeadm: expose the kubeadm reset command as phases (#77847,

@yagonobre)

- kubeadm: kubeadm alpha certs renew `-csr-only` now reads the current certificates as the authoritative source for certificates attributes (same as kubeadm alpha certs renew) (#77780, @fabriziopandini)
- Support “queue-sort” extension point for scheduling framework (#77529, @draveness)
- Allow init container to get its own field value as environment variable values(downwardAPI spport) (#75109, @yuchengwu)
- The metric `kube_proxy_sync_proxy_rules_last_timestamp_seconds` is now available, indicating the last time that kube-proxy successfully applied proxying rules. (#74027, @squeed)
- Fix panic logspam when running kubelet in standalone mode. (#77888, @tallclair)
- consume the AWS region list from the AWS SDK instead of a hard-coded list in the cloud provider (#75990, @mcrute)
- Add `Option` field to the admission webhook `AdmissionReview` API that provides the operation options (e.g. `DeleteOption` or `CreateOption`) for the operation being performed. (#77563, @jpbetz)
- Fix bug where cloud-controller-manager initializes nodes multiple times (#75405, @tghartland)
- Fixed a transient error API requests for custom resources could encounter while changes to the `CustomResourceDefinition` were being applied. (#77816, @liggitt)
- Fix `kubectl exec` usage string (#77589, @soltys)
- CRD validation schemas should not specify `metadata` fields other than `name` and `generateName`. A schema will not be considered structural (and therefore ready for future features) if `metadata` is specified in any other way. (#77653, @sttts)
- Implement Permit extension point of the scheduling framework. (#77559, @ahg-g)
- Fixed a bug in the apiserver storage that could cause just-added finalizers to be ignored on an immediately following delete request, leading to premature deletion. (#77619, @caesarxuchao)
- add operation name for vm/vmss update operations in prometheus metrics (#77491, @andyzhangx)
- fix incorrect prometheus azure metrics (#77722, @andyzhangx)
- Clients may now request that API objects are converted to the `v1.Table` and `v1.PartialObjectMetadata` forms for generic access to objects. (#77448, @smarterclayton)
- ingress: Update in-tree Ingress controllers, examples, and clients to target networking.k8s.io/v1beta1 (#77617, @cmluciano)
- util/initssystem: add support for the OpenRC init system (#73101, @oz123)
- Signal handling is initialized within hyperkube commands that require it (apiserver, kubelet) (#76659, @S-Chan)
- Fix some service tags not supported issues for Azure LoadBalancer service (#77719, @feiskyer)

- Add Un-reserve extension point for the scheduling framework. (#77598, @danielqsj)
- Once merged, `legacy cloud providers` unit tests will run as part of ci, just as they were before they move from `./pkg/cloudproviders/providers` (#77704, @khenidak)
- Check if container memory stats are available before accessing it (#77656, @yastij)
- Add a field to store CSI volume expansion secrets (#77516, @gnufied)
- Add a condition `NonStructuralSchema` to `CustomResourceDefinition` listing `Structural Schema` violations as defined in KEP <https://github.com/kubernetes/enhancements/blob/master/keps/sig-api-machinery/20190425-structural-openapi.md>. CRD authors should update their validation schemas to be structural in order to participate in future CRD features. (#77207, @sttts)
- Update to use go 1.12.5 (#77528, @cblecker)
- Fix race conditions for Azure loadbalancer and route updates. (#77490, @feiskyer)
- remove VM API call dep in azure disk `WaitForAttach` (#77483, @andyzhangx)
- N/A (#77425, @figo)
- Fix `TestEventChannelFull` random fail (#76603, @changyaowei)
- `aws-cloud-provider` service account in the `kube-system` namespace need to be granted with `list node` permission with this optimization (#76976, @zhan849)
- Remove hyperkube short aliases from source code, Because hyperkube docker image currently create these aliases. (#76953, @Rand01ph)
- Allow to define kubeconfig file for OpenStack cloud provider. (#77415, @Fedosin)
- API servers using the default Google Compute Engine bootstrapping scripts will have their insecure port (:8080) disabled by default. To enable the insecure port, set `ENABLE_APISERVER_INSECURE_PORT=true` in kube-env or as an environment variable. (#77447, @dekkagaijin)
- GCE clusters will include some IP ranges that are not in used on the public Internet to the list of non-masq IPs. (#77458, @grayluck)
  - Bump ip-masq-agent version to v2.3.0 with flag `nomasq-all-reserved-ranges` turned on.
- Implement un-reserve extension point for the scheduling framework. (#77457, @danielqsj)
- If a pod has a running instance, the stats of its previously terminated instances will not show up in the kubelet summary stats any more for CRI runtimes like containerd and cri-o. (#77426, @Random-Liu)
  - This keeps the behavior consistent with Docker integration, and fixes an issue that some container Prometheus metrics don't work when there are summary stats for multiple instances of the same pod.
- Limit use of tags when calling EC2 API to prevent API throttling for very large clusters (#76749, @mcrute)

- When specifying an invalid value for a label, it was not always clear which label the value was specified for. Starting with this release, the label's key is included in such error messages, which makes debugging easier. (#77144, @kenegozi)

## v1.15.0-alpha.3

Documentation

### Downloads for v1.15.0-alpha.3

filename	sha512 hash
kubernetes.tar.gz	88d9ced283324136e9230a0c92ad9ade10d1f52d095d5a3f9827a1ebe0cf87b
kubernetes-src.tar.gz	c6cfe656825da66e863cd08887b3ce4374e3dae0448e33c77f960aec168c1c

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	9df574b99dd03b15c784afa0bf91e826d687c5a2c7279878ddc9489e5542b2b
kubernetes-client-darwin-amd64.tar.gz	bd8ac74d57e2c5dbfb36a8a3f79802a85393d914c0f513f83395f4b951a41d5
kubernetes-client-linux-386.tar.gz	8ffecc41f973564b18ee6ee0cf3d2c553e9f4649b13e99dc92f427a3861b04c
kubernetes-client-linux-amd64.tar.gz	8c62df3e8f02d0fe6388f82cf3af32c592783a012744b0595e5ae66097643d
kubernetes-client-linux-arm.tar.gz	6e411c605778e2a079971bfe6f066bd834dcaa13a6e1369d1a5064cc16a95a
kubernetes-client-linux-arm64.tar.gz	52daf658b97c66bf67b24ad45adf27e70cf8e721e616250bef06c8d4d4b6e08
kubernetes-client-linux-ppc64le.tar.gz	0f2fe4d16518640a958166bc9e1963d594828e6edfa37c018778ccce797615
kubernetes-client-linux-s390x.tar.gz	58582b030c95160460f7061000c19da225d175249beff26d4a3f5d415670ff3
kubernetes-client-windows-386.tar.gz	d2898a2e2c6d28c9069479b7dfcf5dc640864e20090441c9bb101e3f6a1cbc2
kubernetes-client-windows-amd64.tar.gz	50fa515ba4be8a30739cb811d8750260f2746914b98de9989c58e9b100d07f5

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	b124b2fa18935bbc15b9a3c0447df931314b41d36d2cd9a65bebd090dafec9b
kubernetes-server-linux-arm.tar.gz	cde20282adb8d43e350c932c5a52176c2e1accb80499631a46c6d6980c19670
kubernetes-server-linux-arm64.tar.gz	657b24b24ddb475a737be8e65669caf3c41102de5feb990b8b0f29066f8233
kubernetes-server-linux-ppc64le.tar.gz	2373012c73109a38a6a2b64f1db716d62a65a4a64ccf246680f226dba96b598
kubernetes-server-linux-s390x.tar.gz	c2ce4362766bb08ffccea13893431c5f59d02f996fbb5fad1fe0014a9670440

## Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	c26b0b2fff310d791c91e610252a86966df271b745a3ded8067328dab04fd30
kubernetes-node-linux-arm.tar.gz	79e70e550a401435b0f3d06b60312bc0740924ca56607eae9cd0d12dce1a6ea
kubernetes-node-linux-arm64.tar.gz	5f920cf9e169c863760a27022f3f0e1503cedcb6b84089a7e77a05d2d449a9a
kubernetes-node-linux-ppc64le.tar.gz	6037b555f484337e659b347ce0ca725e0a25e2e3034100a9ebc4c18668eb102
kubernetes-node-linux-s390x.tar.gz	a32a0a22ade7658e5fb924ca8b0ccca40e96f872d136062842c046fd3f17ec0
kubernetes-node-windows-amd64.tar.gz	005120b6500ee9839a6914a08ec270ccd273b5dea863da17d4da5ab1e47a7de

## Changelog since v1.15.0-alpha.2

### Other notable changes

- Adding ListMeta.RemainingItemCount. When responding a LIST request, if the server has more data available, and if the request does not contain label selectors or field selectors, the server sets the ListOptions.RemainingItemCount to the number of remaining objects. (#75993, @caesarxuchao)
- This PR removes unused soak test cauldron (#77335, @loqutus)
- N/A (#76966, @figo)
- kubeadm: kubeadm alpha certs renew and kubeadm upgrade now supports renews of certificates embedded in KubeConfig files managed by kubeadm; this does not apply to certificates signed by external CAs. (#77180, @fabriziopandini)

- As of Kubernetes 1.15, the `SupportNodePidsLimit` feature introduced as alpha in Kubernetes 1.14 is now beta, and the ability to utilize it is enabled by default. It is no longer necessary to set the feature gate `SupportNodePidsLimit=true`. In all other respects, this functionality behaves as it did in Kubernetes 1.14. (#76221, @RobertKrawitz)
- Bump addon-manager to v9.0.1 (#77282, @MrHohn)
  - Rebase image on debian-base:v1.0.0
- Fix kubectl describe CronJobs error of `Successful Job History Limit`. (#77347, @danielqsj)
- Remove extra pod creation exceptions when daemonset fails to create pods in batches. (#74856, @draveness)
- enhance the daemonset sync logic in clock-skew scenario (#77208, @Dai-Hao)
- GCE-only flag `cloud-provider-gce-lb-src-cidrs` becomes optional for external cloud providers. (#76627, @timoreimann)
- The `GCERegionalPersistentDisk` feature gate (GA in 1.13) can no longer be disabled. The feature gate will be removed in v1.17. (#77412, @liggitt)
- API requests rejected by admission webhooks which specify an http status code < 400 are now assigned a 400 status code. (#77022, @liggitt)
- kubeadm: Add ability to specify certificate encryption and decryption key for the upload/download certificates phases as part of the new v1beta2 kubeadm config format. (#77012, @rosti)
- Fixes incorrect handling by kubectl of custom resources whose Kind is “Status” (#77368, @liggitt)
- kubeadm: disable the kube-proxy DaemonSet on non-Linux nodes. This step is required to support Windows worker nodes. (#76327, @neolit123)
- Add etag for NSG updates so as to fix nsg race condition (#77210, @feiskyer)
- The `series.state` field in the events.k8s.io/v1beta1 Event API is deprecated and will be removed in v1.18 (#75987, @yastij)
- API paging is now enabled by default in k8s.io/apiserver recommended options, and in k8s.io/sample-apiserver (#77278, @liggitt)
- GCE/Windows: force kill Stackdriver logging processes when the service cannot be stopped (#77378, @yujuhong)
- ingress objects are now persisted in etcd using the networking.k8s.io/v1beta1 version (#77139, @cmluciano)
- [fluentd-gcp addon] Bump fluentd-gcp-scaler to v0.5.2 to pick up security fixes. (#76762, @serathius)
- Add RuntimeClass restrictions & defaulting to PodSecurityPolicy. (#73795, @tallclair)
- Promote meta.k8s.io/v1beta1 Table and PartialObjectMetadata to v1. (#77136, @smarterclayton)
- Fix bug with block volume expansion (#77317, @gnufied)
- Fixes spurious error messages about failing to clean up iptables rules when using iptables 1.8. (#77303, @danwinship)
- Add TLS termination support for NLB (#74910, @M00nF1sh)

- Preserves existing namespace information in manifests when running `kubect1 set ... --local` commands (#77267, @liggitt)
- fix issue that pull image failed from a cross-subscription Azure Container Registry when using MSI to authenticate (#77245, @norshtein)
- Clean links handling in cp's tar code (#76788, @soltys)
- Implement and update interfaces and skeleton for the scheduling framework. (#75848, @bsalamat)
- Fixes segmentation fault issue with Protobuf library when log entries are deeply nested. (#77224, @qingling128)
- kubeadm: support sub-domain wildcards in certificate SANs (#76920, @sempr)
- Fixes an error with stuck informers when an etcd watch receives update or delete events with missing data (#76675, @ryanmcnamara)

## v1.15.0-alpha.2

Documentation

### Downloads for v1.15.0-alpha.2

filename	sha512 hash
kubernetes.tar.gz	88ca590c9bc2a095492310fee73bd191398375bc7f549e66e8978c48be8a9c0
kubernetes-src.tar.gz	f587073d7b58903a52beaa911c932047294be54b6f395063c65b46a61113a1

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	1b944693f3813702e64f41fc11102af59beceb5ded52aac3109ebe39eb2e910
kubernetes-client-darwin-amd64.tar.gz	233bba8324f7570e527f7ef22a01552c28dbabc6eef658311668ed55492334
kubernetes-client-linux-386.tar.gz	1203729b3180328631d4192c5f4cfb09e3fea958be544fe4ee3e86826422a62
kubernetes-client-linux-amd64.tar.gz	ad0613c88d4f97b2a8f35fff607bf6168724b28838587218ccece14afb52b53
kubernetes-client-linux-arm.tar.gz	e9d3905d306504838d417051df43431f724ea689fd3564e575f8235fc80d771
kubernetes-client-linux-arm64.tar.gz	a426b27d0851d84b76d225b9366668521441539e7582b2439e973c98c849091
kubernetes-client-linux-ppc64le.tar.gz	be717777159b6f0c472754be704d543b80168cc02d76ca936f6559a55752530
kubernetes-client-linux-s390x.tar.gz	4a4a08d23be247e1543c85895c211e9fee8e8fa276e5aa31ed012804fa0921e

filename	sha512 hash
kubernetes-client-windows-386.tar.gz	8d16d655d7d4213a45a583f81b31056a02dd2100d06d8072a8ec77e255630b0
kubernetes-client-windows-amd64.tar.gz	d4ece03464aaa9c2416d7acf9de7f94f3e01fa17f6f7469a9aedaefa90d4b0a

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	932557827bfcc329162fcf29510f40951bdd5da4890de62fd5c44d5290349b0
kubernetes-server-linux-arm.tar.gz	e1c5349feab83ad458b9a5956026c48c7ce53f3becc09c537eda8984cea56b0
kubernetes-server-linux-arm64.tar.gz	e8cfe09ff625b36b58d97440d82dbc06795d503729b45a8d077de7c73b70f35
kubernetes-server-linux-ppc64le.tar.gz	99770fe0abd0ec2d5f7e38d434a82fa323b2e25124e62aadf483dd68e763b07
kubernetes-server-linux-s390x.tar.gz	3f0772f3b470d59330dd6b44a43af640a7ec42354d734a1aef491769d20a2da

### Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	9c879a12174a8c69124a649a8e6d51a5d4c174741d743f68f9cc349aa671c
kubernetes-node-linux-arm.tar.gz	3ac31c7f6b01896da60028037f30f8b6f331b7cd989dcfabd5623dbfbb8a0
kubernetes-node-linux-arm64.tar.gz	669376d5673534d53d2546bc7768f00a3add74da452061dbc2892f59efba28c
kubernetes-node-linux-ppc64le.tar.gz	b1c7fb9fcafc216fa2bd9551399f11a592922556dfad4c56fa273a7c54426fb
kubernetes-node-linux-s390x.tar.gz	b93ae8cebd79d1ce0cb2aed66ded63b3541fcca23a1f879299c422774fb757a
kubernetes-node-windows-amd64.tar.gz	e99127789e045972d0c52c61902f00297c208851bb65e01d28766b6f9439f83

## Changelog since v1.15.0-alpha.1

### Other notable changes

- Kubemark scripts have been fixed for IKS clusters. (#76909, @Huang-Wei)
- fix azure disk list corruption issue (#77187, @andyzhangx)



- kubeadm: kubeadm upgrade now renews all the certificates used by one component before upgrading the component itself, with the exception of certificates signed by external CAs. User can eventually opt-out from certificate renewal during upgrades by setting the new flag `-certificate-renewal` to false. (#76862, @fabriziopandini)
- kube-proxy: os exit when CleanupAndExit is set to true (#76732, @JieJih)
- kubectl exec now allows using resource name (e.g., deployment/mydeployment) to select a matching pod. (#73664, @prksu)
  - kubectl exec now allows using `-pod-running-timeout` flag to wait till at least one pod is running.
- kubeadm: add optional ECDSA support. (#76390, @rojkov)
  - kubeadm still generates RSA keys when deploying a node, but also accepts ECDSA
  - keys if they exist already in the directory specified in `-cert-dir` option.
- kube-proxy: HealthzBindAddress and MetricsBindAddress support ipv6 address. (#76320, @JieJih)
- Packets considered INVALID by conntrack are now dropped. In particular, this fixes a problem where spurious retransmits in a long-running TCP connection to a service IP could result in the connection being closed with the error “Connection reset by peer” (#74840, @anfernee)
- Introduce the v1beta2 config format to kubeadm. (#76710, @rosti)
- kubeadm: bump the minimum supported Docker version to 1.13.1 (#77051, @chenzhiwei)
- Rancher credential provider has now been removed (#77099, @dims)
- Support print volumeMode using `kubectl get pv/pvc -o wide` (#76646, @cwdsuzhou)
- Upgrade go-autorest to v11.1.2 (#77070, @feiskyer)
- Fixes a bug where dry-run is not honored for pod/eviction sub-resource. (#76969, @apelisse)
- Reduce event spam for AttachVolume storage operation (#75986, @muc-ahitkurt)
- Report cp errors consistently (#77010, @soltys)
- specify azure file share name in azure file plugin (#76988, @andyzhangx)
- Migrate oom watcher not relying on cAdvisor’s API any more (#74942, @WanLinghao)
- Validating admission webhooks are now properly called for CREATE operations on the following resources: tokenreviews, subjectaccessreviews, localsubjectaccessreviews, selfsubjectaccessreviews, selfsubjectrulesreviews (#76959, @sbezverk)
- Fix OpenID Connect (OIDC) token refresh when the client secret contains a special character. (#76914, @tsuna)
- kubeadm: Improve resiliency when it comes to updating the `kubeadm-config` config map upon new control plane joins or resets. This allows for safe multiple control plane joins and/or resets. (#76821, @ereslibre)

- Validating admission webhooks are now properly called for CREATE operations on the following resources: pods/binding, pods/eviction, bindings (#76910, @liggitt)
- Default TTL for DNS records in kubernetes zone is changed from 5s to 30s to keep consistent with old dnsmasq based kube-dns. The TTL can be customized with command `kubect1 edit -n kube-system configmap/coredns`. (#76238, @Dieken)
- Fixed a kubemark panic when hollow-node is morphed as proxy. (#76848, @Huang-Wei)
- k8s-dns-node-cache image version v1.15.1 (#76640, @george-angel)
- GCE/Windows: add support for stackdriver logging agent (#76850, @yujuhong)
- Admission webhooks are now properly called for `scale` and `deployments/rollback` subresources (#76849, @liggitt)
- Switch to instance-level update APIs for Azure VMSS loadbalancer operations (#76656, @feiskyer)
- kubeadm: kubeadm alpha cert renew now ignores certificates signed by external CAs (#76865, @fabriziopandini)
- Update to use go 1.12.4 (#76576, @cblecker)
- [metrics-server addon] Restore connecting to nodes via IP addresses (#76819, @serathius)
- fix detach azure disk back off issue which has too big lock in failure retry condition (#76573, @andyzhangx)
- Updated klog to 0.3.0 (#76474, @vincepri)
- kube-up.sh no longer supports “centos” and “local” providers (#76711, @dims)
- Ensure the backend pools are set correctly for Azure SLB with multiple backend pools (e.g. outbound rules) (#76691, @feiskyer)
- Windows nodes on GCE use a known-working 1809 image rather than the latest 1809 image. (#76722, @pjh)
- The userspace proxy now respects the IPTables proxy’s minSyncInterval parameter. (#71735, @dcbw)
- Kubeadm will now include the missing certificate key if it is unable to find an expected key during `kubeadm join` when used with the `--experimental-control-plane` flow (#76636, @mdaniel)

## v1.15.0-alpha.1

Documentation

## Downloads for v1.15.0-alpha.1

filename	sha512 hash
kubernetes.tar.gz	e07246d1811bfcaf092a3244f94e4bcbfd050756aea1b56e8af54e9c016c16

filename	sha512 hash
kubernetes-src.tar.gz	ebd902a1cfdde0d9a0062f3f21732eed76eb123da04a25f9f5c7cfce8a2926

### Client Binaries

filename	sha512 hash
kubernetes-client-darwin-386.tar.gz	88ce20f3c1f914aebca3439b3f4b642c9c371970945a25e623730826168eba
kubernetes-client-darwin-amd64.tar.gz	a5c1a43c7e3dbb27c1a4c7e4111596331887206f768072e3fb7671075c11f2e
kubernetes-client-linux-386.tar.gz	cf7513ab821cd0c979b1421034ce50e9bc0f347c184551cf4a9b6beab06588a
kubernetes-client-linux-amd64.tar.gz	964296e9289e12bc02ec05fb5ca9e6766654f81e1885989f8185ee8b47573ae
kubernetes-client-linux-arm.tar.gz	3480209c2112315d81e9ac22bc2a5961a805621b82ad80dc04c7044b7a8d63b
kubernetes-client-linux-arm64.tar.gz	be7d5bb5fddfbbe95d32b354b6ed26831b1afc406dc78e9188eae3d957991ea
kubernetes-client-linux-ppc64le.tar.gz	bfaeb3b8b0b2e2dde8900cd2910786cb68804ad7d173b6b52c15400041d7e8c
kubernetes-client-linux-s390x.tar.gz	653c99e3171f74e52903ac9101cf8280a5e9d82969c53e9d481a72e0cb5b4a2
kubernetes-client-windows-386.tar.gz	9b2862996eadf4e97d890f21bd4392beca80e356c7f94abaf5968b4ea3c2485
kubernetes-client-windows-amd64.tar.gz	97d87fcbc0cd821b3ca5ebfbda0b38fdc9c5a5ec58e521936163fead936995c

### Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	ffa2db2c39676e39535bcee3f41f4d178b239ca834c1aa6aafb75fb58cc5909
kubernetes-server-linux-arm.tar.gz	a526cf7009fec5cd43da693127668006d3d6c4ebfb719e8c5b9b78bd5ad3488
kubernetes-server-linux-arm64.tar.gz	4f9c8f85eebbf9f0023c9311560b7576cb5f4d2eac491e38aa4050c82b34f6a
kubernetes-server-linux-ppc64le.tar.gz	bf95f15c3edd9a7f6c2911eedd55655a60da288c9df3fed4c5b2b7cc11d5e1c
kubernetes-server-linux-s390x.tar.gz	a2588d8b3df5f7599cd84635e5772f9ba2c665287c54a6167784bb284eb09f1

## Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	b4e9faadd0e03d3d89de496b5248547b159a7fe0c26319d898a448f3da80eb7
kubernetes-node-linux-arm.tar.gz	bf6db10d15a97ae39e2fcdf32c11c6cd8afcd254dc2fbc1fc00c5c74d6179f4
kubernetes-node-linux-arm64.tar.gz	e89b95a23e36164b10510492841d7d140a9bd1799846f4ee1e8fbd74e8f6c53
kubernetes-node-linux-ppc64le.tar.gz	47f47c8b7fafc7d6ed0e55308ccb2a3b289e174d763c4a6415b7f1b7d2b81e4
kubernetes-node-linux-s390x.tar.gz	8a0af4be530008bc8f120cd82ec592d08b09a85a2a558c10d712ff44867c4e1
kubernetes-node-windows-amd64.tar.gz	f48886bf8f965572b78baf9e02417a56fab31870124240cac02809615caa0b

## Changelog since v1.14.0

### Action Required

- client-go: The `rest AnonymousClientConfig(*rest.Config)` `*rest.Config` helper method no longer copies custom `Transport` and `WrapTransport` fields, because those can be used to inject user credentials. (#75771, @liggitt)
- ACTION REQUIRED: The `Node.Status.Volumes.Attached.DevicePath` field is now unset for CSI volumes. Update any external controllers that depend on this field. (#75799, @msau42)

### Other notable changes

- Remove the function `Parallelize`, please convert to use the function `ParallelizeUntil`. (#76595, @danielqsj)
- `StorageObjectInUseProtection` admission plugin is additionally enabled by default. (#74610, @oomichi)
  - So default enabled admission plugins are now `NamespaceLifecycle`, `LimitRanger`, `ServiceAccount`, `StorageObjectInUseProtection`. Please note that if you previously had not set the `--admission-control` flag, your cluster behavior may change (to be more standard).
- Juju provider source moved to the Charmed Kubernetes org (#76628, @kwmonroe)
- improve `kubect1 auth can-i` command by warning users when they try access resource out of scope (#76014, @WanLinghao)
- Introduce API for watch bookmark events. (#74074, @wojtekt)
  - Introduce Alpha field `AllowWatchBookmarks` in `ListOptions` for requesting watch bookmarks from apiserver. The implementation in apiserver is hidden behind feature gate `WatchBookmark` (currently in Alpha stage).

- Override protocol between etcd server and kube-apiserver on master with HTTPS instead HTTP when mTLS is enabled in GCE (#74690, @wenji-aswe)
- Fix issue in Portworx volume driver causing controller manager to crash (#76341, @harsh-px)
- kubeadm: Fix a bug where if couple of CRIs are installed a user override of the CRI during join (via kubeadm join -cri-socket ...) is ignored and kubeadm bails out with an error (#76505, @rostri)
- UpdateContainerResources is no longer recorded as a `container_status` operation. It now uses the label `update_container` (#75278, @Nessex)
- Bump metrics-server to v0.3.2 (#76437, @brett-elliott)
- The kubelet's /spec endpoint no longer provides cloud provider information (cloud\_provider, instance\_type, instance\_id). (#76291, @dims)
- Change kubelet probe metrics to counter type. (#76074, @danielqsj)
  - The metrics `prober_probe_result` is replaced by `prober_probe_total`.
- Reduce GCE log rotation check from 1 hour to every 5 minutes. Rotation policy is unchanged (new day starts, log file size > 100MB). (#76352, @jpbetz)
- Add ListPager.EachListItem utility function to client-go to enable incremental processing of chunked list responses (#75849, @jpbetz)
- Added `CNI_VERSION` and `CNI_SHA1` environment variables in kube-up.sh to configure CNI versions on GCE. (#76353, @Random-Liu)
- Update cri-tools to v1.14.0 (#75658, @feiskyer)
- 2X performance improvement on both required and preferred PodAffinity. (#76243, @Huang-Wei)
- scheduler: add metrics to record number of pending pods in different queues (#75501, @Huang-Wei)
- Create a new `kubect1 rollout restart` command that does a rolling restart of a deployment. (#76062, @apelisse)
- Added port configuration to Admission webhook configuration service reference. (#74855, @mbohlool)
  - Added port configuration to AuditSink webhook configuration service reference.
  - Added port configuration to CRD Conversion webhook configuration service reference.
  - Added port configuration to kube-aggregator service reference.
- `kubect1 get -w` now prints custom resource definitions with custom print columns (#76161, @liggitt)
- Fixes bug in DaemonSetController causing it to stop processing some DaemonSets for 5 minutes after node removal. (#76060, @krzysztof-jastrzebski)
- no (#75820, @YoubingLi)
- Use stdlib to log stack trace when a panic occurs (#75853, @roycaiwh)
- Fixes a NPD bug on GCI, so that it disables glog writing to files for log-counter (#76211, @wangzhen127)
- Tolerations with the same key and effect will be merged into one which

has the value of the latest toleration for best effort pods. (#75985, @ravisantoshgudimetla)

- Fix empty array expansion error in cluster/gce/util.sh (#76111, @kewu1992)
- kube-proxy no longer automatically cleans up network rules created by running kube-proxy in other modes. If you are switching the mode that kube-proxy is in running in (EG: iptables to IPVS), you will need to run `kube-proxy --cleanup`, or restart the worker node (recommended) before restarting kube-proxy. (#76109, @vllry)
  - If you are not switching kube-proxy between different modes, this change should not require any action.
- Adds a new “storage\_operation\_status\_count” metric for kube-controller-manager and kubelet to count success and error statuses. (#75750, @msau42)
- GCE/Windows: disable stackdriver logging agent to prevent node startup failures (#76099, @yujuhong)
- StatefulSet controllers no longer force a resync every 30 seconds when nothing has changed. (#75622, @jonsabo)
- Ensures the conformance test image saves results before exiting when ginkgo returns non-zero value. (#76039, @johnSchnake)
- Add `-image-repository` flag to “kubeadm config images”. (#75866, @jmkeyes)
- Paginate requests from the kube-apiserver watch cache to etcd in chunks. (#75389, @jpbetz)
  - Paginate reflector init and resync List calls that are not served by watch cache.
- `k8s.io/kubernetes` and published components (like `k8s.io/client-go` and `k8s.io/api`) now publish go module files containing dependency version information. See <http://git.k8s.io/client-go/INSTALL.md#go-modules> for details on consuming `k8s.io/client-go` using go modules. (#74877, @liggitt)
- give users the option to suppress detailed output in integration test (#76063, @Huang-Wei)
- CSI alpha CRDs have been removed (#75747, @msau42)
- Fixes a regression proxying responses from aggregated API servers which could cause watch requests to hang until the first event was received (#75887, @liggitt)
- Support specify the Resource Group of Route Table when update Pod network route (Azure) (#75580, @suker200)
- Support parsing more v1.Taint forms. `key:effect`, `key=:effect-` are now accepted. (#74159, @dlipovetsky)
- Resource list requests for PartialObjectMetadata now correctly return list metadata like the resourceVersion and the continue token. (#75971, @smarterclayton)
- `StubDomains` and `Upstreamnameserver` which contains a service name will be omitted while translating to the equivalent CoreDNS config. (#75969,

- @rajansandeep)
- Count PVCs that are unbound towards attach limit (#73863, @gnufied)
- Increased verbose level for local openapi aggregation logs to avoid flooding the log during normal operation (#75781, @roycaiHW)
- In the 'kubectl describe' output, the fields with names containing special characters are displayed as-is without any pretty formatting. (#75483, @gsadhani)
- Support both JSON and YAML for scheduler configuration. (#75857, @danielqsj)
- kubeadm: fix "upgrade plan" not defaulting to a "stable" version if no version argument is passed (#75900, @neolit123)
- clean up func podTimestamp in queue (#75754, @denkensk)
- The AWS credential provider can now obtain ECR credentials even without the AWS cloud provider or being on an EC2 instance. Additionally, AWS credential provider caching has been improved to honor the ECR credential timeout. (#75587, @tiffanyfay)
- Add completed job status in Cronjob event. (#75712, @danielqsj)
- kubeadm: implement deletion of multiple bootstrap tokens at once (#75646, @bart0sh)
- GCE Windows nodes will rely solely on kubernetes and kube-proxy (and not the GCE agent) for network address management. (#75855, @pjh)
- kubeadm: preflight checks on external etcd certificates are now skipped when joining a control-plane node with automatic copy of cluster certificates (-certificate-key) (#75847, @fabriziopandini)
- [stackdriver addon] Bump prometheus-to-sd to v0.5.0 to pick up security fixes. (#75362, @serathius)
  - [fluentd-gcp addon] Bump fluentd-gcp-scaler to v0.5.1 to pick up security fixes.
  - [fluentd-gcp addon] Bump event-exporter to v0.2.4 to pick up security fixes.
  - [fluentd-gcp addon] Bump prometheus-to-sd to v0.5.0 to pick up security fixes.
  - [metatada-proxy addon] Bump prometheus-to-sd v0.5.0 to pick up security fixes.
- Support describe pod with inline csi volumes (#75513, @cwdsuzhou)
- Object count quota is now supported for namespaced custom resources using the count/. syntax. (#72384, @zhouhaibing089)
- In case kubeadm can't access the current Kubernetes version remotely and fails to parse the git-based version it falls back to a static predefined value of k8s.io/kubernetes/cmd/kubeadm/app/constants.CurrentKubernetesVersion. (#72454, @rojkov)
- Fixed a potential deadlock in resource quota controller Enabled recording partial usage info for quota objects specifying multiple resources, when only some of the resources' usage can be determined. (#74747, @liggitt)
- CRI API will now be available in the kubernetes/cri-api repository (#75531, @dims)

- Support vSphere SAML token auth when using Zones (#75515, @dougml)
- Transition service account controller clients to TokenRequest API (#72179, @WanLinghao)
- kubeadm: reimplemented IPVS Proxy check that produced confusing warning message. (#75036, @bart0sh)
- Allow to read OpenStack user credentials from a secret instead of a local config file. (#75062, @Fedosin)
- watch can now be enabled for events using the flag `-watch-cache-sizes` on kube-apiserver (#74321, @yastij)
- kubeadm: Support for deprecated old kubeadm v1alpha3 config is totally removed. (#75179, @rostri)
- The Kubelet now properly requests protobuf objects where they are supported from the apiserver, reducing load in large clusters. (#75602, @smarterclayton)
- Add name validation for dynamic client methods in client-go (#75072, @lblackstone)
- Users may now execute `get-kube-binaries.sh` to request a client for an OS/Arch unlike the one of the host on which the script is invoked. (#74889, @akutz)
- Move config local to controllers in kube-controller-manager (#72800, @stewart-yu)
- Fix some potential deadlocks and file descriptor leaking for inotify watches. (#75376, @cpuguy83)
- [IPVS] Introduces flag `ipvs-strict-arp` to configure stricter ARP sysctls, defaulting to false to preserve existing behaviors. This was enabled by default in 1.13.0, which impacted a few CNI plugins. (#75295, @lbernail)
- [IPVS] Allow for transparent kube-proxy restarts (#75283, @lbernail)
- Replace `*_admission_latencies_milliseconds_summary` and `*_admission_latencies_milliseconds` metrics due to reporting wrong unit (was labelled milliseconds, but reported seconds), and multiple naming guideline violations (units should be in base units and “duration” is the best practice labelling to measure the time a request takes). Please convert to use `*_admission_duration_seconds` and `*_admission_duration_seconds_summary`, these now report the unit as described, and follow the instrumentation best practices. (#75279, @danielqsj)
- Reset exponential backoff when storage operation changes (#75213, @gnufied)
- Watch will now support converting response objects into Table or PartialObjectMetadata forms. (#71548, @smarterclayton)
- N/A (#74974, @goodluckbot)
- kubeadm: fix the machine readability of “kubeadm token create --print-join-command” (#75487, @displague)
- Update Cluster Autoscaler to 1.14.0; changelog: <https://github.com/kubernetes/autoscaler/releases/tag/cluster-autoscaler-1.14.0> (#75480, @losipiuk)