- v1.23.5
  - Downloads for v1.23.5
    - Source Code
    - Client Binaries
    - Server Binaries
    - Node Binaries
    - Container Images
  - Changelog since v1.23.4
  - Changes by Kind
    - API Change
    - Feature
    - Bug or Regression
  - Dependencies
    - Added
    - Changed
    - Removed
- v1.23.4
  - Downloads for v1.23.4
    - Source Code
    - Client Binaries
    - Server Binaries
    - Node Binaries
    - Container Images
  - Changelog since v1.23.3
  - Changes by Kind
    - API Change
    - Feature
    - Bug or Regression
  - Dependencies
    - Added
    - Changed
    - Removed
- v1.23.3
  - Downloads for v1.23.3
    - Source Code
    - Client Binaries
    - Server Binaries
    - Node Binaries
    - Container Images
  - Changelog since v1.23.2
  - Changes by Kind
    - Feature
    - Bug or Regression
  - Dependencies
    - Added
    - Changed

        * Removed
- v1.23.2
  - Downloads for v1.23.2
    * Source Code
    * Client Binaries
    * Server Binaries
    * Node Binaries
  - Changelog since v1.23.1
  - Changes by Kind
    * Feature
    * Bug or Regression
    * Other (Cleanup or Flake)
  - Dependencies
    * Added
    * Changed
    * Removed
- v1.23.1
  - Downloads for v1.23.1
    * Source Code
    * Client Binaries
    * Server Binaries
    * Node Binaries
  - Changelog since v1.23.0
  - Changes by Kind
    * Feature
    * Bug or Regression
  - Dependencies
    * Added
    * Changed
    * Removed
- v1.23.0
  - Downloads for v1.23.0
    * Source Code
    * Client Binaries
    * Server Binaries
    * Node Binaries
  - Changelog since v1.22.0
  - What's New (Major Themes)
    * Deprecation of FlexVolume
    * Deprecation of klog specific flags
    * Software Supply Chain SLSA Level 1 Compliance in the Kubernetes Release Process
    * IPv4/IPv6 Dual-stack Networking graduates to GA
    * HorizontalPodAutoscaler v2 graduates to GA
    * Generic Ephemeral Volume feature graduates to GA
    * Skip Volume Ownership change graduates to GA

        * Allow CSI drivers to opt-in to volume ownership and permission change graduates to GA
        * PodSecurity graduates to Beta
        * Container Runtime Interface (CRI) v1 is default
        * Structured logging graduate to Beta
        * Simplified Multi-point plugin configuration for scheduler
        * CSI Migration updates
    - Urgent Upgrade Notes
        * (No, really, you MUST read this before you upgrade)
    - Changes by Kind
        * Deprecation
        * API Change
        * Feature
        * Documentation
        * Failing Test
        * Bug or Regression
        * Other (Cleanup or Flake)
    - Dependencies
        * Added
        * Changed
        * Removed
- v1.23.0-rc.1
    - Downloads for v1.23.0-rc.1
        * Source Code
        * Client Binaries
        * Server Binaries
        * Node Binaries
    - Changelog since v1.23.0-rc.0
    - Changes by Kind
        * Bug or Regression
    - Dependencies
        * Added
        * Changed
        * Removed
- v1.23.0-rc.0
    - Downloads for v1.23.0-rc.0
        * Source Code
        * Client Binaries
        * Server Binaries
        * Node Binaries
    - Changelog since v1.23.0-beta.0
    - Changes by Kind
        * API Change
        * Feature
        * Bug or Regression
    - Dependencies

        * Added
        * Changed
        * Removed
- v1.23.0-beta.0
  - Downloads for v1.23.0-beta.0
    * Source Code
    * Client Binaries
    * Server Binaries
    * Node Binaries
  - Changelog since v1.23.0-alpha.4
  - Urgent Upgrade Notes
    * (No, really, you MUST read this before you upgrade)
  - Changes by Kind
    * Deprecation
    * API Change
    * Feature
    * Documentation
    * Bug or Regression
    * Other (Cleanup or Flake)
  - Dependencies
    * Added
    * Changed
    * Removed
- v1.23.0-alpha.4
  - Downloads for v1.23.0-alpha.4
    * Source Code
    * Client Binaries
    * Server Binaries
    * Node Binaries
  - Changelog since v1.23.0-alpha.3
  - Changes by Kind
    * Deprecation
    * API Change
    * Feature
    * Failing Test
    * Bug or Regression
    * Other (Cleanup or Flake)
  - Dependencies
    * Added
    * Changed
    * Removed
- v1.23.0-alpha.3
  - Downloads for v1.23.0-alpha.3
    * Source Code
    * Client Binaries
    * Server Binaries

        * Node Binaries
    - Changelog since v1.23.0-alpha.2
    - Changes by Kind
        * Deprecation
        * API Change
        * Feature
        * Bug or Regression
        * Other (Cleanup or Flake)
    - Dependencies
        * Added
        * Changed
        * Removed
- v1.23.0-alpha.2
    - Downloads for v1.23.0-alpha.2
        * Source Code
        * Client Binaries
        * Server Binaries
        * Node Binaries
    - Changelog since v1.23.0-alpha.1
    - Changes by Kind
        * Deprecation
        * API Change
        * Feature
        * Documentation
        * Bug or Regression
        * Other (Cleanup or Flake)
    - Dependencies
        * Added
        * Changed
        * Removed
- v1.23.0-alpha.1
    - Downloads for v1.23.0-alpha.1
        * Source Code
        * Client Binaries
        * Server Binaries
        * Node Binaries
    - Changelog since v1.22.0
    - Urgent Upgrade Notes
        * (No, really, you MUST read this before you upgrade)
    - Changes by Kind
        * Deprecation
        * API Change
        * Feature
        * Documentation
        * Bug or Regression
        * Other (Cleanup or Flake)

- Dependencies
  - Added
  - Changed
  - Removed

v1.23.5

Downloads for v1.23.5

Source Code

filename	sha512 hash
kubernetes.tar.gz	ced23c737deb52c9e84af8d2937b19d13822c05d588c29bde120a125c97276ea1f00
kubernetes-src.tar.gz	7fe3cf10bb534a26ee74fa1eedad0c98d874d8de0b8e2c91ed10ebf880e74968bd39c

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	0c5dfa5cd898aba6599273da7c16aa81f11d0e3a031d92820c98daabb2d2372c8a1c
kubernetes-client-darwin-arm64.tar.gz	f41e58a9118378685ff42499d082f34bed72a23ab55c1e94cd6ec209aad8e5de943c9
kubernetes-client-linux-386.tar.gz	795f9f68447b36ed912cad4b3f874780bbc28ef7dd34881927467ee42961563a8e6cb
kubernetes-client-linux-amd64.tar.gz	51f5679a0cb11a65f25c3479bbfdfd21c4d0acd8814d3cbaf5aaeea7682178a3820c3
kubernetes-client-linux-arm.tar.gz	056d62df16a9725c7ae8b072cadb4b713bbd2230fff95d777721a951b6a1443c4809
kubernetes-client-linux-arm64.tar.gz	a6b5b19a71e971cdfb0b4819add8f7ef3c24a99b6201b67f52ef6c65787a4d9008ba0
kubernetes-client-linux-ppc64le.tar.gz	969d000f87e991755f91f9b16c114c8606d342f669625111609c1991537e7085eef6c2
kubernetes-client-linux-s390x.tar.gz	64a1bb89a47a37e7de1bc8835963d8ef3253c86306e5c4ef4d6b2609699fa5dce1d8
kubernetes-client-windows-386.tar.gz	381d1602538fd7926758fad59a64dba6fa560ecc48593cb55f7b3bcb494ac221dab8
kubernetes-client-windows-amd64.tar.gz	a794fc29d9d2de0d5550a05dd7712b91dd39dc6c75bd9f291c25fb4acd3a5b6fcfae
kubernetes-client-windows-arm64.tar.gz	f4225d21f12a270019c7a96330f14159fe8a34b869370deeff3920b8dee3cd78e91736

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	063ad74fb1463ee7a7bf4fb746eef1e02980c170cfa89c93444bee0841a84133bdbe9
kubernetes-server-linux-arm.tar.gz	baa1a310236fc5baad609285fc4717913791cbad920dca17d8736e0052af9cad07ee
kubernetes-server-linux-arm64.tar.gz	b3388b6da8fcbbaa30ac881f0f0dbf6ca501bd5fc52aca33174025fe6234af2872ab1
kubernetes-server-linux-ppc64le.tar.gz	1eab49c6ad3bc7f368b2756239f60b59cb946f6bf56974a5c62688f5bfc5175e2d4ae
kubernetes-server-linux-s390x.tar.gz	3abcaa6fda41b19a0b5e2627e93b0004759d291ea22c8698008f0924a7c8a5c2aece

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	57eeae81081e06e35484b353be04f18bf5c2556175a0355d63cbe3eea80d51decfae2
kubernetes-node-linux-arm.tar.gz	26510f1f342efa97d3a340db699f8d18d3b8430e082ff32c4596fc3efb629cdc0d427a
kubernetes-node-linux-arm64.tar.gz	70a73dc630df6fe60682e5379624116607a6fef571f17423de309d1ce20895eb35847
kubernetes-node-linux-ppc64le.tar.gz	ebf98d17dc9ffba9ab895bf4877099563cc01ae930b9ec0342936ec53dd6b5335cb2f
kubernetes-node-linux-s390x.tar.gz	708a9101cf73f5c78cd7d7199833b5f2f74a7cca8a4f1e0db629e3a47250a3e533826
kubernetes-node-windows-amd64.tar.gz	8aa1ad4a60edc6b677f21509eb6120dae4bd396317f28ef2d73a49986e3aafb899a5

Container Images

All container images are available as manifest lists and support the described architectures. It is also possible to pull a specific architecture directly by adding the "-$ARCH" suffix to the container image name.

name	architectures
k8s.gcr.io/conformance:v1.23.5	amd64, arm, arm64, ppc64le, s390x
k8s.gcr.io/kube-apiserver:v1.23.5	amd64, arm, arm64, ppc64le, s390x
k8s.gcr.io/kube-controller-manager:v1.23.5	amd64, arm, arm64, ppc64le, s390x

name	architectures
k8s.gcr.io/kube-proxy:v1.23.5	amd64, arm, arm64, ppc64le, s390x
k8s.gcr.io/kube-scheduler:v1.23.5	amd64, arm, arm64, ppc64le, s390x

Changelog since v1.23.4

Changes by Kind

API Change

- Fixes a regression in v1beta1 PodDisruptionBudget handling of "strategic merge patch"-type API requests for the `selector` field. Prior to 1.21, these requests would merge `matchLabels` content and replace `matchExpressions` content. In 1.21, patch requests touching the `selector` field started replacing the entire selector. This is consistent with server-side apply and the v1 PodDisruptionBudget behavior, but should not have been changed for v1beta1. (#108139, @liggitt) [SIG Auth and Testing]

Feature

- Kubernetes is now built with Golang 1.17.8 (#108559, @cpanato) [SIG Cloud Provider, Instrumentation, Release and Testing]

Bug or Regression

- Bump sigs.k8s.io/apiserver-network-proxy/konnectivity-client to v0.0.30, fixing goroutine leaks in kube-apiserver. (#108438, @andrewsykim) [SIG API Machinery, Auth and Cloud Provider]
- Fix kubectl config flags incorrectly setting burst and discovery limits (#108401, @ulucinar) [SIG CLI]
- Fix static pod restarts in cases where the container is not present. (#108164, @rphillips) [SIG Node]
- Fixes a bug where a partial EndpointSlice update could cause node name information to be dropped from endpoints that were not updated. (#108201, @robscott) [SIG Network]
- Fixes a regression in the kubelet restarting static pods. (#107931, @rphillips) [SIG Node and Testing]
- Fixes error handling in a kubectl method used in downstream packages. (#107938, @heybronson) [SIG CLI]
- Increase Azure ACR credential provider timeout (#108209, @andyzhangx) [SIG Cloud Provider]
- Kube-apiserver: removed apf_fd from server logs (added in 1.23.0) which could contain data identifying the requesting user (#108634, @jupblb)

[SIG API Machinery and Scalability]

Dependencies

Added

Nothing has changed.

Changed

- sigs.k8s.io/apiserver-network-proxy/konnectivity-client: v0.0.27 → v0.0.30

Removed

Nothing has changed.

v1.23.4

Downloads for v1.23.4

Source Code

filename	sha512 hash
kubernetes.tar.gz	c88f633b0b418469aa381cd39da1581236ce3e7df6f983434d4ce95fbd810a63005a
kubernetes-src.tar.gz	ae34f80b5a13f717179954a99bb5d0481b3b9bb1ea27e805341f6911d0cd1b3f2d58

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	6cdbaffea1ed917cddf6c4d7630eb33dddc36c7194421bb291ea7c7a8acdc235ea06
kubernetes-client-darwin-arm64.tar.gz	200025cd65155ef8d6a854a96f8fc28f819dc3d4f7417af4c0da141d31036d48eebeb
kubernetes-client-linux-386.tar.gz	111157e8a37ddf5d746018a4c8c8b16e86f6c2e18b228d9935b5eb2da630959e2236
kubernetes-client-linux-amd64.tar.gz	280c0b62d7b19c23b30e52e2b6d3aad676de003cbe711ee20bf03227362133782ab
kubernetes-client-linux-arm.tar.gz	0d2c1d7091fcfa37b439e3c8ae5643385860e1cf6578fe58df85913b607f356c5e6e2b
kubernetes-client-linux-arm64.tar.gz	fd995845ebd87195b8de662097f423f6c4c71addeefd95387303be16814374eaf0448
kubernetes-client-linux-ppc64le.tar.gz	f88356c7f1bf84eba54ad83de924f35f893b3f8dd6ed78518907f8f69cc85048c3b1eb
kubernetes-client-linux-s390x.tar.gz	899ae660288a6dee79e3e9b64ca8c3c37c8bcdf290748074172f546da785d805f9ed2

filename	sha512 hash
kubernetes-client-windows-386.tar.gz	0bd0219cf5653204ac89cf246521f4ce56f89218ce4ace979504a70947a7aad9c7e783
kubernetes-client-windows-amd64.tar.gz	aad2ae5885801748468334784 9d04baf3bfc7eee6984548383b3bb0150fc8cc25b1a
kubernetes-client-windows-arm64.tar.gz	c5d6a22f8264b38b67c316a44619095c1826e46996ffd93e4a78f6f7cf8d85f6e98352

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	cd5e90d25bd48dbbd1755eb5d328676c6424d191c2936d7477c9dde72cd374389f8
kubernetes-server-linux-arm.tar.gz	cef6eaea9e1f65cbcf8cbfd254d61e6faacd1550bb691ee5cf7f157efc61a4cce6a6abd
kubernetes-server-linux-arm64.tar.gz	a7762d0b380fb06675bad6d4b987e3ddfe0c2b54ce1592c9d2c853d3a8a4d85bbfa
kubernetes-server-linux-ppc64le.tar.gz	e8390ca2a4cf7d2e4b1ab5a42da4a47a0761fea200ee83626c8e81b2790cc6a20b25
kubernetes-server-linux-s390x.tar.gz	1501c640e22acbe03ec06b76ccad8bece1038039f2a7d71d9504843c8173551b04b2

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	9f75ec2e71469bf5d53f0ac305128d7b685f7d2daf4dd3218a8c89b36bd3f3e73f696
kubernetes-node-linux-arm.tar.gz	f9085bf9b750dbebcf713aa4b5166e65aa8a313be468e1e8014e79a516018b930a9d
kubernetes-node-linux-arm64.tar.gz	5e6f30f07f1f49092c2201303d5f3843343c1453cbcb1603617df9aa43bf4549581afd
kubernetes-node-linux-ppc64le.tar.gz	a63da0682d139a9ccc261fef8e9b944b31d8cf020416f5fe3216ea5da6e2b76c65778
kubernetes-node-linux-s390x.tar.gz	3c7e7295f1b133a0469f9a70a56891cef9d990e7959c75f4c5dfa1dbe8f2e6bc689743
kubernetes-node-windows-amd64.tar.gz	434c0a397a10c06bbed9228944741605a97eee3c0fad6f4de341a5ac882439879433

Container Images

All container images are available as manifest lists and support the described architectures. It is also possible to pull a specific architecture directly by adding the "-$ARCH" suffix to the container image name.

name	architectures
k8s.gcr.io/conformance-amd64:v1.23.4	amd64, arm, arm64, ppc64le, s390x
k8s.gcr.io/kube-apiserver:v1.23.4	amd64, arm, arm64, ppc64le, s390x
k8s.gcr.io/kube-controller-manager:v1.23.4	amd64, arm, arm64, ppc64le, s390x
k8s.gcr.io/kube-proxy:v1.23.4	amd64, arm, arm64, ppc64le, s390x
k8s.gcr.io/kube-scheduler:v1.23.4	amd64, arm, arm64, ppc64le, s390x

Changelog since v1.23.3

Changes by Kind

API Change

- Fix OpenAPI serialization of the x-kubernetes-validations field (#108030, @liggitt) [SIG API Machinery]

Feature

- Kubernetes is now built with Golang 1.17.7 (#108100, @xmudrii) [SIG Cloud Provider, Instrumentation, Release and Testing]

Bug or Regression

- Fix Azurefile volumeid collision issue in csi migration (#107575, @andyzhangx) [SIG Cloud Provider and Storage]
- Fix e2e test "Services should respect internalTrafficPolicy=Local Pod and Node, to Pod (hostNetwork: true)" (#107902, @xueqzhan) [SIG Network and Testing]
- Fixes a regression in 1.23 where update requests to previously persisted `Service` objects that have not been modified since 1.19 can be rejected with an incorrect `spec.clusterIPs: Required value` error (#107875, @liggitt) [SIG Network and Testing]
- Fixes static pod add and removes restarts in certain cases. (#107761, @rphillips) [SIG Node]

Dependencies

Added

Nothing has changed.

Changed

Nothing has changed.

Removed

Nothing has changed.

v1.23.3

Downloads for v1.23.3

Source Code

filename	sha512 hash
kubernetes.tar.gz	339d208b86206272494d4f31a384fd8430911a1f8205d4a73605f412b4653fd816e7
kubernetes-src.tar.gz	9530d46878aff36b26b6e8f8bb04c53eb402bd822851f5aa65a2ac6e46064f67820a6

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	96810fc0f294bfe412f06125b257ae4e7d4ddc7d11247435a3f500830af334560b613
kubernetes-client-darwin-arm64.tar.gz	c9d1bad58e46908d190760fb1615188180ca1c734ab4137437e62baa76d92e3b79a
kubernetes-client-linux-386.tar.gz	cbc63934798cb57f0be188346e852fb9ca8da071c38c5b75c8199b5637bc8df7df901
kubernetes-client-linux-amd64.tar.gz	7ee6292a77d7042ed3589f998231985e82abd90143496a65e29b8141dd39dced5f9c
kubernetes-client-linux-arm.tar.gz	36147a76eb16869bc07608f947b78ff15c3d60b73deef208e5c135d93e1a48d17e5f8
kubernetes-client-linux-arm64.tar.gz	fb66a9735f40e2df40388df1f8e17aedd1ac87f7190d76e3eb2a5dd1a11494be56ae3
kubernetes-client-linux-ppc64le.tar.gz	6b3103ade6e0d7d918461ae33978636343b3d122dda5a68287c21eaba7c6abc2de4
kubernetes-client-linux-s390x.tar.gz	13edeefe00b9d9c151ba27a4190a0dfe5fbb7fdf409a83787eb90a0f38be1cfffa7be50
kubernetes-client-windows-386.tar.gz	4c761bf7ddf59a980cc800602c5ae1379d9b39b3a15fc35a0a9b2b34fe18150dfea5e
kubernetes-client-windows-amd64.tar.gz	92cc39b07c62ce5c436f167bb8929f678e362484d7c40b7ef76562ea61db93a38e811
kubernetes-client-windows-arm64.tar.gz	71a136733fc032af8c825c402355b73e1049f3706c8b88fc3c7c78da0d3e0e6e7eb1fe

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	667bc04778070685e5fb5b6281fe78263c5081af0613adfe9a68df0695210cb2273e8
kubernetes-server-linux-arm.tar.gz	dd3dbb478185819a4783ac5ed923282ce5be6d9595228226dd8c8c447ac78e5ab7b
kubernetes-server-linux-arm64.tar.gz	1eab0b0102cf6635a3e92249d95c08ac36baaccc14a612f512009e0aff28d563b4fd8
kubernetes-server-linux-ppc64le.tar.gz	e648010752a1db8d23119ffd44b672f67040e4f841b014df699bfa328c32cf97bb928
kubernetes-server-linux-s390x.tar.gz	0da7c96e2360f8272dd6cab9da7a3a6b516760b39a9fcd38e86365c2b6f7bff0e8398

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	9fd17ed04dc8e13ba5b4d67ec657b8afba721c344bd9785669af3def481dcbd8a2ee
kubernetes-node-linux-arm.tar.gz	8c934bc5b3a545a8a5c2fa9f6df7358127125509ebd9ddf1b074121f78c6520ff0e4af
kubernetes-node-linux-arm64.tar.gz	6319071775767b4eab400f3068ec4c0901756ccb79db63fa9ed6754047bacbaec55c
kubernetes-node-linux-ppc64le.tar.gz	8bf110dac7e4e61ca9a2a513a6e296bf36bfd8dee85e7c2c46f831e4eacdeaf6b238b3
kubernetes-node-linux-s390x.tar.gz	35afc0d3f31b6795a280cb7005cc7c5253e897758aba36f4d4558a0ffc2b34ac4f0e7a
kubernetes-node-windows-amd64.tar.gz	8d687018bf4b70065d4871406702d57f0ef14abb6c8e8bd7635d2d94f8a56aead9a6

Container Images

All container images are available as manifest lists and support the described architectures. It is also possible to pull a specific architecture directly by adding the "-$ARCH" suffix to the container image name.

name	architectures
k8s.gcr.io/conformance-amd64:v1.23.3	amd64, arm, arm64, ppc64le, s390x
k8s.gcr.io/kube-apiserver:v1.23.3	amd64, arm, arm64, ppc64le, s390x
k8s.gcr.io/kube-controller-manager:v1.23.3	amd64, arm, arm64, ppc64le, s390x

name	architectures
k8s.gcr.io/kube-proxy:v1.23.3	amd64, arm, arm64, ppc64le, s390x
k8s.gcr.io/kube-scheduler:v1.23.3	amd64, arm, arm64, ppc64le, s390x

Changelog since v1.23.2

Changes by Kind

Feature

- Kubernetes is now built with Golang 1.17.6 (#107613, @palnabarun) [SIG Cloud Provider, Instrumentation, Release and Testing]

Bug or Regression

- Fix: delete non existing Azure disk issue (#107406, @andyzhangx) [SIG Cloud Provider]
- Fixes a regression in 1.23 that incorrectly pruned data from array items of a custom resource that set `x-kubernetes-preserve-unknown-fields: true` (#107689, @liggitt) [SIG API Machinery]

Dependencies

Added

Nothing has changed.

Changed

- k8s.io/utils: cb0fa31 → 6203023

Removed

Nothing has changed.

v1.23.2

Downloads for v1.23.2

Source Code

filename	sha512 hash
kubernetes.tar.gz	f30d444bd0fc62bd8f7d352dacbdc2fe8904707f3c4f6d719e62f6c9509d5d544a1b2

filename	sha512 hash
kubernetes-src.tar.gz	6a54e73972672415c9d1472764f6f266700da807a6ee9cd530e28a5158d33280702f

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	7371cbf87768e49cbc7ef2776fe037eae2809eefefc5242733da119328d49facf714cb
kubernetes-client-darwin-arm64.tar.gz	a5c8aa760e1cd94e469beb1e73c5abc786bc294278b2e92082dc1afc7ce6e3f8c7f15
kubernetes-client-linux-386.tar.gz	84af3cd829626a8737e38650dd231e158edce11706612f357e19c2e8ef316b31239d6
kubernetes-client-linux-amd64.tar.gz	c8653aa2bce09a29041b7347ce2d45710abd8bc3cfe79265e0aa04a24c2028344f0b
kubernetes-client-linux-arm.tar.gz	35a00f6296ab70d0af2838915b848b9f0df5b778935ab8089b4b180c7406b958a1c9
kubernetes-client-linux-arm64.tar.gz	b00539ec1d993e272b77d4ed3a46be743af645cecc6320c9a017c0c5f4f48dd027237
kubernetes-client-linux-ppc64le.tar.gz	135e2aa8ae000ac6fe88ec8afa0f671147b9d8936def510a53d2a456191805daceaef8
kubernetes-client-linux-s390x.tar.gz	860ad0d3eb064e1ca3b2ce74a296fde1fffe3e620ddfd579f7d022032419bb8f0c7300
kubernetes-client-windows-386.tar.gz	907c3043a1f06912238ee5d91f7d76d9bbc5417363deb3d9f2cef86bd79e72ad4f7d9
kubernetes-client-windows-amd64.tar.gz	1abd5aeeaaff5884238ee39022ef18b91518026c93e4305f25de9d2cc2136fbacb9799
kubernetes-client-windows-arm64.tar.gz	ab5617a9a6b154af6a2329523c2fd356583b8266cf9dd512dccdab5a21a9f82ab5ea

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	7f4cc97250be176a9af0136c25a549fc491caa0ef6300ccca798c599c5ed5182c08ebb
kubernetes-server-linux-arm.tar.gz	572fbad7f0edcb1e1294d81e222f4add78d302d80ea28d7456b8020b53f01fbe54be
kubernetes-server-linux-arm64.tar.gz	971ce29019cf248c167c27fd081458fde613f7f92c5fe4ad3816eb12ab157c30eb7810
kubernetes-server-linux-ppc64le.tar.gz	e1cc8146a2c2a0b5774a3516548323aed948dd03e93545ec11c23be8bc5b23e3395b

filename	sha512 hash
kubernetes-server-linux-s390x.tar.gz	c3f766166e64f878c9077c1d070326da0ce71881b40204d60596921d62d568282f65

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	2fab5c395fbf5f88e56430c51979670db0be5119d79a8a74846900601a313917b916
kubernetes-node-linux-arm.tar.gz	cfe8e40981aec67fbe9cfcba4af18b1ea4f5b4f34e5b9b11cdb6dee076ad8be2b351d
kubernetes-node-linux-arm64.tar.gz	b75d8d1e0b9ba1b06b3f08d67ffbff01784eee8973797d0f1565efda4d61bdb89fbea
kubernetes-node-linux-ppc64le.tar.gz	fc47a39b6cbe9d4237740d060234c065c7bcf33fbb10b3cffc670b6f7eacfb9f44c269
kubernetes-node-linux-s390x.tar.gz	1e9b0d5197b436a14a1e772027c951ba580c5a047acf201102c585190eefc8a8871fe
kubernetes-node-windows-amd64.tar.gz	37d6edc06bb5a555c0594875f917a80f42486e59252c0a8b813b3a935352306a1917

Changelog since v1.23.1

Changes by Kind

Feature

- Kube-apiserver: when merging lists, Server Side Apply now prefers the order of the submitted request instead of the existing persisted object (#107567, @jiahuif) [SIG API Machinery, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Storage and Testing]

Bug or Regression

- An inefficient lock in EndpointSlice controller metrics cache has been reworked. Network programming latency may be significantly reduced in certain scenarios, especially in clusters with a large number of Services. (#107167, @robscott) [SIG Apps and Network]
- Client-go: fix that paged list calls with ResourceVersionMatch set would fail once paging kicked in. (#107334, @fasaxc) [SIG API Machinery]
- Fix a panic when using invalid output format in kubectl create secret command (#107347, @rikatz) [SIG CLI]
- Fix: azuredisk parameter lowercase translation issue (#107429, @andyzhangx) [SIG Cloud Provider and Storage]

- Fixed a bug that a pod's .status.nominatedNodeName is not cleared properly, and thus over-occupied system resources. (#107109, @Huang-Wei) [SIG Scheduling and Testing]
- Fixes a rare race condition handling requests that timeout (#107458, @liggitt) [SIG API Machinery]
- Mount-utils: Detect potential stale file handle (#106988, @andyzhangx) [SIG Storage]
- The feature gate was mentioned as `csiMigrationRBD` where it should have been `CSIMigrationRBD` to be in parity with other migration plugins. This release correct the same and keep it as `CSIMigrationRBD`.

  users who have configured this feature gate as `csiMigrationRBD` has to reconfigure the same to `CSIMigrationRBD` from this release. (#107554, @humblec) [SIG Storage]

Other (Cleanup or Flake)

- Updates konnectivity-network-proxy to v0.0.27. This includes a memory leak fix for the network proxy (#107037, @jdnurme) [SIG API Machinery, Auth and Cloud Provider]

Dependencies

Added

Nothing has changed.

Changed

- sigs.k8s.io/apiserver-network-proxy/konnectivity-client: v0.0.25 → v0.0.27
- sigs.k8s.io/structured-merge-diff/v4: v4.1.2 → v4.2.1

Removed

Nothing has changed.

v1.23.1

Downloads for v1.23.1

Source Code

filename	sha512 hash
kubernetes.tar.gz	d7b53be1a9695143b780fb9ff1271c65dd1584e09ef77fe5aa3db4f965a9a7a8b59af
kubernetes-src.tar.gz	00e07c8f2b42bda04f780f74fb5625f52d7a16b99424a0f7a4c67101923eabe495f44

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	b7e858cdb049e710d3961a791d0ae4b0c2309b024f98a80dd470e4e6a2ab30bd2aa
kubernetes-client-darwin-arm64.tar.gz	df441b4757c7ccc3e13145ad264c1de8101e442cf267b3537d2506e9c62f5da4738fc
kubernetes-client-linux-386.tar.gz	3dcc223be7562a78d01e491fe101196d9c644490e4d9a11f5a2314cd25c0f1870ed1c
kubernetes-client-linux-amd64.tar.gz	aaf6c4f2f65b27902ce02069aa5a7c5b195099deb522fbe7638c5458fc1ba6c2fbe2eb
kubernetes-client-linux-arm.tar.gz	5091b2731725a53a9d0db7e45dcd3f534978f6f0361dff13f36e8c22259506df622e25
kubernetes-client-linux-arm64.tar.gz	dbd3ce1ec9cc3e89a0510ce3809966b38fbd95e538b9b9426b9c303e1dbb71eb44c1
kubernetes-client-linux-ppc64le.tar.gz	677e733f714b148478b9576bd8fe56e78e7517b2fcc5b1d276e92c958933002b9565
kubernetes-client-linux-s390x.tar.gz	8019fae5c10b146594e300fb5591eba45df7a637db4bcbea8943bbef37d06f2d349f3
kubernetes-client-windows-386.tar.gz	b9d3831e78220abc15b0384ab3739f4ba105e324270012a2519ffae4b22c963f2eb60
kubernetes-client-windows-amd64.tar.gz	d661b48b7d5dedadcd644a9dd4eb99b756784e43026a39cd837194f8eae5d4356fe
kubernetes-client-windows-arm64.tar.gz	833ba3c0afafc1fa5fd40d20e0450eeb591fe3eb2b73cbcea74fcc029cdf17caabc3a2a

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	be1b895d3b6e7d36d6e8b9415cb9b52bb47d34a3cb289029a8bce8a26933c6cc5c0
kubernetes-server-linux-arm.tar.gz	e5518962fc1543cfba096693c9ca3fb026a11395dd6eabdf50fc577c598e6c546860a9
kubernetes-server-linux-arm64.tar.gz	c546831cca738c3178ff464891d15f84c10d754c1c9b70742b1fa638d108afabf320aa
kubernetes-server-linux-ppc64le.tar.gz	6e72592a8ab51d6e7875c327159918a737deca88e168574b0dae77c08e0325acc575
kubernetes-server-linux-s390x.tar.gz	1092c009c518f28b089c962e33c73f97af2226e5d100856a3ac996f47da4519a4c450

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	77bdd46d93d6dcdb2e5a66ecf0e5f9b6fffe49c53920a36c2e0c4ceb3625631a4a096
kubernetes-node-linux-arm.tar.gz	fb619f27a72cb014e5e97c287d768fbd23bcd21dd8f5d2cc1a4e4d7a21727781ba91
kubernetes-node-linux-arm64.tar.gz	6f3a98d8929f1e7088ad8751dea6a9fe588ff6a7c40d29b5723ebc47f1badc2130ff4a
kubernetes-node-linux-ppc64le.tar.gz	3c8b14d8680612af73f56dbf8b1de4c7c45addf98cda1aa7cdf0b8a0e8f12a95dffe33
kubernetes-node-linux-s390x.tar.gz	6f8a30f6ea0114156e636208ab09de9763ed08844d1278f7d034575ce0b4b486aa3f
kubernetes-node-windows-amd64.tar.gz	a0cf768d92b51d370842dd7b819c20d6fac2bee955763ead4700f095ac0bead030a9

Changelog since v1.23.0

Changes by Kind

Feature

- Kubernetes is now built with Golang 1.17.5
  - golang.org/x/net to v0.0.0-20211209124913-491a49abca63 (#106835, @cpanato) [SIG API Machinery, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Node, Release, Storage and Testing]

Bug or Regression

- Kubeadm: allow the "certs check-expiration" command to not require the existence of the cluster CA key (ca.key file) when checking the expiration of managed certificates in kubeconfig files. (#106931, @neolit123) [SIG Cluster Lifecycle]
- Kubeadm: during execution of the "check expiration" command, treat the etcd CA as external if there is a missing etcd CA key file (etcd/ca.key) and perform the proper validation on certificates signed by the etcd CA. Additionally, make sure that the CA for all entries in the output table is included - for both certificates on disk and in kubeconfig files. (#106926, @neolit123) [SIG Cluster Lifecycle]
- Kubectl: restores `--dry-run`, `--dry-run=true`, and `--dry-run=false` for compatibility with pre-1.23 invocations. (#107021, @liggitt) [SIG CLI and Testing]
- Reverts graceful node shutdown to match 1.21 behavior of setting pods that have not yet successfully completed to "Failed" phase if the GracefulNodeShutdown feature is enabled in kubelet. The GracefulNodeShutdown feature is beta and must be explicitly configured via kubelet config to be enabled in 1.21+. This changes 1.22 and 1.23 behavior on node shutdown to match 1.21. If you do not want pods to be marked terminated on node

shutdown in 1.22 and 1.23, disable the GracefulNodeShutdown feature. (#106900, @bobbypage) [SIG Node and Testing]

Dependencies

Added

Nothing has changed.

Changed

- golang.org/x/net: e898025 → 491a49a

Removed

Nothing has changed.

v1.23.0

Documentation

Downloads for v1.23.0

Source Code

filename	sha512 hash
kubernetes.tar.gz	`850f92f4a4f397773ceabdacdb0513fa3cd2eb8867f7e3697f42bc595c3c710`
kubernetes-src.tar.gz	`ee53eb3b32bc4745a3f58dd0af1a8f4157e74b71b896eb39ae0658f6f3d0497`

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	`ec7acc668cf32ec2ecf9ff515096cfe0d421c096522f4d4f6dd5504046051d6`
kubernetes-client-darwin-arm64.tar.gz	`5c8dcc6c847d44bef1d739015627369b8b7f0b27d96bb0264bac1ea029d3e24`
kubernetes-client-linux-386.tar.gz	`a94aa935b348dfeee09b47f3a34e8cb7b2d7213dc28e8df189a4b8438a317cf`
kubernetes-client-linux-amd64.tar.gz	`82574d81696693510d8becd2a2319d517dda2b424b63c5525299ed24c9f4abe`
kubernetes-client-linux-arm.tar.gz	`8dd15ed487883f76ed869458df3b5e859518491ac5b3aedb7ec95fd6c8ba1bc`
kubernetes-client-linux-arm64.tar.gz	`125f51a712fa4cad241e84a57baa4bc7950b4977bb4f7275ec21e82758ea901`

filename	sha512 hash
kubernetes-client-linux-ppc64le.tar.gz	`ebf7130485c33a59fc81c2a6b8d19b847470f57f4be49ead06e0405a9b3489`
kubernetes-client-linux-s390x.tar.gz	`dc0a122755d096f18de5d33a7596bae3c8cce058d22999c6754377cd074b8d6`
kubernetes-client-windows-386.tar.gz	`d64f72835dca883e666fc44f80db6b75467b5f952bf40f241b8b1034a8b7565`
kubernetes-client-windows-amd64.tar.gz	`915b7e23517dba67db9aa8b20f18f3451897fe7ab2bae1cd64bc22810e38efa`
kubernetes-client-windows-arm64.tar.gz	`2702663c0bc4316e83573c6c262040e72c13c6ea50b9dd042dd8d375e719e87`

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	`633cba8102648735b93d91a9840a39597b3242d2489081e71b0131a9bf246e2`
kubernetes-server-linux-arm.tar.gz	`39eb3f85a46f6c71ba70ffa391e706b6c57c8f9fb7eea95960f944a3fee7883`
kubernetes-server-linux-arm64.tar.gz	`91236a70b0ff67b54c939215ac71a7e03e4202e71d8b11f687fc6406eb54da6`
kubernetes-server-linux-ppc64le.tar.gz	`a41f590fcc271861d73cae14032c51d7674efba48f160550da8be7095240be3`
kubernetes-server-linux-s390x.tar.gz	`2bb2d3087e911e5c296ae194697190470606c1ac761fb3e69533492109d012e`

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	`4b0d9188914f3b8dbb7cab384b9f2a63b5d0f53b78c7c9d4920613e780d17af`
kubernetes-node-linux-arm.tar.gz	`039c77a9a5f7e12d826ded7f8590b9f63c79863fcc463e150848ab6304de171`
kubernetes-node-linux-arm64.tar.gz	`d60c740f2f5b2ffe95bc9d1ea0e26ca6af1aef718d5c498339eabe6a9cc1cdf`
kubernetes-node-linux-ppc64le.tar.gz	`163b33fcab0226e950c2d2415ece74ac840c592ede2e7276babab466ef3ef1c`
kubernetes-node-linux-s390x.tar.gz	`c01db605cc3b744a6a13962e318f94ae66eb221d4ed3758a868452bc610cdcf`
kubernetes-node-windows-amd64.tar.gz	`d5431cd60990bd56649ce11e3c5a72b92a733e6abafaee6517cec333a3dcabc`

Changelog since v1.22.0

What's New (Major Themes)

Deprecation of FlexVolume

FlexVolume is deprecated. Out-of-tree CSI driver is the recommended way to write volume drivers in Kubernetes. See this doc for more information. Maintainers of FlexVolume drivers should implement a CSI driver and move users of FlexVolume to CSI. Users of FlexVolume should move their workloads to CSI driver.

Deprecation of klog specific flags

To simplify the code base, several logging flags got marked as deprecated in Kubernetes 1.23. The code which implements them will be removed in a future release, so users of those need to start replacing the deprecated flags with some alternative solutions.

Software Supply Chain SLSA Level 1 Compliance in the Kubernetes Release Process

Kubernetes releases are now generating provenance attestation files describing the staging and release phases of the release process and artifacts are verified as they are handed over from one phase to the next. This final piece completes the work needed to comply with Level 1 of the SLSA security framework (Supply-chain Levels for Software Artifacts).

IPv4/IPv6 Dual-stack Networking graduates to GA

IPv4/IPv6 dual-stack networking graduates to GA. Since 1.21, Kubernetes clusters are enabled to support dual-stack networking by default. In 1.23, the `IPv6DualStack` feature gate is removed. The use of dual-stack networking is not mandatory. Although clusters are enabled to support dual-stack networking, Pods and Services continue to default to single-stack. To use dual-stack networking: Kubernetes nodes have routable IPv4/IPv6 network interfaces, a dual-stack capable CNI network plugin is used, Pods are configured to be dual-stack and Services have their `.spec.ipFamilyPolicy` field set to either `PreferDualStack` or `RequireDualStack`.

HorizontalPodAutoscaler v2 graduates to GA

Version 2 of the HorizontalPodAutoscaler API graduates to stable in the 1.23 release. The HorizontalPodAutoscaler `autoscaling/v2beta2` API is deprecated in favor of the new `autoscaling/v2` API, which the Kubernetes project recommends for all use cases.

This release does *not* deprecate the v1 HorizontalPodAutoscaler API.

Generic Ephemeral Volume feature graduates to GA

The generic ephemeral volume feature moved to GA in 1.23. This feature allows any existing storage driver that supports dynamic provisioning to be used as an ephemeral volume with the volume's lifecycle bound to the Pod. All StorageClass parameters for volume provisioning and all features supported with PersistentVolumeClaims are supported.

Skip Volume Ownership change graduates to GA

The feature to configure volume permission and ownership change policy for Pods moved to GA in 1.23. This allows users to skip recursive permission changes on mount and speeds up the pod start up time.

Allow CSI drivers to opt-in to volume ownership and permission change graduates to GA

The feature to allow CSI Drivers to declare support for fsGroup based permissions graduates to GA in 1.23.

PodSecurity graduates to Beta

PodSecurity moves to Beta. `PodSecurity` replaces the deprecated `PodSecurityPolicy` admission controller. `PodSecurity` is an admission controller that enforces Pod Security Standards on Pods in a Namespace based on specific namespace labels that set the enforcement level. In 1.23, the `PodSecurity` feature gate is enabled by default.

Container Runtime Interface (CRI) v1 is default

The Kubelet now supports the CRI `v1` API, which is now the project-wide default. If a container runtime does not support the `v1` API, Kubernetes will fall back to the `v1alpha2` implementation. There is no intermediate action required by end-users, because `v1` and `v1alpha2` do not differ in their implementation. It is likely that `v1alpha2` will be removed in one of the future Kubernetes releases to be able to develop `v1`.

Structured logging graduate to Beta

Structured logging reached its Beta milestone. Most log messages from kubelet and kube-scheduler have been converted. Users are encouraged to try out JSON output or parsing of the structured text format and provide feedback on possible solutions for the open issues, such as handling of multi-line strings in log values.

Simplified Multi-point plugin configuration for scheduler

The kube-scheduler is adding a new, simplified config field for Plugins to allow multiple extension points to be enabled in one spot. The new `multiPoint`

plugin field is intended to simplify most scheduler setups for administrators. Plugins that are enabled via `multiPoint` will automatically be registered for each individual extension point that they implement. For example, a plugin that implements Score and Filter extensions can be simultaneously enabled for both. This means entire plugins can be enabled and disabled without having to manually edit individual extension point settings. These extension points can now be abstracted away due to their irrelevance for most users.

CSI Migration updates

CSI Migration enables the replacement of existing in-tree storage plugins such as `kubernetes.io/gce-pd` or `kubernetes.io/aws-ebs` with a corresponding CSI driver. If CSI Migration is working properly, Kubernetes end users shouldn't notice a difference. After migration, Kubernetes users may continue to rely on all the functionality of in-tree storage plugins using the existing interface. - CSI Migration feature is turned on by default but stays in Beta for GCE PD, AWS EBS, and Azure Disk in 1.23. - CSI Migration is introduced as an Alpha feature for Ceph RBD and Portworx in 1.23.

Urgent Upgrade Notes

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

- Kubeadm: remove the deprecated flag `--experimental-patches` for the `init|join|upgrade` commands. The flag `--patches` is no longer allowed in a mixture with the flag `--config`. Please use the kubeadm configuration for setting patches for a node using `{Init|Join}Configuration.patches`. (#104065, @pacoxu)
- Log messages in JSON format are written to stderr by default now (same as text format) instead of stdout. Users who expected JSON output on stdout must now capture stderr instead or in addition to stdout. (#106146, @pohly) [SIG API Machinery, Architecture, Cluster Lifecycle and Instrumentation]
- Support for the seccomp annotations `seccomp.security.alpha.kubernetes.io/pod` and `container.seccomp.security.alpha.kubernetes.io/[name]` has been deprecated since 1.19, will be dropped in 1.25. Transition to using the `seccompProfile` API field. (#104389, @saschagrunert)
- kube-log-runner is included in release tar balls. It can be used to replace the deprecated `--log-file` parameter. (#106123, @pohly) [SIG API Machinery, Architecture, Cloud Provider, Cluster Lifecycle and Instrumentation]
- Kubernetes is built using golang 1.17. This version of go removes the ability to use a `GODEBUG=x509ignoreCN=0` environment setting to re-enable deprecated legacy behavior of treating the CommonName of X.509 serving certificates as a host name. This behavior has been disabled by default since Kubernetes 1.19 / go 1.15. Serving certificates used by admission webhooks, custom resource conversion webhooks, and aggregated API servers must now include valid Subject Alternative Names.

If you are running Kubernetes 1.22 with `GODEBUG=x509ignoreCN=0` set, check the `apiserver_kube_aggregator_x509_missing_san_total` and `apiserver_webhooks_x509_missing_san_total` metrics for non-zero values to see if the API server is connecting to webhooks or aggregated API servers using certificates that will be considered invalid in Kubernetes 1.23+.

Known Issues

Etcd v3.5.[0-2] data corruption

Data corruption issue was found in etcd v3.5.0 release that was shipped with 1.22 Kubernetes release. Please read up-to-date production recommendations for etcd.

Changes by Kind

Deprecation

- A deprecation notice has been added when using the kube-proxy userspace proxier, which will be removed in v1.25. (#103860) (#104631, @perithompson)
- Added `apiserver_longrunning_requests` metric to replace the soon to be deprecated `apiserver_longrunning_gauge` metric. (#103799, @jyz0309)
- Controller-manager: the following flags have no effect and would be removed in v1.24:
  - `--port`
  - `--address` The insecure port flags `--port` may only be set to 0 now.
- Kube-scheduler: the `--port` and `--address` flags have no effect and would be removed in v1.24. The insecure port flags `--port` may only be set to 0 now. Also `metricsBindAddress` and `healthzBindAddress` fields from `kubescheduler.config.k8s.io/v1beta1` are no-op and expected to be empty. Removed in `kubescheduler.config.k8s.io/v1beta2` completely. (#96345, @ingvagabund) In addition, please be careful that:
  - kube-scheduler MUST start with `--authorization-kubeconfig` and `--authentication-kubeconfig` correctly set to get authentication/authorization working.
  - liveness/readiness probes to kube-scheduler MUST use HTTPS now, and the default port has been changed to 10259.
  - Applications that fetch metrics from kube-scheduler should use a dedicated service account which is allowed to access nonResourceURLs `/metrics`. (#96345, @ingvagabund) [SIG Cloud Provider, Scheduling and Testing]
- Feature-gate `VolumeSubpath` has been deprecated and cannot be disabled. It will be completely removed in 1.25 (#105474, @mauriciopoppe)

- Kubeadm: add a new `output/v1alpha2` API that is identical to the `output/v1alpha1`, but attempts to resolve some internal dependencies with the `kubeadm/v1beta2` API. The `output/v1alpha1` API is now deprecated and will be removed in a future release. (#105295, @neolit123)
- Kubeadm: add the kubeadm specific, Alpha (disabled by default) feature gate UnversionedKubeletConfigMap. When this feature is enabled kubeadm will start using a new naming format for the ConfigMap where it stores the KubeletConfiguration structure. The old format included the Kubernetes version - "kube-system/kubelet-config-1.22", while the new format does not - "kube-system/kubelet-config". A similar formatting change is done for the related RBAC rules. The old format is now DEPRECATED and will be removed after the feature graduates to GA. When writing the ConfigMap kubeadm (init, upgrade apply) will respect the value of UnversionedKubeletConfigMap, while when reading it (join, reset, upgrade), it would attempt to use new format first and fallback to the legacy format if needed. (#105741, @neolit123) [SIG Cluster Lifecycle and Testing]
- Kubeadm: remove the deprecated / NO-OP phase `update-cluster-status` in `kubeadm reset` (#105888, @neolit123)
- Remove 'master' as a valid EgressSelection type in the EgressSelectorConfiguration API. (#102242, @pacoxu)
- Removed `kubectl --dry-run` empty default value and boolean values. `kubectl --dry-run` usage must be specified with `--dry-run=(server|client|none)`. (#105327, @julianvmodesto)
- Removed deprecated metric `scheduler_volume_scheduling_duration_seconds`. (#104518, @dntosas)
- The deprecated `--experimental-bootstrap-kubeconfig` flag has been removed. This can be set via `--bootstrap-kubeconfig`. (#103172, @niulechuan)

API Change

- A new field `omitManagedFields` has been added to both `audit.Policy` and `audit.PolicyRule` so cluster operators can opt in to omit managed fields of the request and response bodies from being written to the API audit log. (#94986, @tkashem) [SIG API Machinery, Auth, Cloud Provider and Testing]
- A small regression in Service updates was fixed. The circumstances are so unlikely that probably nobody would ever hit it. (#104601, @thockin)
- Added a feature gate `StatefulSetAutoDeletePVC`, which allows PVCs automatically created for StatefulSet pods to be automatically deleted. (#99728, @mattcary)
- Client-go impersonation config can specify a UID to pass impersonated uid information through in requests. (#104483, @margocrawf)
- Create HPA v2 from v2beta2 with some fields changed. (#102534, @wangyysde) [SIG API Machinery, Apps, Auth, Autoscaling and Testing]

- Ephemeral containers graduated to beta and are now available by default. (#105405, @verb)
- Fix kube-proxy regression on UDP services because the logic to detect stale connections was not considering if the endpoint was ready. (#106163, @aojea) [SIG API Machinery, Apps, Architecture, Auth, Autoscaling, CLI, Cloud Provider, Contributor Experience, Instrumentation, Network, Node, Release, Scalability, Scheduling, Storage, Testing and Windows]
- If a conflict occurs when creating an object with `generateName`, the server now returns an "AlreadyExists" error with a retry option. (#104699, @vincepri)
- Implement support for recovering from volume expansion failures (#106154, @gnufied) [SIG API Machinery, Apps and Storage]
- In kubelet, log verbosity and flush frequency can also be configured via the configuration file and not just via command line flags. In other commands (kube-apiserver, kube-controller-manager), the flags are listed in the "Logs flags" group and not under "Global" or "Misc". The type for `-vmodule` was made a bit more descriptive (`pattern=N,...` instead of `moduleSpec`). (#106090, @pohly) [SIG API Machinery, Architecture, CLI, Cluster Lifecycle, Instrumentation, Node and Scheduling]
- Introduce `OS` field in the PodSpec (#104693, @ravisantoshgudimetla)
- Introduce `v1beta3` API for scheduler. This version
  - increases the weight of user specifiable priorities. The weights of following priority plugins are increased
    - `TaintTolerations` to 3 - as leveraging node tainting to group nodes in the cluster is becoming a widely-adopted practice
    - `NodeAffinity` to 2
    - `InterPodAffinity` to 2
  - Won't have `HealthzBindAddress`, `MetricsBindAddress` fields (#104251, @ravisantoshgudimetla)
- Introduce v1beta2 for Priority and Fairness with no changes in API spec. (#104399, @tkashem)
- JSON log output is configurable and now supports writing info messages to stdout and error messages to stderr. Info messages can be buffered in memory. The default is to write both to stdout without buffering, as before. (#104873, @pohly)
- JobTrackingWithFinalizers graduates to beta. Feature is enabled by default. (#105687, @alculquicondor)
- Kube-apiserver: Fixes handling of CRD schemas containing literal null values in enums. (#104969, @liggitt)
- Kube-apiserver: The `rbac.authorization.k8s.io/v1alpha1` API version is removed; use the `rbac.authorization.k8s.io/v1` API, available since v1.8. The `scheduling.k8s.io/v1alpha1` API version is removed; use the `scheduling.k8s.io/v1` API, available since v1.14. (#104248, @liggitt)
- Kube-scheduler: support for configuration file version `v1beta1` is removed. Update configuration files to v1beta2(xref: https://github.com/kubernetes/enhancements/issues/2901)

or v1beta3 before upgrading to 1.23. (#104782, @kerthcet)

- KubeSchedulerConfiguration provides a new field `MultiPoint` which will register a plugin for all valid extension points (#105611, @damemi) [SIG Scheduling and Testing]
- Kubelet should reject pods whose OS doesn't match the node's OS label. (#105292, @ravisantoshgudimetla) [SIG Apps and Node]
- Kubelet: turn the KubeletConfiguration v1beta1 `ResolverConfig` field from a `string` to `*string`. (#104624, @Haleygo)
- Kubernetes is now built using go 1.17. (#103692, @justaugustus)
- Performs strict server side schema validation requests via the `fieldValidation=[Strict,Warn,Ignore]`. (#105916, @kevindelgado)
- Promote `IPv6DualStack` feature to stable. Controller Manager flags for the node IPAM controller have slightly changed:
  1. When configuring a dual-stack cluster, the user must specify both `--node-cidr-mask-size-ipv4` and `--node-cidr-mask-size-ipv6` to set the per-node IP mask sizes, instead of the previous `--node-cidr-mask-size` flag.
  2. The `--node-cidr-mask-size` flag is mutually exclusive with `--node-cidr-mask-size-ipv4` and `--node-cidr-mask-size-ipv6`.
  3. Single-stack clusters do not need to change, but may choose to use the more specific flags. Users can use either the older `--node-cidr-mask-size` flag or one of the newer `--node-cidr-mask-size-ipv4` or `--node-cidr-mask-size-ipv6` flags to configure the per-node IP mask size, provided that the flag's IP family matches the cluster's IP family (–cluster-cidr). (#104691, @khenidak)
- Remove `NodeLease` feature gate that was graduated and locked to stable in 1.17 release. (#105222, @cyclinder)
- Removed deprecated `--seccomp-profile-root/seccompProfileRoot` config. (#103941, @saschagrunert)
- Since golang 1.17 both net.ParseIP and net.ParseCIDR rejects leading zeros in the dot-decimal notation of IPv4 addresses, Kubernetes will keep allowing leading zeros on IPv4 address to not break the compatibility. IMPORTANT: Kubernetes interprets leading zeros on IPv4 addresses as decimal, users must not rely on parser alignment to not being impacted by the associated security advisory: CVE-2021-29923 golang standard library "net" - Improper Input Validation of octal literals in golang 1.16.2 and below standard library "net" results in indeterminate SSRF & RFI vulnerabilities. Reference: https://nvd.nist.gov/vuln/detail/CVE-2021-29923 (#104368, @aojea)
- StatefulSet `minReadySeconds` is promoted to beta. (#104045, @ravisantoshgudimetla)
- Support pod priority based node graceful shutdown. (#102915, @wzshiming)
- The "Generic Ephemeral Volume" feature graduates to GA. It is now enabled unconditionally. (#105609, @pohly)
- The Kubelet's `--register-with-taints` option is now available via the

Kubelet config file field registerWithTaints (#105437, @cmssczy) [SIG Node and Scalability]
- The `CSIDriver.Spec.StorageCapacity` can now be modified. (#101789, @pohly)
- The `CSIVolumeFSGroupPolicy` feature has moved from beta to GA. (#105940, @dobsonj)
- The `IngressClass.Spec.Parameters.Namespace` field is now GA. (#104636, @hbagdi)
- The `Service.spec.ipFamilyPolicy` field is now *required* in order to create or update a Service as dual-stack. This is a breaking change from the beta behavior. Previously the server would try to infer the value of that field from either `ipFamilies` or `clusterIPs`, but that caused ambiguity on updates. Users who want a dual-stack Service MUST specify `ipFamilyPolicy` as either "PreferDualStack" or "RequireDualStack". (#96684, @thockin)
- The `TTLAfterFinished` feature gate is now GA and enabled by default. (#105219, @sahilvv)
- The `kube-controller-manager` supports `--concurrent-ephemeralvolume-syncs` flag to set the number of ephemeral volume controller workers. (#102981, @SataQiu)
- The legacy scheduler policy config is removed in v1.23, the associated flags `policy-config-file`, `policy-configmap`, `policy-configmap-namespace` and `use-legacy-policy-config` are also removed. Migrate to Component Config instead, see https://kubernetes.io/docs/reference/scheduling/config/ for details. (#105424, @kerthcet)
- Track the number of Pods with a Ready condition in Job status. The feature is alpha and needs the feature gate JobReadyPods to be enabled. (#104915, @alculquicondor)
- Users of `LogFormatRegistry` in component-base must update their code to use the logr v1.0.0 API. The JSON log output now uses the format from go-logr/zapr (no `v` field for error messages, additional information for invalid calls) and has some fixes (correct source code location for warnings about invalid log calls). (#104103, @pohly)
- Validation rules for Custom Resource Definitions can be written in the CEL expression language using the `x-kubernetes-validations` extension in OpenAPIv3 schemas (alpha). This is gated by the alpha "CustomResourceValidationExpressions" feature gate. (#106051, @jpbetz) [SIG API Machinery, Architecture, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Node, Storage and Testing]

Feature

- (beta feature) If the CSI driver supports the NodeServiceCapability `VOLUME_MOUNT_GROUP` and the `DelegateFSGroupToCSIDriver` feature gate is enabled, kubelet will delegate applying FSGroup to the driver by passing it to NodeStageVolume and NodePublishVolume, regardless of what other FSGroup policies are set. (#106330, @verult) [SIG Storage]

- Add a new `distribute-cpus-across-numa` option to the static `CPUManager` policy. When enabled, this will trigger the `CPUManager` to evenly distribute CPUs across NUMA nodes in cases where more than one NUMA node is required to satisfy the allocation. (#105631, @klueska)
- Add fish shell completion to kubectl. (#92989, @WLun001)
- Add mechanism to load simple sniffer class into fluentd-elasticsearch image (#92853, @cosmo0920)
- Add support for Portworx plugin to csi-translation-lib. Alpha release

  Portworx CSI driver is required to enable migration. This PR adds support of the `CSIMigrationPortworx` feature gate, which can be enabled by:

  1. Adding the feature flag to the kube-controller-manager `--feature-gates=CSIMigrationPortworx=t`
  2. Adding the feature flag to the kubelet config:

  featureGates: CSIMigrationPortworx: true (#103447, @trierra) [SIG API Machinery, Apps, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Network, Node, Release, Scalability, Scheduling, Storage, Testing and Windows]
- Add support to generate client-side binaries for windows/arm64 platform (#104894, @pacoxu)
- Added PowerShell completion generation by running `kubectl completion powershell`. (#103758, @zikhan)
- Added a `Processing` condition for the `workqueue` API. Changed `Shutdown` for the `workqueue` API to wait until the work queue finishes processing all in-flight items. (#101928, @alexanderConstantinescu)
- Added a new feature gate `CustomResourceValidationExpressions` to enable expression validation for Custom Resource. (#105107, @cici37)
- Added a new flag `--append-server-path` to `kubectl proxy` that will automatically append the kube context server path to each request. (#97350, @FabianKramm)
- Added ability for `kubectl wait` to wait on arbitary JSON path (#105776, @lauchokyip)
- Added support for `PodAndContainerStatsFromCRI` feature gate, which allows a user to specify their pod stats must also come from the CRI, not `cAdvisor`. (#103095, @haircommander)
- Added support for setting controller-manager log level online. (#104571, @h4ghhh)
- Added the ability to specify whether to use an RFC7396 JSON Merge Patch, an RFC6902 JSON Patch, or a Strategic Merge Patch to perform

an override of the resources created by `kubectl run` and `kubectl expose`. (#105140, @brianpursley)

- Adding option for `kubectl cp` to resume on network errors until completion, requires tar in addition to tail inside the container image (#104792, @matthyx)
- Adding support for multiple `--from-env-file flags`. (#104232, @lauchokyip)
- Adding support for multiple `--from-env-file` flags. (#101646, @lauchokyip)
- Adds `--as-uid` flag to `kubectl` to allow uid impersonation in the same way as user and group impersonation. (#105794, @margocrawf)
- Adds new [alpha] command 'kubectl events' (#99557, @bboreham)
- Allow node expansion of local volumes. (#102886, @gnufied)
- Allow to build kubernetes with a custom `kube-cross` image. (#104185, @dims)
- Allows users to prevent garbage collection on pinned images (#103299, @wgahnagl) [SIG Node]
- CRI v1 is now the project default. If a container runtime does not support the v1 API, Kubernetes will fall back to the v1alpha2 implementation. (#106501, @ehashman)
- Changed feature `CSIMigrationAWS` to on by default. This feature requires the AWS EBS CSI driver to be installed. (#106098, @wongma7)
- Client-go: pass `DeleteOptions` down to the fake client `Reactor` (#102945, @chenchun)
- Cloud providers can set service account names for cloud controllers. (#103178, @nckturner)
- Display Labels when kubectl describe ingress. (#103894, @kabab)
- Enhance scheduler `VolumeBinding` plugin to handle Lost PVC as `UnschedulableAndUnresolvable` (#105245, @yibozhuang)
- Ensures that volume is deleted from the storage backend when the user tries to delete the PV object manually and the PV `ReclaimPolicy` is set to `Delete`. (#105773, @deepakkinni)
- Expose a `NewUnstructuredExtractor` from apply configurations `meta/v1` package that enables extracting objects into unstructured apply configurations. (#103564, @kevindelgado)

- Feature gate `StorageObjectInUseProtection` has been deprecated and cannot be disabled. It will be completely removed in 1.25 (#105495, @ikeeip)
- Graduating `controller_admission_duration_seconds`, `step_admission_duration_seconds`, `webhook_admission_duration_seconds`, `apiserver_current_inflight_requests` and `apiserver_response_sizes` metrics to stable. (#106122, @rezakrimi) [SIG API Machinery, Instrumentation and Testing]
- Graduating `pending_pods`, `preemption_attempts_total`, `preemption_victims` and `schedule_attempts_total` metrics to stable. Also `e2e_scheduling_duration_seconds` is renamed to `scheduling_attempt_duration_seconds` and the latter is graduated to stable. (#105941, @rezakrimi) [SIG Instrumentation, Scheduling and Testing]
- Health check of kube-controller-manager now includes each controller. (#104667, @jiahuif)
- Integration testing now takes periodic Prometheus scrapes from the etcd server. There is a new script ,`hack/run-prometheus-on-etcd-scrapes.sh`, that runs a containerized Prometheus server against an archive of such scrapes. (#106190, @MikeSpreitzer) [SIG API Machinery and Testing]
- Introduce a feature gate `DisableKubeletCloudCredentialProviders` which allows disabling the in-tree kubelet credential providers.

  The feature gate `DisableKubeletCloudCredentialProviders` is currently in Alpha, which means is currently disabled by default. Once this feature gate moves to beta, in-tree credential providers will be disabled by default, and users will need to migrate to use external credential providers. (#102507, @ostrain)
- Introduces a new metric: `admission_webhook_request_total` with the following labels: name (string) - the webhook name, type (string) - the admission type, operation (string) - the requested verb, code (int) - the HTTP status code, rejected (bool) - whether the request was rejected, namespace (string) - the namespace of the requested resource. (#103162, @rmoriar1)
- Kubeadm: add support for dry running `kubeadm join`. The new flag `kubeadm join --dry-run` is similar to the existing flag for `kubeadm init/upgrade` and allows you to see what changes would be applied. (#103027, @Haleygo)
- Kubeadm: do not check if the `/etc/kubernetes/manifests` folder is empty on joining worker nodes during preflight (#104942, @SataQiu)
- Kubectl will now provide shell completion choices for the `--output/-o` flag (#105851, @marckhouzam)

- Kubelet should reconcile `kubernetes.io/os` and `kubernetes.io/arch` labels on the node object. The side-effect of this is kubelet would deny admission to pod which has nodeSelector with label `kubernetes.io/os` or `kubernetes.io/arch` which doesn't match the underlying OS or arch on the host OS.
  - The label reconciliation happens as part of periodic status update which can be configured via flag `--node-status-update-frequency` (#104613, @ravisantoshgudimetla) [SIG Node, Testing and Windows]
- Kubernetes is now built with Golang 1.16.7. (#104199, @cpanato)
- Kubernetes is now built with Golang 1.17.1. (#104904, @cpanato)
- Kubernetes is now built with Golang 1.17.2 (#105563, @mengjiao-liu)
- Kubernetes is now built with Golang 1.17.3 (#106209, @cpanato) [SIG API Machinery, Cloud Provider, Instrumentation, Release and Testing]
- Move `ConfigurableFSGroupPolicy` to GA and rename metric `volume_fsgroup_recursive_apply` to `volume_apply_access_control` (#105885, @gnufied)
- Move the `GetAllocatableResources` Endpoint in PodResource API to the beta that will make it enabled by default. (#105003, @swatisehgal)
- Moving `WindowsHostProcessContainers` feature to beta (#106058, @marosset)
- Node affinity, Node selectors, and tolerations are now mutable for Jobs that are suspended and have never been started (#105479, @ahg-g)
- Pod template annotations and labels are now mutable for Jobs that are suspended and have never been started (#105980, @ahg-g)
- PodSecurity: in 1.23+ restricted policy levels, Pods and containers which set `runAsUser=0` are forbidden at admission-time; previously, they would be rejected at runtime (#105857, @liggitt)
- Shell completion now knows to continue suggesting resource names when the command supports it. For example `kubectl get pod pod1 <TAB>` will suggest more Pod names. (#105711, @marckhouzam)
- Support to enable Hyper-V in GCE Windows Nodes created with `kube-up` (#105999, @mauriciopoppe)
- The CPUManager policy options are now enabled, and we introduce a graduation path for the new CPU Manager policy options. (#105012, @fromanirh)
- The Pods and Pod controllers that are exempted from the PodSecurity admission process are now marked with the `pod-security.kubernetes.io/exempt:`

`user/namespace/runtimeClass` annotation, based on what caused the exemption.

The enforcement level that allowed or denied a Pod during PodSecurity admission is now marked by the `pod-security.kubernetes.io/enforce-policy` annotation.

The annotation that informs about audit policy violations changed from `pod-security.kubernetes.io/audit` to `pod-security.kubernetes.io/audit-violation`. (#105908, @stlaz)

- The `/openapi/v3` endpoint will be populated with OpenAPI v3 if the feature flag is enabled (#105945, @Jefftree)
- The `CSIMigrationGCE` feature flag is turned `ON` by default (#104722, @leiyiz)
- The `DownwardAPIHugePages` feature is now enabled by default. (#106271, @mysunshine92)
- The `PodSecurity`admission plugin has graduated to `beta` and is enabled by default. The admission configuration version has been promoted to `pod-security.admission.config.k8s.io/v1beta1`. See https://kubernetes.io/docs/concepts/security/pod-security-admission/ for usage guidelines. (#106089, @liggitt)
- The `ServiceAccountIssuerDiscovery` feature gate is removed. It reached GA in Kubernetes 1.21. (#103685, @mengjiao-liu)
- The `constants/variables` from k8s.io for STABLE metrics is now supported. (#103654, @coffeepac)
- The `kubectl describe namespace` now shows Conditions (#106219, @dlipovetsky)
- The etcd container image now supports Windows. (#92433, @claudiubelu)
- The kube-apiserver's Prometheus metrics have been extended with some that describe the costs of handling LIST requests. They are as follows.
  - *apiserver_cache_list_total*: Counter of LIST requests served from watch cache, broken down by resource_prefix and index_name
  - *apiserver_cache_list_fetched_objects_total*: Counter of objects read from watch cache in the course of serving a LIST request, broken down by resource_prefix and index_name
  - *apiserver_cache_list_evaluated_objects_total*: Counter of objects tested in the course of serving a LIST request from watch cache, broken down by resource_prefix
  - *apiserver_cache_list_returned_objects_total*: Counter of objects returned for a LIST request from watch cache, broken down by resource_prefix

  - *apiserver_storage_list_total*: Counter of LIST requests served from etcd, broken down by resource
  - *apiserver_storage_list_fetched_objects_total*: Counter of objects read from etcd in the course of serving a LIST request, broken down by resource
  - *apiserver_storage_list_evaluated_objects_total*: Counter of objects tested in the course of serving a LIST request from etcd, broken down by resource
  - *apiserver_storage_list_returned_objects_total*: Counter of objects returned for a LIST request from etcd, broken down by resource (#104983, @MikeSpreitzer)

- The pause image list now contains Windows Server 2022. (#104438, @nick5616)

- The script `kube-up.sh` installs `csi-proxy v1.0.1-gke.0`. (#104426, @mauriciopoppe)

- This PR adds the following metrics for API Priority and Fairness.

  - **apiserver_flowcontrol_priority_level_seat_count_samples**: histograms of seats occupied by executing requests (both regular and final-delay phases included), broken down by priority_level; the observations are taken once per millisecond.
  - **apiserver_flowcontrol_priority_level_seat_count_watermarks**: histograms of high and low watermarks of number of seats occupied by executing requests (both regular and final-delay phases included), broken down by priority_level.
  - **apiserver_flowcontrol_watch_count_samples**: histograms of number of watches relevant to a given mutating request, broken down by that request's priority_level and flow_schema. (#105873, @MikeSpreitzer) [SIG API Machinery, Instrumentation and Testing]

- Topology Aware Hints have graduated to beta. (#106433, @robscott) [SIG Network]

- Turn on CSIMigrationAzureDisk by default on 1.23 (#104670, @andyzhangx)

- Update the system-validators library to v1.6.0 (#106323, @neolit123) [SIG Cluster Lifecycle and Node]

- Updated Cluster Autosaler to version `1.22.0`. Release notes: https://github.com/kubernetes/autoscaler/releases/tag/cluster-autoscaler-1.22.0. (#104293, @x13n)

- Updates `debian-iptables` to v1.6.7 to pick up CVE fixes. (#104970, @PushkarJ)

- Updates the following images to pick up CVE fixes:

  - `debian` to v1.9.0
  - `debian-iptables` to v1.6.6
  - `setcap` to v2.0.4 (#104142, @mengjiao-liu)
- Upgrade etcd to 3.5.1 (#105706, @uthark) [SIG Cloud Provider, Cluster Lifecycle and Testing]
- When feature gate `JobTrackingWithFinalizers` is enabled:
  - Limit the number of Pods tracked in a single Job sync to avoid starvation of small Jobs.
  - The metric `job_pod_finished_total` counts the number of finished Pods tracked by the Job controller. (#105197, @alculquicondor)
- When using `RequestedToCapacityRatio` ScoringStrategy, empty shape will cause error. (#106169, @kerthcet) [SIG Scheduling]
- `client-go` event library allows customizing spam filtering function. It is now possible to override `SpamKeyFunc`, which is used by event filtering to detect spam in the events. (#103918, @olagacek)
- `client-go`, using log level 9, traces the following events of a HTTP request: - DNS lookup - TCP dialing - TLS handshake - Time to get a connection from the pool - Time to process a request (#105156, @aojea)

Documentation

- Graduating `pod_scheduling_duration_seconds`, `pod_scheduling_attempts`, `framework_extension_point_duration_seconds`, `plugin_execution_duration_seconds` and `queue_incoming_pods_total` metrics to stable. (#106266, @ahg-g) [SIG Instrumentation, Scheduling and Testing]
- The test "[sig-network] EndpointSlice should have Endpoints and EndpointSlices pointing to API Server [Conformance]" only requires that there is an EndpointSlice that references the "kubernetes.default" service, it no longer requires that its named "kubernetes". (#104664, @aojea)
- Update description of `--audit-log-maxbackup` to describe behavior when `value = 0`. (#103843, @Arkessler)
- Users should not rely on unsupported CRON_TZ variable when specifying schedule, both the API server and cronjob controller will emit warnings pointing to https://kubernetes.io/docs/concepts/workloads/controllers/cronjobs/ containing explanation (#106455, @soltysh) [SIG Apps]

Failing Test

- Fixes hostPath storage E2E tests within SELinux enabled env (#104551, @Elbehery)

Bug or Regression

- (PodSecurity admission) errors validating workload resources (deployment, replicaset, etc.) no longer block admission. (#106017, @tallclair) [SIG Auth]
- A pod that the Kubelet rejects was still considered as being accepted for a brief period of time after rejection, which might cause some pods to be rejected briefly that could fit on the node. A pod that is still terminating (but has status indicating it has failed) may also still be consuming resources and so should also be considered. (#104817, @smarterclayton)
- Add Kubernetes Events to the `Kubelet Graceful Shutdown` feature. (#101081, @rphillips)
- Add Pod Security admission metrics: `pod_security_evaluations_total`, `pod_security_exemptions_total`, `pod_security_errors_total` (#105898, @tallclair)
- Add support for Windows Network stats in Containerd (#105744, @jsturtevant) [SIG Node, Testing and Windows]
- Added show-capacity option to `kubectl top node` to show `Capacity` resource usage (#102917, @bysnupy) [SIG CLI]
- Apimachinery: Pretty printed JSON and YAML output is now indented consistently. (#105466, @liggitt)
- Be able to create a Pod with Generic Ephemeral Volumes as raw block devices. (#105682, @pohly)
- CA, certificate and key bundles for the `generic-apiserver` based servers will be reloaded immediately after the files are changed. (#104102, @tnqn)
- Change `kubectl diff --invalid-arg` status code from 1 to 2 to match docs (#105445, @ardaguclu)
- Changed kubectl describe to compute age of an event using the `EventSeries.count` and `EventSeries.lastObservedTime`. (#104482, @harjas27)
- Changes behaviour of kube-proxy start; does not attempt to set specific `sysctl` values (which does not work in recent Kernel versions anymore in non-init namespaces), when the current sysctl values are already set higher. (#103174, @Napsty)
- Client-go uses the same HTTP client for all the generated groups and versions, allowing to share customized transports for multiple groups versions. (#105490, @aojea)
- Disable aufs module for gce clusters. (#103831, @lizhuqi)

- Do not unmount and mount subpath bind mounts during container creation unless bind mount changes (#105512, @gnufied) [SIG Storage]
- Don't prematurely close reflectors in case of slow initialization in watch based manager to fix issues with inability to properly mount secrets/configmaps. (#104604, @wojtek-t)
- Don't use a custom dialer for the kubelet if is not rotating certificates, so we can reuse TCP connections and have only one between the apiserver and the kubelet. If users experiment problems with stale connections using HTTP1.1, they can force the previous behavior of the kubelet by setting the environment variable DISABLE_HTTP2. (#104844, @aojea) [SIG API Machinery, Auth and Node]
- EndpointSlice Mirroring controller now cleans up managed EndpointSlices when a Service selector is added (#105997, @robscott) [SIG Apps, Network and Testing]
- Enhanced event messages for pod failed for exec probe timeout (#106201, @yxxhero) [SIG Node]
- Ensure Pods are removed from the scheduler cache when the scheduler misses deletion events due to transient errors (#106102, @alculquicondor) [SIG Scheduling]
- Ensure `InstanceShutdownByProviderID` return false for creating Azure VMs. (#104382, @feiskyer)
- Evicted and other terminated Pods will no longer revert to the `Running` phase. (#105462, @ehashman)
- Fix `kube-apiserver` metric reporting for the deprecated watch path of `/api/<version>/watch/...`. (#104161, @wojtek-t)
- Fix a regression where the Kubelet failed to exclude already completed pods from calculations about how many resources it was currently using when deciding whether to allow more pods. (#104577, @smarterclayton)
- Fix detach disk issue on deleting vmss node. (#104572, @andyzhangx)
- Fix job controller syncs: In case of conflicts, ensure that the sync happens with the most up to date information. Improves reliability of JobTracking-WithFinalizers. (#105214, @alculquicondor)
- Fix job tracking with finalizers for more than 500 pods, ensuring all finalizers are removed before counting the Pod. (#104666, @alculquicondor)
- Fix pod name of NonIndexed Jobs to not include rogue `-1` substring (#105676, @alculquicondor)
- Fix scoring for `NodeResourcesBalancedAllocation` plugins when nodes have containers with no requests. (#105845, @ahmad-diaa)

- Fix system default topology spreading when nodes don't have zone labels. Pods correctly spread by default now. (#105046, @alculquicondor)
- Fix: do not try to delete a LoadBalancer that does not exist (#105777, @nilo19)
- Fix: ignore non-VMSS error for VMAS nodes in `reconcileBackendPools`. (#103997, @nilo19)
- Fix: leave the probe path empty for TCP probes (#105253, @nilo19)
- Fix: remove VMSS and VMSS instances from SLB backend pool only when necessary (#105839, @nilo19)
- Fix: skip `instance not found` when decoupling VMSSs from LB (#105666, @nilo19)
- Fix: skip case sensitivity when checking Azure NSG rules. (#104384, @feiskyer)
- Fixed a bug that prevents a PersistentVolume that has a PersistentVolumeClaim UID which doesn't exist in local cache but exists in etcd from being updated to the Released phase. (#105211, @xiaopingrubyist)
- Fixed a bug where using `kubectl patch` with `$deleteFromPrimitiveList` on a nonexistent or empty list would add the item to the list (#105421, @brianpursley)
- Fixed a bug which could cause webhooks to have an incorrect copy of the old object after an Apply or Update (#106195, @alexzielenski) [SIG API Machinery]
- Fixed a bug which kubectl would emit duplicate warning messages for flag names that contain an underscore and recommend using a nonexistent flag in some cases. (#103852, @brianpursley)
- Fixed a panic in `kubectl` when creating secrets with an improper output type (#106317, @lauchokyip)
- Fixed a regression setting `--audit-log-path=-` to log to stdout in 1.22 pre-release. (#103875, @andrewrynhard)
- Fixed an issue which didn't append OS's environment variables with the one provided in Credential Provider Config file, which may fail execution of external credential provider binary. See https://github.com/kubernetes/kubernetes/issues/102750. (#103231, @n4j)
- Fixed applying of SELinux labels to CSI volumes on very busy systems (with "error checking for SELinux support: could not get consistent content of /proc/self/mountinfo after 3 attempts") (#105934, @jsafrane) [SIG Storage]

- Fixed architecture within manifest for non `amd64` etcd images. (#104116, @saschagrunert)
- Fixed architecture within manifest for non `amd64` etcd images. (#105484, @saschagrunert)
- Fixed azure disk translation issue due to lower case `managed` kind. (#103439, @andyzhangx)
- Fixed client IP preservation for NodePort service with protocol SCTP in ipvs. (#104756, @tnqn)
- Fixed concurrent map access causing panics when logging timed-out API calls. (#105734, @marseel)
- Fixed consolidate logs for `instance not found` error Fixed skip `not found` nodes when reconciling LB backend address pools (#105188, @nilo19)
- Fixed occasional pod cgroup freeze when using cgroup v1 and systemd driver. (#104528, @kolyshkin)
- Fixed the issue where logging output of kube-scheduler configuration files included line breaks and escape characters. The output also attempted to output the configuration file in one section without showing the user a more readable format. (#106228, @sanchayanghosh) [SIG Scheduling]
- Fixes a bug that could result in the EndpointSlice controller unnecessarily updating EndpointSlices associated with a Service that had Topology Aware Hints enabled. (#105267, @llhuii)
- Fixes a regression that could cause panics in LRU caches in controller-manager, kubelet, kube-apiserver, or client-go. (#104466, @stbenjam)
- Fixes an issue where an admission webhook can observe a v1 Pod object that does not have the `defaultMode` field set in the injected service account token volume in kube-api-server. (#104523, @liggitt)
- Fixes the `should support building a client with a CSR` E2E test to work with clusters configured with short certificate lifetimes (#105396, @liggitt)
- Graceful node shutdown, allow the actual inhibit delay to be greater than the expected inhibit delay. (#103137, @wzshiming)
- Handle Generic Ephemeral Volumes properly in the node limits scheduler filter and the kubelet `hostPath` check. (#100482, @pohly)
- Headless Services with no selector which were created without dual-stack enabled will be defaulted to RequireDualStack instead of PreferDualStack. This is consistent with such Services which are created with dual-stack enabled. (#104986, @thockin)

- Ignore `not a vmss instance` error for VMAS nodes in `EnsureBackendPoolDeleted`. (#105185, @ialidzhikov)
- Ignore the case when comparing azure tags in service annotation. (#104705, @nilo19)
- Ignore the case when updating Azure tags. (#104593, @nilo19)
- Introduce a new server run option 'shutdown-send-retry-after'. If true the HTTP Server will continue listening until all non longrunning request(s) in flight have been drained, during this window all incoming requests will be rejected with a status code `429` and a 'Retry-After' response header. (#101257, @tkashem)
- Kube-apiserver: Avoid unnecessary repeated calls to `admission webhooks` that reject an update or delete request. (#104182, @liggitt)
- Kube-apiserver: Server Side Apply merge order is reverted to match v1.22 behavior until `http://issue.k8s.io/104641` is resolved. (#106661, @liggitt)
- Kube-apiserver: events created via the `events.k8s.io` API group for cluster-scoped objects are now permitted in the default namespace as well for compatibility with events clients and the `v1` API (#100125, @h4ghhh)
- Kube-apiserver: fix a memory leak when deleting multiple objects with a `deletecollection`. (#105606, @sxllwx)
- Kube-proxy health check ports used to listen to `:<port>` for each of the services. This is not needed and opens ports in addresses the cluster user may not have intended. The PR limits listening to all node address which are controlled by `--nodeport-addresses` flag. if no addresses are provided then we default to existing behavior by listening to `:<port>` for each service (#104742, @khenidak)
- Kube-proxy: delete stale conntrack UDP entries for loadbalancer ingress IP. (#104009, @aojea)
- Kube-scheduler now doesn't print any usage message when unknown flag is specified. (#104503, @sanposhiho)
- Kube-up now includes CoreDNS version v1.8.6 (#106091, @rajansandeep) [SIG Cloud Provider]
- Kubeadm: When adding an etcd peer to an existing cluster, if an error is returned indicating the peer has already been added, this is accepted and a `ListMembers` call is used instead to return the existing cluster. This helps to diminish the exponential backoff when the first AddMember call times out, while still retaining a similar performance when the peer has already been added from a previous call. (#104134, @ihgann)

- Kubeadm: do not allow empty `--config` paths to be passed to `kubeadm kubeconfig user` (#105649, @navist2020)
- Kubeadm: fix a bug on Windows worker nodes, where the downloaded KubeletConfiguration from the cluster can contain Linux paths that do not work on Windows and can trip the kubelet binary. (#105992, @hwdef) [SIG Cluster Lifecycle and Windows]
- Kubeadm: switch the preflight check (called 'Swap') that verifies if swap is enabled on Linux hosts to report a warning instead of an error. This is related to the graduation of the NodeSwap feature gate in the kubelet to Beta and being enabled by default in 1.23 - allows swap support on Linux hosts. In the next release of kubeadm (1.24) the preflight check will be removed, thus we recommend that you stop using it - e.g. via `--ignore-preflight-errors` or the kubeadm config. (#104854, @pacoxu)
- Kubelet did not report `kubelet_volume_stats_*` metrics for Generic Ephemeral Volumes. (#105569, @pohly)
- Kubelet's Node Grace Shutdown will terminate probes when shutting down (#105215, @rphillips)
- Kubelet: fixes a file descriptor leak in log rotation (#106382, @rphillips) [SIG Node]
- Kubelet: the printing of flags at the start of kubelet now uses the final logging configuration. (#106520, @pohly)
- Make the etcd client (used by the API server) retry certain types of errors. The full list of retriable (codes.Unavailable) errors can be found at https://github.com/etcd-io/etcd/blob/main/api/v3rpc/rpctypes/error.go#L72 (#105069, @p0lyn0mial)
- Metrics changes: Fix exposed buckets of `scheduler_volume_scheduling_duration_seconds_bucket` metric. (#100720, @dntosas)
- Migrated kubernetes object references (= name + namespace) to structured logging when using JSON as log output format (#104877, @pohly)
- Pass additional flags to subpath mount to avoid flakes in certain conditions. (#104253, @mauriciopoppe)
- Pod SecurityContext sysctls name parameter for update requests where the existing object's sysctl contains slashes and kubelet sysctl whitelist support contains slashes. (#102393, @mengjiao-liu) [SIG Apps, Auth, Node, Storage and Testing]
- Pod will not start when Init container was OOM killed. (#104650, @yxxhero) [SIG Node]

- PodResources interface was changed, now it returns only isolated CPUs (#97415, @AlexeyPerevalov)
- Provide IPv6 support for internal load balancer. (#103794, @nilo19)
- Reduce the number of calls to docker for stats via dockershim. For Windows this reduces the latency when calling docker, for Linux this saves cpu cycles. (#104287, @jsturtevant) [SIG Node and Windows]
- Removed the error message label from the `kubelet_started_pods_errors_total` metric (#105213, @yxxhero)
- Resolves a potential issue with GC and NS controllers which may delete objects after getting a 404 response from the server during its startup. This PR ensures that requests to aggregated APIs will get 503, not 404 while the APIServiceRegistrationController hasn't finished its job. (#104748, @p0lyn0mial)
- Respect grace period when updating static pods. (#104743, @gjkim42) [SIG Node and Testing]
- Revert building binaries with PIE mode. (#105352, @ehashman)
- Reverts adding namespace label to admission metrics (and histogram exansion) due to cardinality issues. (#104033, @s-urbaniak)
- Reverts the CRI API version surfaced by dockershim to `v1alpha2`. (#106808, @saschagrunert)
- Scheduler resource metrics over fractional binary quantities (2.5Gi, 1.1Ki) were incorrectly reported as very small values. (#103751, @y-tag)
- Support more than 100 disk mounts on Windows (#105673, @andyzhangx)
- Support using negative array index in JSON patch replace operations. (#105896, @zqzten)
- The `--leader-elect*` CLI args are now honored in scheduler. (#105915, @Huang-Wei)
- The `--leader-elect*` CLI args are now honored in the scheduler. (#105712, @Huang-Wei)
- The `client-go` dynamic client sets the header `Content-Type: application/json` by default (#104327, @sxllwx)
- The `kube-Proxy` now correctly filters out unready endpoints for Services with Topology. (#106507, @robscott)
- The `pods/binding` subresource now honors `metadata.uid` and `metadata.resourceVersion` (#105913, @aholic)
- The kube-proxy sync_proxy_rules_iptables_total metric now gives the correct number of rules, rather than being off by one.

Fixed multiple iptables proxy regressions introduced in 1.22:

  - When using Services with SessionAffinity, client affinity for an endpoint now gets broken when that endpoint becomes non-ready (rather than continuing until the endpoint is fully deleted).
  - Traffic to a service IP now starts getting rejected (as opposed to merely dropped) as soon as there are no longer any *usable* endpoints, rather than waiting until all of the terminating endpoints have terminated even when those terminating endpoints were not being used.
  - Chains for endpoints that won't be used are no longer output to iptables, saving a bit of memory/time/cpu. (#106030, @danwinship) [SIG Network]

- Topology Aware Hints now ignores unready endpoints when assigning hints. (#106510, @robscott)
- Topology Hints now excludes control plane notes from capacity calculations. (#104744, @robscott)
- Update Go used to build migrate script in etcd image to v1.16.7. (#104301, @serathius)
- Updated json representation for a conflicted taint to `Key=Effect` when a conflicted taint occurs in kubectl taint. (#104011, @manugupt1)
- Upgrades functionality of `kubectl kustomize` as described at https://github.com/kubernetes-sigs/kustomize/releases/tag/kustomize%2Fv4.4.1 (#106389, @natasha41575) [SIG CLI]
- Watch requests that are delegated to aggregated API servers no longer reserve concurrency units (seats) in the API Priority and Fairness dispatcher for their entire duration. (#105511, @benluddy)
- When a static pod file is deleted and recreated while using a fixed UID, the pod was not properly restarted. (#104847, @smarterclayton)
- XFS-filesystems are now force-formatted (option `-f`) in order to avoid problems being formatted due to detection of magic super-blocks. This aligns with the behaviour of formatting of ext3/4 filesystems. (#104923, @davidkarlsen)
- `--log-flush-frequency` had no effect in several commands or was missing. Help and warning texts were not always using the right format for a command (`add_dir_header` instead of `add-dir-header`). Fixing this included cleaning up flag handling in component-base/logs: that package no longer adds flags to the global flag sets. Commands which want the klog and `--log-flush-frequency` flags must explicitly call `logs.AddFlags`; the new `cli.Run` does that for commands. That helper function also covers flag normalization and printing of usage and errors in a consistent

way (print usage text first if parsing failed, then the error). (#105076, @pohly)

Other (Cleanup or Flake)

- All `klog` flags except for `-v` and `-vmodule` are deprecated. Support for `-vmodule` is only guaranteed for the text log format. (#105042, @pohly)
- Better pod events ("waiting for ephemeral volume controller to create the persistentvolumeclaim"" instead of "persistentvolumeclaim not found") when using generic ephemeral volumes. (#104605, @pohly)
- Changed buckets in apiserver_request_duration_seconds metric from [0.05, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4, 0.45, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0,1.25, 1.5, 1.75, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 40, 50, 60] to [0.05, 0.1, 0.2, 0.4, 0.6, 0.8, 1.0, 1.25, 1.5, 2, 3, 4, 5, 6, 8, 10, 15, 20, 30, 45, 60] (#106306, @pawbana) [SIG API Machinery, Instrumentation and Testing]
- Deprecate `apiserver_longrunning_gauge` and `apiserver_register_watchers` in 1.23.0. (#103793, @yan-lgtm)
- Enhanced error message for nodes not selected by scheduler due to pod's PersistentVolumeClaim(s) bound to PersistentVolume(s) that do not exist. (#105196, @yibozhuang)
- Fix an issue in cleaning up `CertificateSigningRequest` objects with an unparseable `status.certificate` field. (#103823, @liggitt)
- Kube-apiserver: requests to node, Service, and Pod `/proxy` subresources with no additional URL path now only automatically redirect GET and HEAD requests. (#95128, @Riaankl)
- Kube-apiserver: sets an upper-bound on the lifetime of idle keep-alive connections and the time to read the headers of incoming requests. (#103958, @liggitt)
- Kubeadm: external etcd endpoints passed in the `ClusterConfiguration` that have Unicode characters are no longer IDNA encoded (converted to Punycode). They are now just URL encoded as per Go's implementation of RFC-3986, have duplicate "/" removed from the URL paths, and passed like that directly to the `kube-apiserver --etcd-servers` flag. If you have etcd endpoints that have Unicode characters, it is advisable to encode them in advance with tooling that is fully IDNA compliant. If you don't do that, the Go standard library (used in k8s and etcd) would do it for you when making requests to the endpoints. (#103801, @gkarthiks)
- Kubeadm: remove the `--port` flag from the manifest for the `kube-controller-manager` since the flag has been a NO-OP since 1.22 and insecure serving was removed for the component. (#104157, @knight42)
- Kubeadm: remove the `--port` flag from the manifest for the kube-scheduler since the flag has been a NO-OP since 1.23 and insecure serving was removed for the component. (#105034, @pacoxu)
- Kubeadm: update references to legacy artifacts locations, the `ci-cross`

prefix has been removed from the version match as it does not exist in the new `gs://k8s-release-dev` bucket. (#103813, @SataQiu)
- Kubectl: deprecated command line flags (like several of the klog flags) now have a `DEPRECATED: <explanation>` comment. (#106172, @pohly) [SIG CLI]
- Kubemark is now built as a portable, static binary. (#106150, @pohly) [SIG Scalability and Testing]
- Migrate `cmd/proxy/{config, healthcheck, winkernel}` to structured logging (#104944, @jyz0309)
- Migrate `pkg/proxy` to structured logging (#104908, @CIPHERTron)
- Migrate `pkg/scheduler/framework/plugins/interpodaffinity/filtering.go`,`pkg/scheduler/frame` `pkg/scheduler/framework/plugins/volumezone/volume_zone.go` to structured logging (#105931, @mengjiao-liu)
- Migrate `pkg/scheduler` to structured logging. (#99273, @yangjun-myfm192085)
- Migrate cmd/proxy/app and pkg/proxy/meta_proxier to structured logging (#104928, @jyz0309)
- Migrated `cmd/kube-scheduler/app/server.go`, `pkg/scheduler/framework/plugins/nodelabel/node` `pkg/scheduler/framework/plugins/nodevolumelimits/csi.go`, `pkg/scheduler/framework/plugins/nodevolumelimits/non_csi.go` to structured logging (#105855, @shivanshu1333)
- Migrated `pkg/proxy/ipvs` to structured logging (#104932, @shivanshu1333)
- Migrated `pkg/proxy/userspace` to structured logging. (#104931, @shivanshu1333)
- Migrated `pkg/proxy` to structured logging (#104891, @shivanshu1333)
- Migrated `pkg/scheduler/framework/plugins/volumebinding/assume_cache.go` to structured logging. (#105904, @mengjiao-liu) [SIG Instrumentation, Scheduling and Storage]
- Migrated `pkg/scheduler/framework/preemption/preemption.go`, `pkg/scheduler/framework/plugins/examples/stateful/stateful.go`, and `pkg/scheduler/framework/plugins/noderesources/resource_allocation.go` to structured logging (#105967, @shivanshu1333) [SIG Instrumentation, Node and Scheduling]
- Migrated pkg/proxy/winuserspace to structured logging (#105035, @shivanshu1333)
- Migrated scheduler file `cache.go` to structured logging (#105969, @shivanshu1333) [SIG Instrumentation and Scheduling]
- Migrated scheduler files `comparer.go`, `dumper.go`, `node_tree.go` to structured logging (#105968, @shivanshu1333) [SIG Instrumentation and Scheduling]
- More detailed logging has been added to the EndpointSlice controller for Topology. (#104741, @robscott)
- Remove deprecated and not supported old cronjob controller. (#106126, @soltysh) [SIG Apps]
- Remove ignore error flag for drain, and set this feature as default (#105571,

@yuzhiquan) [SIG CLI]
- Remove the deprecated flags `--csr-only` and `--csr-dir` from `kubeadm certs renew`. Please use `kubeadm certs generate-csr` instead. (#104796, @RA489)
- Support allocating whole NUMA nodes in the CPUManager when there is not a 1:1 mapping between socket and NUMA node (#102015, @klueska)
- Support for Windows Server 2022 was added to the `k8s.gcr.io/pause:3.6` image. (#104711, @claudiubelu)
- Surface warning when users don't set `propagationPolicy` for jobs while deleting. (#104080, @ravisantoshgudimetla)
- The `AllowInsecureBackendProxy` feature gate is removed. It reached GA in Kubernetes 1.21. (#103796, @mengjiao-liu)
- The `BoundServiceAccountTokenVolume` feature gate that is GA since v1.22 is unconditionally enabled, and can no longer be specified via the `--feature-gates` argument. (#104167, @ialidzhikov)
- The `StartupProbe` feature gate that is GA since v1.20 is unconditionally enabled, and can no longer be specified via the `--feature-gates` argument. (#104168, @ialidzhikov)
- The `SupportPodPidsLimit` and `SupportNodePidsLimit` feature gates that are GA since v1.20 are unconditionally enabled, and can no longer be specified via the `--feature-gates` argument. (#104163, @ialidzhikov)
- The `apiserver` exposes 4 new metrics that allow to track the status of the Service CIDRs allocations: - current number of available IPs per Service CIDR - current number of used IPs per Service CIDR - total number of allocation per Service CIDR - total number of allocation errors per ServiceCIDR (#104119, @aojea)
- The flag `--deployment-controller-sync-period` has been deprecated and will be removed in v1.24. (#103538, @Pingan2017)
- The image `gcr.io/kubernetes-e2e-test-images` will no longer be used in E2E / CI testing, `k8s.gcr.io/e2e-test-images` will be used instead. (#103724, @claudiubelu)
- The kube-proxy image contains `/go-runner` as a replacement for deprecated klog flags. (#106301, @pohly)
- The maximum length of the `CSINode` id field has increased to 256 bytes to match the CSI spec. (#104160, @pacoxu)
- Troubleshooting: informers log handlers that take more than 100 milliseconds to process an object if the `DeltaFIFO` queue starts to grow beyond 10 elements. (#103917, @aojea)
- Update `cri-tools` dependency to v1.22.0. (#104430, @saschagrunert)
- Update `migratecmd/kube-proxy/app` logs to structured logging. (#98913, @yxxhero)
- Update build images to Debian 11 (Bullseye)
  - debian-base:bullseye-v1.0.0
  - debian-iptables:bullseye-v1.0.0
  - go-runner:v2.3.1-go1.17.1-bullseye.0
  - kube-cross:v1.23.0-go1.17.1-bullseye.1

  - setcap:bullseye-v1.0.0
  - cluster/images/etcd: Build 3.5.0-2 image
  - test/conformance/image: Update runner image to base-debian11 (#105158, @justaugustus)
- Update conformance image to use `debian-base:buster-v1.9.0`. (#104696, @PushkarJ)
- `volume.kubernetes.io/storage-provisioner` annotation will be added to dynamic provisioning required PVC. `volume.beta.kubernetes.io/storage-provisioner` annotation is deprecated. (#104590, @Jiawei0227)

Dependencies

Added

- bazil.org/fuse: 371fbbd
- github.com/OneOfOne/xxhash: v1.2.2
- github.com/antlr/antlr4/runtime/Go/antlr: b48c857
- github.com/cespare/xxhash: v1.1.0
- github.com/cncf/xds/go: fbca930
- github.com/getkin/kin-openapi: v0.76.0
- github.com/go-logr/zapr: v1.2.0
- github.com/google/cel-go: v0.9.0
- github.com/google/cel-spec: v0.6.0
- github.com/google/martian/v3: v3.1.0
- github.com/kr/fs: v0.1.0
- github.com/pkg/sftp: v1.10.1
- github.com/spaolacci/murmur3: f09979e
- sigs.k8s.io/json: c049b76

Changed

- cloud.google.com/go/bigquery: v1.4.0 → v1.8.0
- cloud.google.com/go/storage: v1.6.0 → v1.10.0
- cloud.google.com/go: v0.54.0 → v0.81.0
- github.com/GoogleCloudPlatform/k8s-cloud-provider: 7901bc8 → ea6160c
- github.com/Microsoft/go-winio: v0.4.15 → v0.4.17
- github.com/Microsoft/hcsshim: 5eafd15 → v0.8.22
- github.com/benbjohnson/clock: v1.0.3 → v1.1.0
- github.com/bketelsen/crypt: 5cbc8cc → v0.0.4
- github.com/containerd/cgroups: 0dbf7f0 → v1.0.1
- github.com/containerd/containerd: v1.4.4 → v1.4.11
- github.com/containerd/continuity: aaeac12 → v0.1.0
- github.com/containerd/fifo: a9fb20d → v1.0.0
- github.com/containerd/go-runc: 5a6d9f3 → v1.0.0
- github.com/containerd/typeurl: v1.0.1 → v1.0.2
- github.com/coredns/corefile-migration: v1.0.12 → v1.0.14
- github.com/docker/docker: v20.10.2+incompatible → v20.10.7+incompatible

- github.com/envoyproxy/go-control-plane: 668b12f → 63b5d3c
- github.com/evanphx/json-patch: v4.11.0+incompatible → v4.12.0+incompatible
- github.com/go-logr/logr: v0.4.0 → v1.2.0
- github.com/golang/glog: 23def4e → v1.0.0
- github.com/golang/mock: v1.4.4 → v1.5.0
- github.com/google/cadvisor: v0.39.2 → v0.43.0
- github.com/google/pprof: 1ebb73c → cbba55b
- github.com/hashicorp/golang-lru: v0.5.1 → v0.5.0
- github.com/ianlancetaylor/demangle: 5e5cf60 → 28f6c0f
- github.com/json-iterator/go: v1.1.11 → v1.1.12
- github.com/magiconair/properties: v1.8.1 → v1.8.5
- github.com/mitchellh/go-homedir: v1.1.0 → v1.0.0
- github.com/mitchellh/mapstructure: v1.1.2 → v1.4.1
- github.com/modern-go/reflect2: v1.0.1 → v1.0.2
- github.com/opencontainers/runc: v1.0.1 → v1.0.2
- github.com/pelletier/go-toml: v1.2.0 → v1.9.3
- github.com/prometheus/common: v0.26.0 → v0.28.0
- github.com/spf13/afero: v1.2.2 → v1.6.0
- github.com/spf13/cast: v1.3.0 → v1.3.1
- github.com/spf13/cobra: v1.1.3 → v1.2.1
- github.com/spf13/jwalterweatherman: v1.0.0 → v1.1.0
- github.com/spf13/viper: v1.7.0 → v1.8.1
- github.com/yuin/goldmark: v1.3.5 → v1.4.0
- go.opencensus.io: v0.22.3 → v0.23.0
- go.uber.org/zap: v1.17.0 → v1.19.0
- golang.org/x/crypto: 5ea612d → 32db794
- golang.org/x/net: 37e1c6a → e898025
- golang.org/x/oauth2: bf48bf1 → 2bc19b1
- golang.org/x/sys: 59db8d7 → f4d4317
- golang.org/x/term: 6a3ed07 → 6886f2d
- golang.org/x/text: v0.3.6 → v0.3.7
- golang.org/x/tools: v0.1.2 → d4cc65f
- google.golang.org/api: v0.20.0 → v0.46.0
- google.golang.org/appengine: v1.6.5 → v1.6.7
- google.golang.org/genproto: f16073e → fe13028
- google.golang.org/grpc: v1.38.0 → v1.40.0
- google.golang.org/protobuf: v1.26.0 → v1.27.1
- gopkg.in/ini.v1: v1.51.0 → v1.62.0
- honnef.co/go/tools: v0.0.1-2020.1.3 → v0.0.1-2020.1.4
- k8s.io/gengo: b6c5ce2 → 485abfe
- k8s.io/klog/v2: v2.9.0 → v2.30.0
- k8s.io/kube-openapi: 9528897 → e816edb
- k8s.io/system-validators: v1.5.0 → v1.6.0
- k8s.io/utils: 4b05e18 → cb0fa31
- sigs.k8s.io/apiserver-network-proxy/konnectivity-client: v0.0.22 → v0.0.25
- sigs.k8s.io/kustomize/api: v0.8.11 → v0.10.1

- sigs.k8s.io/kustomize/cmd/config: v0.9.13 → v0.10.2
- sigs.k8s.io/kustomize/kustomize/v4: v4.2.0 → v4.4.1
- sigs.k8s.io/kustomize/kyaml: v0.11.0 → v0.13.0

Removed

- cloud.google.com/go/datastore: v1.1.0
- cloud.google.com/go/pubsub: v1.2.0
- github.com/alecthomas/units: f65c72e
- github.com/coreos/bbolt: v1.3.2
- github.com/coreos/etcd: v3.3.13+incompatible
- github.com/coreos/go-systemd: 95778df
- github.com/coreos/pkg: 399ea9e
- github.com/dgrijalva/jwt-go: v3.2.0+incompatible
- github.com/google/martian: v2.1.0+incompatible
- github.com/jpillora/backoff: v1.0.0
- gotest.tools: v2.2.0+incompatible

v1.23.0-rc.1

Downloads for v1.23.0-rc.1

Source Code

filename	sha512 hash
kubernetes.tar.gz	4cf838ebcd3bb756cc604b194dd3b58716b41a34c35f636a7c23af4a501829c7ce23
kubernetes-src.tar.gz	88af717a64f237de86f287c3715540fcaf6fd9e526a715832b395965ae27187319cc89

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	2aa8dbe6fe7926dd78083a243323dd0090f19acb22cc6ab6e7fb74ae3efd494f99274
kubernetes-client-darwin-arm64.tar.gz	8aaaa11ecdefc349a64b12775656c9f1ed9bfdb72e3dac0f651c629f4f113dc701eb01
kubernetes-client-linux-386.tar.gz	03f482611ec7d12b30c03e382e53b1b00d7263882204d146a0fb74185d19eb90487e
kubernetes-client-linux-amd64.tar.gz	bac04a5d242ff32fbed1a7e756107afd68652ed489c405aee026132f8da57107ea929
kubernetes-client-linux-arm.tar.gz	cc3ac01dd58f01e8d85b4c0ef70914331addc5b4abde05175d5194d3754c11b7f113
kubernetes-client-linux-arm64.tar.gz	8fd0109f6ff07656dc0a265248c3fba81cf2faeb3a872dfb4423f14a92bff793e9ca8c33

filename	sha512 hash
kubernetes-client-linux-ppc64le.tar.gz	0610276ae835a9b151ad5ac9b192ef7d15b385279c9676ac4f2dfcb0600cb66dd4dc
kubernetes-client-linux-s390x.tar.gz	bbba68df6895eb722ea7f8678e25e7be6e2d34a50e30c806445515e02b00e3d6982a
kubernetes-client-windows-386.tar.gz	1c41e825e83b0363967af94e759d6f8adb6f77f7f176c804922b089262df933d21528
kubernetes-client-windows-amd64.tar.gz	2b39c66f4d69cdaeff9fa8f46331b2eece1714998df7a9300b6be85e9fec7ccc8cccdc0
kubernetes-client-windows-arm64.tar.gz	77d00160870636703c9604613b6829c3727241616723de638653f5044373ed233608

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	d54cbd2ed123ab30ad8662523a9f28af530bba0fe15b22738dbc2a5c3f6917c7ef4e0
kubernetes-server-linux-arm.tar.gz	835d94a3833e7b3b257f2174840e974f957d17e026dc2e1781f2d4590738afc947a27
kubernetes-server-linux-arm64.tar.gz	1fed95a3649d87390cb266918f5ed1b8fb00b4ef027cf004f6bffb3d05d1f6f84497c4a
kubernetes-server-linux-ppc64le.tar.gz	cb563f6d5625eaa5db4f92b239508c0f30e2c7d9e6200651f23cf59f1962301c211383
kubernetes-server-linux-s390x.tar.gz	a382396ddf43b6a4f5e95a95f58c2618cb63e5d5bbe3d8f8c74bdc1f23855eec14e4a

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	fca9757fe2c67a01841810890fd62fb546c6a7ccb3f475d68a1960a054c0d4db44f71
kubernetes-node-linux-arm.tar.gz	30a29ba0a71d5cf29a359da78c0c42abc1c478d8cb4736b1e4dfb905770f537e170e
kubernetes-node-linux-arm64.tar.gz	066a437d780b0c871e5635246f9434ba9e7652393546f8b3edba83a56e5a431b4e9a
kubernetes-node-linux-ppc64le.tar.gz	8816dc1907a743cf8345acc41f5831d195b8531e313024060a5f322e5ba53061c2878
kubernetes-node-linux-s390x.tar.gz	671e9513d0aeace5352bf22a1522aa64e4f0b041110f6d11663d4fa3c97dc1c60a619
kubernetes-node-windows-amd64.tar.gz	cae457dde9c3bd813b97b2f57912f72cb08668b31700ceb356234ad78183fac45312

Changelog since v1.23.0-rc.0

Changes by Kind

Bug or Regression

- Kube-apiserver: Server Side Apply merge order is reverted to match v1.22 behavior until http://issue.k8s.io/104641 is resolved. (#106661, @liggitt) [SIG API Machinery, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Storage and Testing]
- Reverts the CRI API version surfaced by dockershim to v1alpha2 (#106808, @saschagrunert) [SIG Network and Node]

Dependencies

Added

Nothing has changed.

Changed

- sigs.k8s.io/structured-merge-diff/v4: v4.2.0 → v4.1.2

Removed

Nothing has changed.

v1.23.0-rc.0

Downloads for v1.23.0-rc.0

Source Code

filename	sha512 hash
kubernetes.tar.gz	ede62f7d1bde6a11e60b8ff119366c42902090c5b005ca73590856645c16ff12c904c
kubernetes-src.tar.gz	6103bde6ceeb7b6c40e6e7391731acc4228cf799ee8b7cf612baa8327212a183f16fd

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	0266edfb98cf69c62466c87caa1028510cdb0600dfee9f25ba13b6936935011f6b90e
kubernetes-client-darwin-arm64.tar.gz	8bebf2537a53670a8487ccb43faec62b00439124c99d67ae88c5f1360bb863f03648c
kubernetes-client-linux-386.tar.gz	7cb542707711b5c4cf1402f07d2102b8633b4b75c43be4424f3e15da047badf484b4

filename	sha512 hash
kubernetes-client-linux-amd64.tar.gz	eec960213ccb94b1cf1dc47aaf508eb12c1d04c13474b66960db4e0379d23a59aa48
kubernetes-client-linux-arm.tar.gz	7db536134da64c586058603283d752bc0bd7c2ea63b312513fff95d65bc24f978b24
kubernetes-client-linux-arm64.tar.gz	93a33630fe6bd89fb06f739f7a4184c151c4ac5a8230798b5c3a9137f553f59495e8c
kubernetes-client-linux-ppc64le.tar.gz	afc9ffb6632b4c85837f87d6764e54a8111d4df3a23320294ac0b942dd089789d018
kubernetes-client-linux-s390x.tar.gz	d5c28f9e65d6a910cf6478342c3e1bd968b16820b2aae6d7ab51d1a646a3b4e46dd
kubernetes-client-windows-386.tar.gz	cccb34fd97fb3f05aaf900569bd07772e4ba95f723f7ea71f191926fe05f01b4e608ab
kubernetes-client-windows-amd64.tar.gz	61298763df834a36a1f10c0a45cc7c0b520ad38c2f013fd39e0ab11cb07b7f416b9aa
kubernetes-client-windows-arm64.tar.gz	99d52ce6c6f620464239e4610711daa8d79e0551bab587d9d2342fe315a07fb94b19

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	fff4bdfce528a16abce7d075570bad7e5fd3b64baa5bd154595b44d25945379e4ea6
kubernetes-server-linux-arm.tar.gz	dc777f74f6d6eef8d56d379cad36e535566993df3abf0be5e00cf22790f01f4336cd75
kubernetes-server-linux-arm64.tar.gz	a4d935e6816e6bd14e0378199496446268138 85ef308c7e5ab0a680f71b155cd164c
kubernetes-server-linux-ppc64le.tar.gz	9a69761c04556e246e046e18bd4b875e813aef1a1e01931ad0aef61ad11d741d4a1f
kubernetes-server-linux-s390x.tar.gz	6f64559358d05d659faf79476524101420b6b4e83e27bba11c407624723926adfd14

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	ed3972e5bb9550d0999b4f4b9da315607bfdb349fae9395e23bb36e72c6cc30aa6df
kubernetes-node-linux-arm.tar.gz	c87b42358cc75f362eb5a1b52780ee62fa7c18a8760cf7ee744e1910558ffbe5869fea
kubernetes-node-linux-arm64.tar.gz	34cf8aea703f279559765fdf5c0a079e4679e407134c666082a4ee56d1352c1b66291

filename	sha512 hash
kubernetes-node-linux-ppc64le.tar.gz	86e8bb17b715aea6df3c4ddfd68e4423414ac9a9b86cd38e6272a2226849a456d86
kubernetes-node-linux-s390x.tar.gz	61723328d454ceade01b1ad5e71bf96caae9badd58b02e877833eafae8465cbc9d09
kubernetes-node-windows-amd64.tar.gz	3c22248012c2e301209832ded5ecd20d87eb4350a09592763c7de6b46c821b158ab

Changelog since v1.23.0-beta.0

Changes by Kind

API Change

- Add gRPC probe to Pod.Spec.Container.{Liveness,Readiness,Startup}Probe (#106463, @SergeyKanzhelev) [SIG API Machinery, Apps, CLI, Node and Testing]
- Adds a feature gate StatefulSetAutoDeletePVC, which allows PVCs automatically created for StatefulSet pods to be automatically deleted. (#99728, @mattcary) [SIG API Machinery, Apps, Auth and Testing]
- Performs strict server side schema validation requests via the `fieldValidation=[Strict,Warn,Ignore]` query parameter. (#105916, @kevindelgado) [SIG API Machinery, Apps, Auth, Cloud Provider and Testing]
- Support pod priority based node graceful shutdown (#102915, @wzshiming) [SIG Node and Testing]

Feature

- CRI v1 is now the project default. If a container runtime does not support the v1 API, Kubernetes will fall back to the v1alpha2 implementation. (#106501, @ehashman) [SIG Network, Node and Testing]

Bug or Regression

- Kube-Proxy now correctly filters out unready endpoints for Services with Topology Aware Hints enabled. (#106507, @robscott) [SIG Network]
- Kubelet: the printing of flags at the start of kubelet now uses the final logging configuration (#106520, @pohly) [SIG Node]
- Topology Aware Hints now ignores unready endpoints when assigning hints. (#106510, @robscott) [SIG Apps and Network]

Dependencies

Added

Nothing has changed.

Changed

Nothing has changed.

Removed

Nothing has changed.

v1.23.0-beta.0

Downloads for v1.23.0-beta.0

Source Code

filename	sha512 hash
kubernetes.tar.gz	048cc297840fd70dc571863bbed9da8176a479ca6b8ff17c9a2cc1b1dbf286377d85
kubernetes-src.tar.gz	1d3f6f5bb54b61312934169845417dffc428bed0f51342dc2b0eebf7f16899843b0f60

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	e22ce7199acf369eacf8422c8ee417041289e927bfc03c238f45faec75c2dabd7f8201c
kubernetes-client-darwin-arm64.tar.gz	22fa13ca86eb5837db3844b6b7fd134c3ffa3ba5a008635bfa83613a100fa48b3e233
kubernetes-client-linux-386.tar.gz	8e239ce934d121b21b534a6d521ca02bf1c6709831e181d103c8d86cdab01b29654
kubernetes-client-linux-amd64.tar.gz	e9355264e3ca91da833fe3c8c1dcc55c287a9b813aad91f26b09e6a75f48be57d12cb
kubernetes-client-linux-arm.tar.gz	80e93b6c8cce8221f9a5aba8018fcd95b7ec57728a202fdd158b8df86a733e32d6bb0
kubernetes-client-linux-arm64.tar.gz	769a1aa41988bbf11a11ef40f42c76740fcbe7fe1fd5d6da948729e1a62bf9c4f28101
kubernetes-client-linux-ppc64le.tar.gz	4a9346caef2714f03e65dc3e5e46ade1b311b91ef184b8a47466583e834f44dcdb21c
kubernetes-client-linux-s390x.tar.gz	f2129ea05e581a38bdc2771cfdd92ad990620fabf9655f7343c56541a544aa4c6c1e1
kubernetes-client-windows-386.tar.gz	2dc9459b02f4ed564a7d0e2062e3590c5240debc6a64449d1c714382ded197d5fcf9
kubernetes-client-windows-amd64.tar.gz	e58cb2f87f619d34afbb2c2c0f2bab484970406216698b79129637cb27c5508b2ca4
kubernetes-client-windows-arm64.tar.gz	515bd2e3c95afe613db998ed42ea5456771c488e0963c9fe0328816a6baba09ea4e9

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	adc6c0e5c07c3e1d24ac4399ea725da5d72a043feaea0063f26188e469b4b8cf537df
kubernetes-server-linux-arm.tar.gz	e6e673cb9baecc56ae03d716569769391cd6f8d38d85810f0199e71b20a4d4c3c92e
kubernetes-server-linux-arm64.tar.gz	f91dc6e948b702784909ca0c4b8758ad9dbfbcd202ec4e329666b07d42488df00ad6
kubernetes-server-linux-ppc64le.tar.gz	fbbf3daff8caa89f8249122ba19d67a0d9298fb47d327c0bebd7a54adad4fe6e80916
kubernetes-server-linux-s390x.tar.gz	a4ccda542f1b86667e6bf29afd091a2ce6f3a30165ff8b918585fc7794be26d00bd840

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	4d7dd2e50fe65fd1140c51deeb90d8d9f89bbba59502becf626757e2e9eb59fb781bb
kubernetes-node-linux-arm.tar.gz	d38cd4a06b983a7253d99a6d927c40cbacc636bd73d33172ee03cda502f806638d3
kubernetes-node-linux-arm64.tar.gz	fa1fa35f30ca589e031485affd2a1016ba5ca0efdf64b35d49c7738342acb55c40733e
kubernetes-node-linux-ppc64le.tar.gz	412b3a133a7711e32455e49d1aac4ce9ee0e44df89afca40dfa8ac52a8aa98649bd4c
kubernetes-node-linux-s390x.tar.gz	7e0e217893665a56406b6f1404d616da8578396890b04474fed12ea6b48f5fbf52432
kubernetes-node-windows-amd64.tar.gz	768dfe871a028ff7d972d9b59935c1ebdcc8ea0ccf990ee84060ef3bb995ddecb48a4

Changelog since v1.23.0-alpha.4

Urgent Upgrade Notes

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

- Log messages in JSON format are written to stderr by default now (same as text format) instead of stdout. Users who expected JSON output on stdout must now capture stderr instead or in addition to stdout. (#106146, @pohly) [SIG API Machinery, Architecture, Cluster Lifecycle and Instrumentation]
- kube-log-runner is included in release tar balls. It can be used to replace the deprecated `--log-file` parameter. (#106123, @pohly) [SIG API Machinery, Architecture, Cloud Provider, Cluster Lifecycle and Instrumentation]

Changes by Kind

Deprecation

- Kubeadm: add a new output/v1alpha2 API that is identical to the output/v1alpha1, but attempts to resolve some internal dependencies with the kubeadm/v1beta2 API. The output/v1alpha1 API is now deprecated and will be removed in a future release. (#105295, @neolit123) [SIG Cluster Lifecycle]
- Kubeadm: add the kubeadm specific, Alpha (disabled by default) feature gate UnversionedKubeletConfigMap. When this feature is enabled kubeadm will start using a new naming format for the ConfigMap where it stores the KubeletConfiguration structure. The old format included the Kubernetes version - "kube-system/kubelet-config-1.22", while the new format does not - "kube-system/kubelet-config". A similar formatting change is done for the related RBAC rules. The old format is now DEPRECATED and will be removed after the feature graduates to GA. When writing the ConfigMap kubeadm (init, upgrade apply) will respect the value of UnversionedKubeletConfigMap, while when reading it (join, reset, upgrade), it would attempt to use new format first and fallback to the legacy format if needed. (#105741, @neolit123) [SIG Cluster Lifecycle and Testing]

API Change

- A new field `omitManagedFields` has been added to both `audit.Policy` and `audit.PolicyRule` so cluster operators can opt in to omit managed fields of the request and response bodies from being written to the API audit log. (#94986, @tkashem) [SIG API Machinery, Auth, Cloud Provider and Testing]
- Create HPA v2 from v2beta2 with some fields changed. (#102534, @wangyysde) [SIG API Machinery, Apps, Auth, Autoscaling and Testing]
- Fix kube-proxy regression on UDP services because the logic to detect stale connections was not considering if the endpoint was ready. (#106163, @aojea) [SIG API Machinery, Apps, Architecture, Auth, Autoscaling, CLI, Cloud Provider, Contributor Experience, Instrumentation, Network, Node, Release, Scalability, Scheduling, Storage, Testing and Windows]
- Implement support for recovering from volume expansion failures (#106154, @gnufied) [SIG API Machinery, Apps and Storage]
- In kubelet, log verbosity and flush frequency can also be configured via the configuration file and not just via command line flags. In other commands (kube-apiserver, kube-controller-manager), the flags are listed in the "Logs flags" group and not under "Global" or "Misc". The type for `-vmodule` was made a bit more descriptive (`pattern=N,...` instead of `moduleSpec`). (#106090, @pohly) [SIG API Machinery, Architecture, CLI, Cluster Lifecycle, Instrumentation, Node and Scheduling]
- IngressClass.Spec.Parameters.Namespace field is now GA. (#104636,

@hbagdi) [SIG Network and Testing]
- KubeSchedulerConfiguration provides a new field `MultiPoint` which will register a plugin for all valid extension points (#105611, @damemi) [SIG Scheduling and Testing]
- Kubelet should reject pods whose OS doesn't match the node's OS label. (#105292, @ravisantoshgudimetla) [SIG Apps and Node]
- The CSIVolumeFSGroupPolicy feature has moved from beta to GA. (#105940, @dobsonj) [SIG Storage]
- The Kubelet's `--register-with-taints` option is now available via the Kubelet config file field registerWithTaints (#105437, @cmssczy) [SIG Node and Scalability]
- Validation rules for Custom Resource Definitions can be written in the CEL expression language using the `x-kubernetes-validations` extension in OpenAPIv3 schemas (alpha). This is gated by the alpha "CustomResourceValidationExpressions" feature gate. (#106051, @jpbetz) [SIG API Machinery, Architecture, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Node, Storage and Testing]

Feature

- (beta feature) If the CSI driver supports the NodeServiceCapability `VOLUME_MOUNT_GROUP` and the `DelegateFSGroupToCSIDriver` feature gate is enabled, kubelet will delegate applying FSGroup to the driver by passing it to NodeStageVolume and NodePublishVolume, regardless of what other FSGroup policies are set. (#106330, @verult) [SIG Storage]
- /openapi/v3 endpoint will be populated with OpenAPI v3 if the feature flag is enabled (#105945, @Jefftree) [SIG API Machinery, Architecture, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Node, Storage and Testing]
- Add support for PodAndContainerStatsFromCRI featuregate, which allows a user to specify their pod stats must also come from the CRI, not cAdvisor. (#103095, @haircommander) [SIG Node]
- Add support for Portworx plugin to csi-translation-lib. Alpha release

  Portworx CSI driver is required to enable migration. This PR adds support of the `CSIMigrationPortworx` feature gate, which can be enabled by:

  1. Adding the feature flag to the kube-controller-manager `--feature-gates=CSIMigrationPortworx=t`
  2. Adding the feature flag to the kubelet config:

  featureGates: CSIMigrationPortworx: true (#103447, @trierra) [SIG API Machinery, Apps, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Network, Node, Release, Scalability, Scheduling, Storage, Testing and Windows]
- Added ability for kubectl wait to wait on arbitary JSON path (#105776,

@lauchokyip) [SIG CLI]

- Added the ability to specify whether to use an RFC7396 JSON Merge Patch, an RFC6902 JSON Patch, or a Strategic Merge Patch to perform an override of the resources created by kubectl run and kubectl expose. (#105140, @brianpursley) [SIG CLI]
- Adding option for kubectl cp to resume on network errors until completion, requires tar in addition to tail inside the container image (#104792, @matthyx) [SIG CLI]
- Adds –as-uid flag to kubectl to allow uid impersonation in the same way as user and group impersonation. (#105794, @margocrawf) [SIG API Machinery, Auth, CLI and Testing]
- Allows users to prevent garbage collection on pinned images (#103299, @wgahnagl) [SIG Node]
- CSIMigrationGCE feature flag is turned ON by default (#104722, @leiyiz) [SIG Apps, Cloud Provider, Node, Storage and Testing]
- Changed feature CSIMigrationAWS to on by default. This feature requires the AWS EBS CSI driver to be installed. (#106098, @wongma7) [SIG Storage]
- Ensures that volume is deleted from the storage backend when the user tries to delete the PV object manually and the PV ReclaimPolicy is Delete. (#105773, @deepakkinni) [SIG Apps and Storage]
- Graduating `controller_admission_duration_seconds`, `step_admission_duration_seconds`, `webhook_admission_duration_seconds`, `apiserver_current_inflight_requests` and `apiserver_response_sizes` metrics to stable. (#106122, @rezakrimi) [SIG API Machinery, Instrumentation and Testing]
- Graduating `pending_pods`, `preemption_attempts_total`, `preemption_victims` and `schedule_attempts_total` metrics to stable. Also `e2e_scheduling_duration_seconds` is renamed to `scheduling_attempt_duration_seconds` and the latter is graduated to stable. (#105941, @rezakrimi) [SIG Instrumentation, Scheduling and Testing]
- Integration testing now takes periodic Prometheus scrapes from the etcd server. There is a new script ,`hack/run-prometheus-on-etcd-scrapes.sh`, that runs a containerized Prometheus server against an archive of such scrapes. (#106190, @MikeSpreitzer) [SIG API Machinery and Testing]
- Kube-apiserver: when merging lists, Server Side Apply now prefers the order of the submitted request instead of the existing persisted object (#105983, @jiahuif) [SIG API Machinery, Architecture, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Storage and Testing]
- Kubectl describe namespace now shows Conditions (#106219, @dlipovetsky) [SIG CLI]

- Kubelet should reconcile `kubernetes.io/os` and `kubernetes.io/arch` labels on the node object. The side-effect of this is kubelet would deny admission to pod which has nodeSelector with label `kubernetes.io/os` or `kubernetes.io/arch` which doesn't match the underlying OS or arch on the host OS.
  - The label reconciliation happens as part of periodic status update which can be configured via flag `--node-status-update-frequency` (#104613, @ravisantoshgudimetla) [SIG Node, Testing and Windows]
- Kubernetes is now built with Golang 1.17.3 (#106209, @cpanato) [SIG API Machinery, Cloud Provider, Instrumentation, Release and Testing]
- Move ConfigurableFSGroupPolicy to GA Rename metric volume_fsgroup_recursive_apply to volume_apply_access_control (#105885, @gnufied) [SIG Instrumentation and Storage]
- Moving WindowsHostProcessContainers feature to beta (#106058, @marosset) [SIG Windows]
- The DownwardAPIHugePages feature is now enabled by default. (#106271, @mysunshine92) [SIG Node]
- The PodSecurity admission plugin has graduated to beta and is enabled by default. The admission configuration version has been promoted to pod-security.admission.config.k8s.io/v1beta1. See https://kubernetes.io/docs/concepts/security/pod-security-admission/ for usage guidelines. (#106089, @liggitt) [SIG Auth and Testing]
- This PR adds the following metrics for API Priority and Fairness.
  - **apiserver_flowcontrol_priority_level_seat_count_samples**: histograms of seats occupied by executing requests (both regular and final-delay phases included), broken down by priority_level; the observations are taken once per millisecond.
  - **apiserver_flowcontrol_priority_level_seat_count_watermarks**: histograms of high and low watermarks of number of seats occupied by executing requests (both regular and final-delay phases included), broken down by priority_level.
  - **apiserver_flowcontrol_watch_count_samples**: histograms of number of watches relevant to a given mutating request, broken down by that request's priority_level and flow_schema. (#105873, @MikeSpreitzer) [SIG API Machinery, Instrumentation and Testing]
- Topology Aware Hints have graduated to beta. (#106433, @robscott) [SIG Network]
- Update the system-validators library to v1.6.0 (#106323, @neolit123) [SIG Cluster Lifecycle and Node]

- Upgrade etcd to 3.5.1 (#105706, @uthark) [SIG Cloud Provider, Cluster Lifecycle and Testing]
- When using `RequestedToCapacityRatio` ScoringStrategy, empty shape will cause error. (#106169, @kerthcet) [SIG Scheduling]
- This release enables in-tree RBD migration to CSI driver with a couple of feature gates. These featuregates are alpha in this release.
  - `CSIMigrationRBD`: when enabled, it will redirect traffic from in tree rbd plugin (kubernetes.io/rbd) to CSI driver (rbd.csi.ceph.com) , default to `false` now.
  - `IntreePluginRBDUnregister`: Disables the RBD in-tree driver

  The feature gates can be enabled by:

  1. Adding the feature flag to the kube-controller-manager `--feature-gates=CSIMigrationRBD=true`
  2. Adding the feature flag to the kubelet config: featureGates: `CSIMigrationRBD`: true

  As a Kubernetes cluster operator that administers storage, here are the prerequisites that you must complete before you attempt migration to the RBD CSI driver:

  - You must install the Ceph CSI driver (rbd.csi.ceph.com), v3.5.0 or above, into your Kubernetes cluster.
  - Considering the clusterID field is a required parameter for CSI driver for its operations, but in-tree StorageClass has monitors field as a required parameter, a Kubernetes storage admin has to create a clusterID based on the monitors hash (ex:#echo -n ‘’ | md5sum) in the CSI config map and keep the monitors under this clusterID configuration.
  - Also, if the value of adminId in the in-tree Storageclass is different from admin, the adminSecretName mentioned in the in-tree Storageclass has to be patched with the base64 value of the adminId parameter value, otherwise this step can be skipped.(#95361, @humblec) [SIG API Machinery, Node, Scheduling, Storage]

Documentation

- Graduating `pod_scheduling_duration_seconds`, `pod_scheduling_attempts`, `framework_extension_point_duration_seconds`, `plugin_execution_duration_seconds` and `queue_incoming_pods_total` metrics to stable. (#106266, @ahg-g) [SIG Instrumentation, Scheduling and Testing]
- Users should not rely on unsupported CRON_TZ variable when specifying schedule, both the API server and cronjob controller will emit warnings pointing to https://kubernetes.io/docs/concepts/workloads/controllers/cronjobs/ containing explanation (#106455, @soltysh) [SIG Apps]

Bug or Regression

- (PodSecurity admission) errors validating workload resources (deployment, replicaset, etc.) no longer block admission. (#106017, @tallclair) [SIG Auth]
- Add support for Windows Network stats in Containerd (#105744, @jsturtevant) [SIG Node, Testing and Windows]
- Added show-capacity option to `kubectl top node` to show `Capacity` resource usage (#102917, @bysnupy) [SIG CLI]
- Do not unmount and mount subpath bind mounts during container creation unless bind mount changes (#105512, @gnufied) [SIG Storage]
- Don't use a custom dialer for the kubelet if is not rotating certificates, so we can reuse TCP connections and have only one between the apiserver and the kubelet. If users experiment problems with stale connections using HTTP1.1, they can force the previous behavior of the kubelet by setting the environment variable DISABLE_HTTP2. (#104844, @aojea) [SIG API Machinery, Auth and Node]
- EndpointSlice Mirroring controller now cleans up managed EndpointSlices when a Service selector is added (#105997, @robscott) [SIG Apps, Network and Testing]
- Enhanced event messages for pod failed for exec probe timeout (#106201, @yxxhero) [SIG Node]
- Ensure Pods are removed from the scheduler cache when the scheduler misses deletion events due to transient errors (#106102, @alculquicondor) [SIG Scheduling]
- Fix a panic in kubectl when creating secrets with an improper output type (#106317, @lauchokyip) [SIG CLI]
- Fixed a bug which could cause webhooks to have an incorrect copy of the old object after an Apply or Update (#106195, @alexzielenski) [SIG API Machinery]
- Fixed applying of SELinux labels to CSI volumes on very busy systems (with "error checking for SELinux support: could not get consistent content of /proc/self/mountinfo after 3 attempts") (#105934, @jsafrane) [SIG Storage]
- Fixed bug where using kubectl patch with $deleteFromPrimitiveList on a nonexistent or empty list would add the item to the list (#105421, @brianpursley) [SIG API Machinery]
- Fixed the issue where logging output of kube-scheduler configuration files included line breaks and escape characters. The output also attempted

to output the configuration file in one section without showing the user a more readable format. (#106228, @sanchayanghosh) [SIG Scheduling]

- Kube-up now includes CoreDNS version v1.8.6 (#106091, @rajansandeep) [SIG Cloud Provider]
- Kubeadm: fix a bug on Windows worker nodes, where the downloaded KubeletConfiguration from the cluster can contain Linux paths that do not work on Windows and can trip the kubelet binary. (#105992, @hwdef) [SIG Cluster Lifecycle and Windows]
- Kubectl port-forward service will now properly exit when the attached pod dies (#103526, @brianpursley) [SIG API Machinery]
- Kubelet: fixes a file descriptor leak in log rotation (#106382, @rphillips) [SIG Node]
- Pod SecurityContext sysctls name parameter for update requests where the existing object's sysctl contains slashes and kubelet sysctl whitelist support contains slashes. (#102393, @mengjiao-liu) [SIG Apps, Auth, Node, Storage and Testing]
- Pod will not start when Init container was OOM killed. (#104650, @yxxhero) [SIG Node]
- Reduce the number of calls to docker for stats via dockershim. For Windows this reduces the latency when calling docker, for Linux this saves cpu cycles. (#104287, @jsturtevant) [SIG Node and Windows]
- Respect grace period when updating static pods. (#104743, @gjkim42) [SIG Node and Testing]
- The kube-proxy sync_proxy_rules_iptables_total metric now gives the correct number of rules, rather than being off by one.

  Fixed multiple iptables proxy regressions introduced in 1.22:

  - When using Services with SessionAffinity, client affinity for an endpoint now gets broken when that endpoint becomes non-ready (rather than continuing until the endpoint is fully deleted).
  - Traffic to a service IP now starts getting rejected (as opposed to merely dropped) as soon as there are no longer any *usable* endpoints, rather than waiting until all of the terminating endpoints have terminated even when those terminating endpoints were not being used.
  - Chains for endpoints that won't be used are no longer output to iptables, saving a bit of memory/time/cpu. (#106030, @danwinship) [SIG Network]
- Upgrades functionality of `kubectl kustomize` as described at https://github.com/kubernetes-sigs/kustomize/releases/tag/kustomize%2Fv4.4.1 (#106389, @natasha41575) [SIG CLI]

Other (Cleanup or Flake)

- Changed buckets in apiserver_request_duration_seconds metric from [0.05, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4, 0.45, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0,1.25, 1.5, 1.75, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 40, 50, 60] to [0.05, 0.1, 0.2, 0.4, 0.6, 0.8, 1.0, 1.25, 1.5, 2, 3, 4, 5, 6, 8, 10, 15, 20, 30, 45, 60] (#106306, @pawbana) [SIG API Machinery, Instrumentation and Testing]
- Kubectl: deprecated command line flags (like several of the klog flags) now have a `DEPRECATED: <explanation>` comment. (#106172, @pohly) [SIG CLI]
- Kubemark is now built as a portable, static binary. (#106150, @pohly) [SIG Scalability and Testing]
- Migrated `pkg/scheduler/framework/plugins/volumebinding/assume_cache.go` to structured logging. (#105904, @mengjiao-liu) [SIG Instrumentation, Scheduling and Storage]
- Migrated `pkg/scheduler/framework/preemption/preemption.go`, `pkg/scheduler/framework/plugins/examples/stateful/stateful.go`, and `pkg/scheduler/framework/plugins/noderesources/resource_allocation.go` to structured logging (#105967, @shivanshu1333) [SIG Instrumentation, Node and Scheduling]
- Migrated scheduler file `cache.go` to structured logging (#105969, @shivanshu1333) [SIG Instrumentation and Scheduling]
- Migrated scheduler files `comparer.go`, `dumper.go`, `node_tree.go` to structured logging (#105968, @shivanshu1333) [SIG Instrumentation and Scheduling]
- Remove deprecated and not supported old cronjob controller. (#106126, @soltysh) [SIG Apps]
- Remove ignore error flag for drain, and set this feature as default (#105571, @yuzhiquan) [SIG CLI]
- The kube-proxy image contains /go-runner as a replacement for deprecated klog flags. (#106301, @pohly) [SIG Testing]

Dependencies

Added

- github.com/OneOfOne/xxhash: v1.2.2
- github.com/antlr/antlr4/runtime/Go/antlr: b48c857
- github.com/cespare/xxhash: v1.1.0
- github.com/cncf/xds/go: fbca930
- github.com/getkin/kin-openapi: v0.76.0
- github.com/google/cel-go: v0.9.0
- github.com/google/cel-spec: v0.6.0
- github.com/spaolacci/murmur3: f09979e

Changed

- github.com/containerd/containerd: v1.4.9 → v1.4.11
- github.com/coredns/corefile-migration: v1.0.12 → v1.0.14
- github.com/docker/docker: v20.10.2+incompatible → v20.10.7+incompatible
- github.com/envoyproxy/go-control-plane: 668b12f → 63b5d3c
- github.com/golang/glog: 23def4e → v1.0.0
- github.com/google/cadvisor: v0.39.2 → v0.43.0
- golang.org/x/net: 60bc85c → e898025
- golang.org/x/sys: 41cdb87 → f4d4317
- golang.org/x/text: v0.3.6 → v0.3.7
- google.golang.org/genproto: f16073e → fe13028
- google.golang.org/grpc: v1.38.0 → v1.40.0
- google.golang.org/protobuf: v1.26.0 → v1.27.1
- k8s.io/kube-openapi: 7fbd8d5 → e816edb
- k8s.io/system-validators: v1.5.0 → v1.6.0
- sigs.k8s.io/apiserver-network-proxy/konnectivity-client: v0.0.23 → v0.0.25
- sigs.k8s.io/kustomize/api: v0.8.11 → v0.10.1
- sigs.k8s.io/kustomize/cmd/config: v0.9.13 → v0.10.2
- sigs.k8s.io/kustomize/kustomize/v4: v4.2.0 → v4.4.1
- sigs.k8s.io/kyaml: v0.11.0 → v0.13.0
- sigs.k8s.io/structured-merge-diff/v4: v4.1.2 → v4.2.0

Removed

Nothing has changed.

v1.23.0-alpha.4

Downloads for v1.23.0-alpha.4

Source Code

filename	sha512 hash
kubernetes.tar.gz	aeb10a3fbb89694c52d47203cc958d3543b21426938a9664348163aacd41e20ea76
kubernetes-src.tar.gz	b7a8999335ce15b68360478b22af4daaed10e9db50d597e077d731de194208355d1

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	5654879ac03f4c7193a8df49cfd4b7253add031c197f50bada40942738bf5720d1c06
kubernetes-client-darwin-arm64.tar.gz	5dce9fee32436c971ef17595f88f3c74f5644ab3af0e3f854a79fb42f3c8d6d8f507fbb0

filename	sha512 hash
kubernetes-client-linux-386.tar.gz	e9eb7dab22801c043da2833fde89d2cd721b9dd622df0ff42b25a6742cfab5cff8bfe
kubernetes-client-linux-amd64.tar.gz	570eeaed029bb05235c58138a777cfd6a4b17d4d91aba346b1fc9a0e573781947599
kubernetes-client-linux-arm.tar.gz	298923762745cc064a4489aa01d55f57076b84538aef3a6a3554b60257d9959b4eeb
kubernetes-client-linux-arm64.tar.gz	498527f1cf2d16af576a6b6d27b5ddbb876e24bd85e34e2c91cf39ef467d366b2059
kubernetes-client-linux-ppc64le.tar.gz	2632b0fb69565819ef1b6797a834e65f96629df4fd8bec01fce7370672a39afa18185
kubernetes-client-linux-s390x.tar.gz	b793a5a8fce9109343ada86f29cf356c6973cd80d81ca47af5c7e4fa11ffccc273f77ab
kubernetes-client-windows-386.tar.gz	b92e34ee58e1247c1c444134dd9fa78033d0fda1f51509b43016543596cb211128f8a
kubernetes-client-windows-amd64.tar.gz	0b5ea6a2de0ff6f71647f428fdbee67c7eb2b918d725cf236ce60daa02e94bd998d15
kubernetes-client-windows-arm64.tar.gz	a4e570be453d1df779bb85c62efb41e98209bb93b57b7655a94a737d552c90f9d306

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	cf215ee7372edd7d5dbf07faee8ccf83de477c8cd431c0fac58357bb8e027349d8edf8
kubernetes-server-linux-arm.tar.gz	d6281a6727fcdab956170dca7563fc5099ef79b06c96b2f6bc87fcd0b74f1dea0e14a
kubernetes-server-linux-arm64.tar.gz	4ec30cdfd8128ca405201c0c40750e10bac016e1e53a7662265328564b09e4feb831a
kubernetes-server-linux-ppc64le.tar.gz	42b31174a95d0999c78750a1d2c866918c91d11d6406df4e984913f64806708add3
kubernetes-server-linux-s390x.tar.gz	c4e2b38681c0858d560adc8a330f27e95a035cb0e426c6ff332dcd435cefe88441ea8

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	708b40c9c0d2cfcb6f9874aa3f1b5a27796cbe2bfe7a2345f381e0d9062df8a6769b2
kubernetes-node-linux-arm.tar.gz	f89448106af23d6658b9c2e7b43240fb82051d2f89a302ee61fc1cc78e593535993ba

filename	sha512 hash
kubernetes-node-linux-arm64.tar.gz	bcd8d9fbb244048a3ef3f79f1d4e8f2645bbd69caf353e67ee5c5a4ffd4443da420e59
kubernetes-node-linux-ppc64le.tar.gz	c0724d053c601d4e80ea19957bd32005aeba0cf8f5e03e8e36412aed0777e860ae68
kubernetes-node-linux-s390x.tar.gz	0245f592b92d79ccd102961e5b23a9f5b275829e627254fe8ce5f0a7df53ec2c4a943
kubernetes-node-windows-amd64.tar.gz	2a5c6c79ea65f47a42d25b236709a00eafb793e5d87b5f56516da16b85b06e030206

Changelog since v1.23.0-alpha.3

Changes by Kind

Deprecation

- A deprecation notice has been added when using the kube-proxy Userspace proxier, which will be removed in v1.25. (#103860) (#104631, @perithompson) [SIG Network]
- Feature-gate VolumeSubpath has been deprecated and cannot be disabled. It will be completely removed in 1.25 (#105474, @mauriciopoppe) [SIG Storage]
- Kubeadm: remove the deprecated / NO-OP phase "update-cluster-status" in "kubeadm reset" (#105888, @neolit123) [SIG Cluster Lifecycle]
- Removed kubectl –dry-run empty default value and boolean values. kubectl –dry-run usage must be specified with –dry-run=(server|client|none). (#105327, @julianvmodesto) [SIG CLI and Testing]

API Change

- **Additional documentation e.g., KEPs (Kubernetes Enhancement Proposals), usage docs, etc.:** (#104782, @kerthcet) [SIG Scheduling and Testing]
- Ephemeral containers have reached beta maturity and are now available by default. (#105405, @verb) [SIG API Machinery, Apps, Node and Testing]
- Introduce OS field in the Pod Spec (#104693, @ravisantoshgudimetla) [SIG API Machinery and Apps]
- Introduce v1beta3 api for scheduler. This version
  - increases the weight of user specifiable priorities. The weights of following priority plugins are increased

        * TaintTolerations to 3 - as leveraging node tainting to group nodes in the cluster is becoming a widely-adopted practice
        * NodeAffinity to 2
        * InterPodAffinity to 2
    - Won't have HealthzBindAddress, MetricsBindAddress fields (#104251, @ravisantoshgudimetla) [SIG Scheduling and Testing]

- JSON log output is configurable and now supports writing info messages to stdout and error messages to stderr. Info messages can be buffered in memory. The default is to write both to stdout without buffering, as before. (#104873, @pohly) [SIG API Machinery, Architecture, CLI, Cluster Lifecycle, Instrumentation, Node and Scheduling]
- JobTrackingWithFinalizers graduates to beta. Feature is enabled by default. (#105687, @alculquicondor) [SIG Apps and Testing]
- Remove NodeLease feature gate that was graduated and locked to stable in 1.17 release. (#105222, @cyclinder) [SIG Apps, Node and Testing]
- TTLAfterFinished is now GA and enabled by default (#105219, @sahilvv) [SIG API Machinery, Apps, Auth and Testing]
- The "Generic Ephemeral Volume" feature graduates to GA. It is now enabled unconditionally. (#105609, @pohly) [SIG API Machinery, Apps, Auth, Node, Scheduling, Storage and Testing]
- The legacy scheduler policy config is removed in v1.23, the associated flags policy-config-file, policy-configmap, policy-configmap-namespace and use-legacy-policy-config are also removed. Migrate to Component Config instead, see https://kubernetes.io/docs/reference/scheduling/config/ for details. (#105424, @kerthcet) [SIG Scheduling and Testing]
- Track the number of Pods with a Ready condition in Job status. The feature is alpha and needs the feature gate JobReadyPods to be enabled. (#104915, @alculquicondor) [SIG API Machinery, Apps, CLI and Testing]

Feature

- Add a new `distribute-cpus-across-numa` option to the static `CPUManager` policy. When enabled, this will trigger the `CPUManager` to evenly distribute CPUs across NUMA nodes in cases where more than one NUMA node is required to satisfy the allocation. (#105631, @klueska) [SIG Node]
- Add support to generate client-side binaries for windows/arm64 platform (#104894, @pacoxu) [SIG CLI, Testing and Windows]
- Added a new feature gate `CustomResourceValidationExpressions` to enable expression validation for Custom Resource. (#105107, @cici37) [SIG API Machinery]

- Adds new [alpha] command 'kubectl events' (#99557, @bboreham) [SIG CLI]
- Client-go, using log level 9, trace the following events of an http request: - dns lookup - tcp dialing - tls handshake - time to get a connection from the pool - time to process a request (#105156, @aojea) [SIG API Machinery]
- Client-go: pass `DeleteOptions` down to the fake client `Reactor` (#102945, @chenchun) [SIG API Machinery, Apps and Auth]
- Enhance scheduler volumebinding plugin to handle Lost PVC as UnschedulableAndUnresolvable during PreFilter stage (#105245, @yibozhuang) [SIG Scheduling and Storage]
- Feature-gate `StorageObjectInUseProtection` has been deprecated and cannot be disabled. It will be completely removed in 1.25 (#105495, @ikeeip) [SIG Apps]
- Kubectl will now provide shell completion choices for the –output/-o flag (#105851, @marckhouzam) [SIG CLI]
- Kubernetes is now built with Golang 1.17.2 (#105563, @mengjiao-liu) [SIG API Machinery, Cloud Provider, Instrumentation, Release and Testing]
- Move the getAllocatableResources endpoint in podresource-api to the beta that will make it enabled by default. (#105003, @swatisehgal) [SIG Node and Testing]
- Node affinity, node selector and tolerations are now mutable for jobs that are suspended and have never been started (#105479, @ahg-g) [SIG Apps, Scheduling and Testing]
- Pod template annotations and labels are now mutable for jobs that are suspended and have never been started (#105980, @ahg-g) [SIG Apps]
- PodSecurity: add a container image and manifests for the PodSecurity validating admission webhook (#105923, @liggitt) [SIG Auth]
- PodSecurity: in 1.23+ restricted policy levels, pods and containers which set runAsUser=0 are forbidden at admission-time; previously, they would be rejected at runtime (#105857, @liggitt) [SIG Auth]
- Shell completion now knows to continue suggesting resource names when the command supports it. For example "kubectl get pod pod1 " will suggest more pod names. (#105711, @marckhouzam) [SIG CLI]
- Support to enable Hyper-V in GCE Windows Nodes created with kube-up (#105999, @mauriciopoppe) [SIG Cloud Provider and Windows]
- The CPUManager policy options are now enabled, and we introduce a graduation path for the new CPU Manager policy options. (#105012, @fromanirh) [SIG Node and Testing]

- The etcd container image now supports Windows. (#92433, @claudiubelu) [SIG API Machinery and Windows]
- The pods and pod controllers that are exempted from the PodSecurity admission process are now marked with the "pod-security.kubernetes.io/exempt: user/namespace/runtimeClass" annotation, based on what caused the exemption.

  The enforcement level that allowed or denied pod during PodSecurity admission is now marked by the "pod-security.kubernetes.io/enforce-policy" annotation.

  The annotation that informs about audit policy violations changed from ""pod-security.kubernetes.io/audit" to ""pod-security.kubernetes.io/audit-violation". (#105908, @stlaz) [SIG Auth]
- When feature gate JobTrackingWithFinalizers is enabled:
  - Limit the number of pods tracked in a single job sync to avoid starvation of small jobs.
  - The metric job_pod_finished_total counts the number of finished pods tracked by the job controller (#105197, @alculquicondor) [SIG Apps, Instrumentation and Testing]

Failing Test

- Fixes hostpath storage e2e tests within SELinux enabled env (#104551, @Elbehery) [SIG Testing]

Bug or Regression

- (PodSecurity admission) errors validating workload resources (deployment, replicaset, etc.) no longer block admission. (#106017, @tallclair) [SIG Auth]
- Add Pod Security admission metrics: pod_security_evaluations_total, pod_security_exemptions_total, pod_security_errors_total (#105898, @tallclair) [SIG Auth, Instrumentation and Testing]
- Apimachinery: pretty-printed json and yaml output is now indented consistently (#105466, @liggitt) [SIG API Machinery]
- Change `kubectl diff --invalid-arg` status code from 1 to 2 to match docs (#105445, @ardaguclu) [SIG CLI]
- Client-go uses the same http client for all the generated groups and versions, allowing to share customized transports for multiple groups versions. (#105490, @aojea) [SIG API Machinery, Auth, Instrumentation and Testing]
- Evicted and other terminated pods will no longer revert to Running phase (#105462, @ehashman) [SIG Node and Testing]
- Fix pod name of NonIndexed jobs to not include rogue -1 substring (#105676, @alculquicondor) [SIG Apps]

- Fix scoring for NodeResourcesBalancedAllocation plugins when nodes have containers with no requests. (#105845, @ahmad-diaa) [SIG Scheduling]
- Fix: consolidate logs for instance not found error fix: skip not found nodes when reconciling LB backend address pools (#105188, @nilo19) [SIG Cloud Provider]
- Fix: do not delete the lb that does not exist (#105777, @nilo19) [SIG Cloud Provider]
- Fix: ignore not a VMSS error for VMAS nodes in EnsureBackendPoolDeleted. (#105185, @ialidzhikov) [SIG Cloud Provider]
- Fix: leave the probe path empty for TCP probes (#105253, @nilo19) [SIG Cloud Provider]
- Fix: remove VMSS and VMSS instances from SLB backend pool only when necessary (#105839, @nilo19) [SIG Cloud Provider]
- Fix: skip instance not found when decoupling vmss from lb (#105666, @nilo19) [SIG Cloud Provider]
- Fixed a bug that prevents PersistentVolume that has a Claim UID which doesn't exist in local cache but exists in ETCD from being updated to Released phase. (#105211, @xiaopingrubyist) [SIG Apps]
- Fixed architecture within manifest for non `amd64` etcd images. (#105484, @saschagrunert) [SIG API Machinery]
- Fixes a bug that could result in the EndpointSlice controller unnecessarily updating EndpointSlices associated with a Service that had Topology Aware Hints enabled. (#105267, @llhuii) [SIG Apps and Network]
- Fixes the `should support building a client with a CSR` e2e test to work with clusters configured with short certificate lifetimes (#105396, @liggitt) [SIG Auth and Testing]
- Generic ephemeral volumes can be used also as raw block devices, but the Pod validation was refusing to create pods with that combination. (#105682, @pohly) [SIG Apps, Storage and Testing]
- Generic ephemeral volumes were not considered properly by the the node limits scheduler filter and the kubelet hostpath check. (#100482, @pohly) [SIG Node, Scheduling, Storage and Testing]
- Kube-apiserver: fix a memory leak when deleting multiple objects with a deletecollection. (#105606, @sxllwx) [SIG API Machinery]
- Kubeadm: do not allow empty "–config" paths to be passed to "kubeadm kubeconfig user" (#105649, @navist2020) [SIG Cluster Lifecycle]
- Kubelet did not report `kubelet_volume_stats_*` metrics for generic ephemeral voiumes. (#105569, @pohly) [SIG Node]
- Kubelet's Node Grace Shutdown will terminate probes when shutting down. (#105215, @rphillips) [SIG Node]
- Kubernetes object references (= name + namespace) were not logged as struct when using JSON as log output format. (#104877, @pohly) [SIG API Machinery, Architecture, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation and Storage]
- Podresources interface was changed, now it returns only isolated cpus (#97415, @AlexeyPerevalov) [SIG Node and Testing]

- Release-note Removed error message label from kubelet_started_pods_errors_total metric (#105213, @yxxhero) [SIG Instrumentation and Node]
- Resolves a potential issue with GC and NS controllers which may delete objects after getting a 404 response from the server during its startup. This PR ensures that requests to aggregated APIs will get 503, not 404 while the APIServiceRegistrationController hasn't finished its job. (#104748, @p0lyn0mial) [SIG API Machinery]
- Revert building binaries with PIE mode. (#105352, @ehashman) [SIG Node, Release and Security]
- Support more than 100 disk mounts on Windows (#105673, @andyzhangx) [SIG Storage and Windows]
- Support using negative array index in json patch replace operations. (#105896, @zqzten) [SIG API Machinery, Architecture, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation and Storage]
- The –leader-elect* CLI args are now honored in scheduler. (#105712, @Huang-Wei) [SIG Scheduling]
- The client-go dynamic client sets the header 'Content-Type: application/json' by default (#104327, @sxllwx) [SIG API Machinery]
- The pods/binding subresource now honors `metadata.uid` and `metadata.resourceVersion` preconditions (#105913, @aholic) [SIG Scheduling]
- Topology Hints now excludes control plane notes from capacity calculations. (#104744, @robscott) [SIG Apps and Network]
- Watch requests that are delegated to aggregated apiservers no longer reserve concurrency units (seats) in the API Priority and Fairness dispatcher for their entire duration. (#105511, @benluddy) [SIG API Machinery]
- `--log-flush-frequency` had no effect in several commands or was missing. Help and warning texts were not always using the right format for a command (`add_dir_header` instead of `add-dir-header`). Fixing this included cleaning up flag handling in component-base/logs: that package no longer adds flags to the global flag sets. Commands which want the klog and –log-flush-frequency flags must explicitly call logs.AddFlags; the new cli.Run does that for commands. That helper function also covers flag normalization and printing of usage and errors in a consistent way (print usage text first if parsing failed, then the error). (#105076, @pohly) [SIG API Machinery, Architecture, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Network, Node, Release, Scheduling and Testing]

Other (Cleanup or Flake)

- All klog flags except for `-v` and `-vmodule` are deprecated. Support for `-vmodule` is only guaranteed for the text log format. (#105042, @pohly) [SIG API Machinery, Architecture, CLI, Cluster Lifecycle and Instrumentation]
- Kube-apiserver: requests to node, service, and pod `/proxy` subresources with no additional URL path now only automatically redirect GET and

HEAD requests. (#95128, @Riaankl) [SIG API Machinery, Architecture and Testing]
- Migrate `pkg/scheduler/framework/plugins/interpodaffinity/filtering.go`,`pkg/scheduler/frame` `pkg/scheduler/framework/plugins/volumezone/volume_zone.go` to structured logging (#105931, @mengjiao-liu) [SIG Instrumentation and Scheduling]
- Migrated `cmd/kube-scheduler/app/server.go`, `pkg/scheduler/framework/plugins/nodelabel/node` `pkg/scheduler/framework/plugins/nodevolumelimits/csi.go`, `pkg/scheduler/framework/plugins/nodevolumelimits/non_csi.go` to structured logging (#105855, @shivanshu1333) [SIG Instrumentation and Scheduling]
- Migrated pkg/proxy to structured logging (#104891, @shivanshu1333) [SIG Network]
- Migrated pkg/proxy/ipvs to structured logging (#104932, @shivanshu1333) [SIG Network]
- Support allocating whole NUMA nodes in the CPUManager when there is not a 1:1 mapping between socket and NUMA node (#102015, @klueska) [SIG Node]

Dependencies

Added

- sigs.k8s.io/json: c049b76

Changed

- github.com/evanphx/json-patch: v4.11.0+incompatible → v4.12.0+incompatible
- github.com/go-logr/logr: v1.1.0 → v1.2.0
- github.com/go-logr/zapr: v1.1.0 → v1.2.0
- k8s.io/klog/v2: v2.20.0 → v2.30.0
- k8s.io/utils: bdf08cb → cb0fa31

Removed

Nothing has changed.

v1.23.0-alpha.3

Downloads for v1.23.0-alpha.3

Source Code

filename	sha512 hash
kubernetes.tar.gz	083e6ca03c9d701768b1b5666f354223a3f7dca9fc6410ce45bbf5947152620e300b4

filename	sha512 hash
kubernetes-src.tar.gz	c3fc74d52e1b7e808c03b9caa30e3e73be30eb8330ce676000b93d5324bbdba93bd

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	31d8adc657afbd305df18bfec397a825536357e23b241a19aa538b6ddefefc59743f7
kubernetes-client-darwin-arm64.tar.gz	b69c4d6cde1c476bafa2ca9916ce3e5bf7286be0ff6a08193bdd1a954ba89b64b1b1
kubernetes-client-linux-386.tar.gz	059f25ee48aa4b0d1621d6ba87af8fb7e765634d723d98a4e9739f50d3703e7dd397
kubernetes-client-linux-amd64.tar.gz	291dba14160803065895799adcde39bdad7a5b0372403f283d6d5e9a094fe1fc79c7
kubernetes-client-linux-arm.tar.gz	988e12cd7466033578acc487447df376c409e4f79726a4721af1aedbe931e927b22a9
kubernetes-client-linux-arm64.tar.gz	b3f21dac41b38e671fa7a95892468e2c27fab51abf9c77b336550e5ec213af204e16ca
kubernetes-client-linux-ppc64le.tar.gz	beebf01e2e4ff09bb711284bb9a5c7cc519e4ac8a826dc829394fa28bd9a3149ba730
kubernetes-client-linux-s390x.tar.gz	87e5d3d8ba01f9fefb2300e9f06146a254d39d72eaa10cad8c444428b738b3763483
kubernetes-client-windows-386.tar.gz	71bfc5a1df9c47735476af10225830212f68c83357ff7d443e18f9b7881524db910781
kubernetes-client-windows-amd64.tar.gz	078b0c698f9535f3eee41ecf162d57e2ace67243da36067b78b30cfbb7b27cfcf97af4

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	951b790158dadf46c32e1a1e9c12f2cc8f41e1645602ebff6b4130a08a377bc6d9254
kubernetes-server-linux-arm.tar.gz	0e7a5b9f39b4f45c45bdb5a19dd3695d28f53e1039d76bc572421c707917944d28b
kubernetes-server-linux-arm64.tar.gz	921e060120b8651a0f80977360faca9f207189cee10bc61f669ceba4e540ef48c0ceff1
kubernetes-server-linux-ppc64le.tar.gz	292cde446b754a87f4ef5384fadbd30017e53ed2744d45a724be467c86ccd9837bfb
kubernetes-server-linux-s390x.tar.gz	e0ea667f828ce3b36ca4b2a05fb286da5eb321852c50caf0957694553caf2908b27bc

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	e13cd3f75628d354bd1544a5495600fb905741431eb4af4da3d980cc0b7565e3f9c1
kubernetes-node-linux-arm.tar.gz	6c91b42350528692ff558b667bffd41c5b967c7aa6101471274e4b16b0ac6f84afe01
kubernetes-node-linux-arm64.tar.gz	81728e1388e9cdb436d6847c868f28ab2771331e5e40cd5a7af13cb8dc80a7e4e66a
kubernetes-node-linux-ppc64le.tar.gz	299649f1b25cc38f3a7543ef4d3ee6d42c85e24ac41b4eb61927bc5c5f0c533a39f9d
kubernetes-node-linux-s390x.tar.gz	fd6cbc93f98abff9803b43215af6e75a4f7b91ca06969220a779468f34b5ec5ec69f20
kubernetes-node-windows-amd64.tar.gz	a5bfaf2e3ad8d3d2127c3e3e0f131c615a03563253da6bf0e1fd793f6ef71287f341ce

Changelog since v1.23.0-alpha.2

Changes by Kind

Deprecation

- Remove 'master' as a valid EgressSelection type in the EgressSelectorConfiguration API. (#102242, @pacoxu) [SIG API Machinery and Cloud Provider]
- Remove VolumeSubpath feature gate (#105090, @saad-ali) [SIG Apps, Node and Storage]
- The deprecated –experimental-bootstrap-kubeconfig flag has been removed. This can be set via –bootstrap-kubeconfig. (#103172, @niulechuan) [SIG Node]

API Change

- Client-go impersonation config can specify a UID to pass impersonated uid information through in requests. (#104483, @margocrawf) [SIG API Machinery, Auth and Testing]
- IPv6DualStack feature moved to stable. Controller Manager flags for the node IPAM controller have slightly changed:
  1. When configuring a dual-stack cluster, the user must specify both –node-cidr-mask-size-ipv4 and –node-cidr-mask-size-ipv6 to set the per-node IP mask sizes, instead of the previous –node-cidr-mask-size flag.
  2. The –node-cidr-mask-size flag is mutually exclusive with –node-cidr-mask-size-ipv4 and –node-cidr-mask-size-ipv6.
  3. Single-stack clusters do not need to change, but may choose to use the more specific flags. Users can use either the older –node-cidr-mask-size

flag or one of the newer –node-cidr-mask-size-ipv4 or –node-cidr-mask-size-ipv6 flags to configure the per-node IP mask size, provided that the flag's IP family matches the cluster's IP family (–cluster-cidr). (#104691, @khenidak) [SIG API Machinery, Apps, Auth, Cloud Provider, Cluster Lifecycle, Network, Node and Testing]

- Kubelet: turn the KubeletConfiguration v1beta1 `ResolverConfig` field from a `string` to `*string`. (#104624, @Haleygo) [SIG Cluster Lifecycle and Node]

Feature

- Add mechanism to load simple sniffer class into fluentd-elasticsearch image (#92853, @cosmo0920) [SIG Cloud Provider and Instrumentation]
- Kubeadm: do not check if the '/etc/kubernetes/manifests' folder is empty on joining worker nodes during preflight (#104942, @SataQiu) [SIG Cluster Lifecycle]
- The kube-apiserver's Prometheus metrics have been extended with some that describe the costs of handling LIST requests. They are as follows.
  - *apiserver_cache_list_total*: Counter of LIST requests served from watch cache, broken down by resource_prefix and index_name
  - *apiserver_cache_list_fetched_objects_total*: Counter of objects read from watch cache in the course of serving a LIST request, broken down by resource_prefix and index_name
  - *apiserver_cache_list_evaluated_objects_total*: Counter of objects tested in the course of serving a LIST request from watch cache, broken down by resource_prefix
  - *apiserver_cache_list_returned_objects_total*: Counter of objects returned for a LIST request from watch cache, broken down by resource_prefix
  - *apiserver_storage_list_total*: Counter of LIST requests served from etcd, broken down by resource
  - *apiserver_storage_list_fetched_objects_total*: Counter of objects read from etcd in the course of serving a LIST request, broken down by resource
  - *apiserver_storage_list_evaluated_objects_total*: Counter of objects tested in the course of serving a LIST request from etcd, broken down by resource
  - *apiserver_storage_list_returned_objects_total*: Counter of objects returned for a LIST request from etcd, broken down by resource (#104983, @MikeSpreitzer) [SIG API Machinery and Instrumentation]
- Turn on CSIMigrationAzureDisk by default on 1.23 (#104670, @andyzhangx) [SIG Cloud Provider]

Bug or Regression

- Changes behaviour of kube-proxy start; does not attempt to set specific sysctl values (which does not work in recent Kernel versions anymore in non-init namespaces), when the current sysctl values are already set higher. (#103174, @Napsty) [SIG Network]
- Fix job controller syncs: In case of conflicts, ensure that the sync happens with the most up to date information. Improves reliability of JobTracking-WithFinalizers. (#105214, @alculquicondor) [SIG Apps]
- Fix system default topology spreading when nodes don't have zone labels. Pods correctly spread by default now. (#105046, @alculquicondor) [SIG Scheduling]
- Headless Services with no selector which were created without dual-stack enabled will be defaulted to RequireDualStack instead of PreferDualStack. This is consistent with such Services which are created with dual-stack enabled. (#104986, @thockin) [SIG Network]
- Kube-apiserver: events created via the `events.k8s.io` API group for cluster-scoped objects are now permitted in the default namespace as well for compatibility with events clients and the `v1` API (#100125, @h4ghhh) [SIG API Machinery, Apps and Testing]
- Kube-controller incorrectly enabled support for generic ephemeral inline volumes if the storage object in use protection feature was enabled. (#104913, @pohly) [SIG API Machinery]
- Kubeadm: switch the preflight check (called 'Swap') that verifies if swap is enabled on Linux hosts to report a warning instead of an error. This is related to the graduation of the NodeSwap feature gate in the kubelet to Beta and being enabled by default in 1.23 - allows swap support on Linux hosts. In the next release of kubeadm (1.24) the preflight check will be removed, thus we recommend that you stop using it - e.g. via –ignore-preflight-errors or the kubeadm config. (#104854, @pacoxu) [SIG Cluster Lifecycle]
- Makes the etcd client (used by the API server) retry certain types of errors. The full list of retriable (codes.Unavailable) errors can be found at https://github.com/etcd-io/etcd/blob/main/api/v3rpc/rpctypes/error.go#L72 (#105069, @p0lyn0mial) [SIG API Machinery]
- When a static pod file is deleted and recreated while using a fixed UID, the pod was not properly restarted. (#104847, @smarterclayton) [SIG Node and Testing]
- XFS-filesystems are now force-formatted (option `-f`) in order to avoid problems being formatted due to detection of magic super-blocks. This aligns with the behaviour of formatting of ext3/4 filesystems. (#104923, @davidkarlsen) [SIG Storage]

Other (Cleanup or Flake)

- Enhanced error message for nodes not selected by scheduler due to pod's PersistentVolumeClaim(s) bound to PersistentVolume(s) that do not exist. (#105196, @yibozhuang) [SIG Scheduling and Storage]
- Kubeadm: remove the –port flag from the manifest for the kube-scheduler since the flag has been a NO-OP since 1.23 and insecure serving was removed for the component. (#105034, @pacoxu) [SIG Cluster Lifecycle]
- Migrate `cmd/proxy/{config, healthcheck, winkernel}` to structured logging (#104944, @jyz0309) [SIG Network]
- Migrate cmd/proxy/app and pkg/proxy/meta_proxier to structured logging (#104928, @jyz0309) [SIG Apps, Cluster Lifecycle, Network, Node and Testing]
- Migrate pkg/proxy to structured logs (#104908, @CIPHERTron) [SIG Network]
- Migrated pkg/proxy/winuserspace to structured logging (#105035, @shivanshu1333) [SIG Network]
- The `BoundServiceAccountTokenVolume` feature gate that is GA since v1.22 is unconditionally enabled, and can no longer be specified via the `--feature-gates` argument. (#104167, @ialidzhikov) [SIG Auth]
- The `SupportPodPidsLimit` and `SupportNodePidsLimit` feature gates that are GA since v1.20 are unconditionally enabled, and can no longer be specified via the `--feature-gates` argument. (#104163, @ialidzhikov) [SIG Node]
- Update build images to Debian 11 (Bullseye)
  - debian-base:bullseye-v1.0.0
  - debian-iptables:bullseye-v1.0.0
  - go-runner:v2.3.1-go1.17.1-bullseye.0
  - kube-cross:v1.23.0-go1.17.1-bullseye.1
  - setcap:bullseye-v1.0.0
  - cluster/images/etcd: Build 3.5.0-2 image
  - test/conformance/image: Update runner image to base-debian11 (#105158, @justaugustus) [SIG API Machinery, Architecture, Release and Testing]

Dependencies

Added

Nothing has changed.

Changed

- github.com/json-iterator/go: v1.1.11 → v1.1.12
- github.com/modern-go/reflect2: v1.0.1 → v1.0.2

Removed

Nothing has changed.

v1.23.0-alpha.2

Downloads for v1.23.0-alpha.2

Source Code

filename	sha512 hash
kubernetes.tar.gz	121d51f42a52b28e27a4b2f914a4f80fa3fba6328e6a4a5c96dec39c5b28c05461fcc2
kubernetes-src.tar.gz	641d47241acfadb3b13bccec57795749d2c9e3e07ffa7aa4b30df3a488643631eb8e5

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	f734cb514ee56adcb2d991a6f0550df907c72f8a61cc2a13117e61b8d5826ff942a582
kubernetes-client-darwin-arm64.tar.gz	24d1f851cd5782f8f39054e37beda1554dadd8a28cb3272b00d50fc095d1fc3018768
kubernetes-client-linux-386.tar.gz	082ad4abea58de3b629fc2ed4560a836cdbeb1adefb0c4cf47044bf33c750d8fcd8a0
kubernetes-client-linux-amd64.tar.gz	b3b0b23479c05b57ca574cf17cdcde7e716033bc4f6a80532d1175d8e533e3202bec
kubernetes-client-linux-arm.tar.gz	f5dac2976ce04310f74bba6102080554309b851fbd966ff1220d3eb23089db8eb8da
kubernetes-client-linux-arm64.tar.gz	057b372150749b13a38e04802c7cf566765e0fbb27f1b5f7bf6d3cc3f71eb3020916ea
kubernetes-client-linux-ppc64le.tar.gz	9a090d22aeba011c6d039bff59dbdc23ac4a112828db3cbba588d8b0ee1cd14d16e
kubernetes-client-linux-s390x.tar.gz	435e20055badb619289dc7c572af300bd2f86068d0b8f326e8d9abfda5347f2449e3
kubernetes-client-windows-386.tar.gz	55f192a4d095d494bb53af1b7133124b762a677eb46247b9dba71d10ea6830b37c3
kubernetes-client-windows-amd64.tar.gz	944059d1f1918a793490b95be8130d06189508ba8e79e79ca8cfd2ab98bf396ac551

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	a76a4b86ee151ba027f7cf4a2072451ae4c829182bb14e00ce1967421744bfc1e58f1
kubernetes-server-linux-arm.tar.gz	95aeb4eb473ab4920d81904bc89c6126732b9c6888f9e57493ee99d692042ca44f68
kubernetes-server-linux-arm64.tar.gz	3c56e906aafc2a1ac72300352a334662bec5d59e3e523c19b9d65bc52ad9075dc263
kubernetes-server-linux-ppc64le.tar.gz	b74bacafe9bb6a7cf407747b03e78ae3873e50deec4eaa08758d5e1d5287ac23af59b
kubernetes-server-linux-s390x.tar.gz	d3f8f8d9c233b114129f615252d42782cd366978a49506393a40af3f8b5b1250ce99e

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	146e2f762c179178a57a8c7af7c26470c5d580b8ff8400615162ad1056625f87ce2b3
kubernetes-node-linux-arm.tar.gz	9357d1b387e1b049fb6cec06a7081afc2ce7e906484c9b061fb0449d147a6c4f9c9dc
kubernetes-node-linux-arm64.tar.gz	8394f8f9d6ee823cb9a470ea67e15d4d0c6aca7065fe826788f50955905373fc3cddd
kubernetes-node-linux-ppc64le.tar.gz	7211cb426834484bff39f1ab3c9541203429039f8f5e522ca9e28c43da749e197128a3
kubernetes-node-linux-s390x.tar.gz	a7c1a38250398171d3df5865749e9928867c4f44106ae66d44cf9f948ce4f4eed9d1f2
kubernetes-node-windows-amd64.tar.gz	2007b3b16597cc06b486f87f35b6c637404f07c11d88b8c8e1c2c9bbea97f762bd7d

Changelog since v1.23.0-alpha.1

Changes by Kind

Deprecation

- Controller-manager: the following flags have no effect and would be removed in v1.24:
  - `--port`
  - `--address` The insecure port flags `--port` may only be set to 0 now. Also `metricsBindAddress` and `healthzBindAddress` fields from `kubescheduler.config.k8s.io/v1beta1` are no-op and expected to be empty. Removed in `kubescheduler.config.k8s.io/v1beta2` completely.

  In addition, please be careful that:

  - kube-scheduler MUST start with `--authorization-kubeconfig` and `--authentication-kubeconfig` correctly set to get authentication/authorization working.
  - liveness/readiness probes to kube-scheduler MUST use HTTPS now, and the default port has been changed to 10259.
  - Applications that fetch metrics from kube-scheduler should use a dedicated service account which is allowed to access nonResourceURLs `/metrics`. (#96345, @ingvagabund) [SIG Cloud Provider, Scheduling and Testing]
- Removed deprecated metric `scheduler_volume_scheduling_duration_seconds` (#104518, @dntosas) [SIG Instrumentation, Scheduling and Storage]

API Change

- A small regression in Service updates was fixed. The circumstances are so unlikely that probably nobody would ever hit it. (#104601, @thockin) [SIG Network]
- Introduce v1beta2 for Priority and Fairness with no changes in API spec (#104399, @tkashem) [SIG API Machinery and Testing]
- Kube-apiserver: Fixes handling of CRD schemas containing literal null values in enums. (#104969, @liggitt) [SIG API Machinery, Apps and Network]
- Kubelet: turn the KubeletConfiguration v1beta1 `ResolverConfig` field from a `string` to `*string`. (#104624, @Haleygo) [SIG Cluster Lifecycle and Node]
- Kubernetes is now built using go1.17 (#103692, @justaugustus) [SIG API Machinery, Apps, Architecture, Auth, Autoscaling, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Network, Node, Release, Scheduling, Storage and Testing]
- Removed deprecated `--seccomp-profile-root`/`seccompProfileRoot` config (#103941, @saschagrunert) [SIG Node]
- Since golang 1.17 both net.ParseIP and net.ParseCIDR rejects leading zeros in the dot-decimal notation of IPv4 addresses. Kubernetes will keep allowing leading zeros on IPv4 address to not break the compatibility. IMPORTANT: Kubernetes interprets leading zeros on IPv4 addresses as decimal, users must not rely on parser alignment to not being impacted by the associated security advisory: CVE-2021-29923 golang standard library "net" - Improper Input Validation of octal literals in golang 1.16.2 and below standard library "net" results in indeterminate SSRF & RFI vulnerabilities. Reference: https://nvd.nist.gov/vuln/detail/CVE-2021-29923 (#104368, @aojea) [SIG API Machinery, Apps, Architecture, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation, Network, Node, Release, Scalability, Scheduling, Storage and Testing]
- StatefulSet minReadySeconds is promoted to beta (#104045, @ravisantoshgudimetla) [SIG Apps and Testing]
- The `Service.spec.ipFamilyPolicy` field is now *required* in order to create

or update a Service as dual-stack. This is a breaking change from the beta behavior. Previously the server would try to infer the value of that field from either `ipFamilies` or `clusterIPs`, but that caused ambiguity on updates. Users who want a dual-stack Service MUST specify `ipFamilyPolicy` as either "PreferDualStack" or "RequireDualStack". (#96684, @thockin) [SIG API Machinery, Apps, Network and Testing]
- Users of LogFormatRegistry in component-base must update their code to use the logr v1.0.0 API. The JSON log output now uses the format from go-logr/zapr (no `v` field for error messages, additional information for invalid calls) and has some fixes (correct source code location for warnings about invalid log calls). (#104103, @pohly) [SIG API Machinery, Architecture, Auth, CLI, Cloud Provider, Cluster Lifecycle, Instrumentation and Storage]
- When creating an object with generateName, if a conflict occurs the server now returns an AlreadyExists error with a retry option. (#104699, @vincepri) [SIG API Machinery]

Feature

- Add fish shell completion to kubectl (#92989, @WLun001) [SIG CLI]
- Added PowerShell completion generation by running `kubectl completion powershell` (#103758, @zikhan) [SIG CLI]
- Added a `Processing` condition for the workqueue API Changed `Shutdown` for the workqueue API to wait until the work queue finishes processing all in-flight items. (#101928, @alexanderConstantinescu) [SIG API Machinery and Apps]
- Added a new flag `--append-server-path` to `kubectl proxy` that will automatically append the kube context server path to each request. (#97350, @FabianKramm) [SIG API Machinery, CLI and Testing]
- Added support for setting controller-manager log level online (#104571, @h4ghhh) [SIG API Machinery, Apps and Cloud Provider]
- Adding support for multiple –from-env-file flags (#104232, @lauchokyip) [SIG CLI]
- Cloud providers can set service account names for cloud controllers. (#103178, @nckturner) [SIG API Machinery and Cloud Provider]
- Health check of kube-controller-manager now includes each controller. (#104667, @jiahuif) [SIG API Machinery and Cloud Provider]
- Kubernetes is now built with Golang 1.17.1 (#104904, @cpanato) [SIG API Machinery, Cloud Provider, Instrumentation, Release and Testing]
- The pause image list now contains Windows Server 2022 (#104438, @nick5616) [SIG Windows]
- Updates debian-iptables to v1.6.7 to pick up CVE fixes (#104970, @PushkarJ) [SIG API Machinery, Network, Release, Security and Testing]

Documentation

- Conformance: the test "[sig-network] EndpointSlice should have Endpoints and EndpointSlices pointing to API Server [Conformance]" only requires that there is an EndpointSlice that references the "kubernetes.default" service, it no longer requires that its named "kubernetes". (#104664, @aojea) [SIG Architecture, Network and Testing]

Bug or Regression

- A pod that the Kubelet rejects was still considered as being accepted for a brief period of time after rejection, which might cause some pods to be rejected briefly that could fit on the node. A pod that is still terminating (but has status indicating it has failed) may also still be consuming resources and so should also be considered. (#104817, @smarterclayton) [SIG Node]
- Changed kubectl describe to compute Age of an event using the count and lastObservedTime fields available in the event series (#104482, @harjas27) [SIG CLI]
- Don't prematurely close reflectors in case of slow initialization in watch based manager to fix issues with inability to properly mount secrets/configmaps. (#104604, @wojtek-t) [SIG Node]
- Fix Job tracking with finalizers for more than 500 pods, ensuring all finalizers are removed before counting the Pod. (#104666, @alculquicondor) [SIG Apps and Instrumentation]
- Fix a regression where the Kubelet failed to exclude already completed pods from calculations about how many resources it was currently using when deciding whether to allow more pods. (#104577, @smarterclayton) [SIG Node]
- Fix detach disk issue on deleting vmss node (#104572, @andyzhangx) [SIG Cloud Provider]
- Fix: ensure InstanceShutdownByProviderID return false for creating Azure VMs (#104382, @feiskyer) [SIG Cloud Provider]
- Fix: ignore the case when comparing azure tags in service annotation (#104705, @nilo19) [SIG Cloud Provider]
- Fix: ignore the case when updating Azure tags (#104593, @nilo19) [SIG Cloud Provider]
- Fixed bug where kubectl would emit duplicate warning messages for flag names that contain an underscore and recommend using a nonexistent flag in some cases (#103852, @brianpursley) [SIG CLI and Cluster Lifecycle]
- Fixed client IP preservation for NodePort service with protocol SCTP in ipvs mode (#104756, @tnqn) [SIG Network]
- Fixed occasional pod cgroup freeze when using cgroup v1 and systemd driver. (#104528, @kolyshkin) [SIG Node]
- Fixes a regression that could cause panics in LRU caches in controller-manager, kubelet, kube-apiserver, or client-go (#104466, @stbenjam) [SIG API Machinery, Architecture, Auth, CLI, Cloud Provider, Cluster Lifecycle,

Instrumentation and Storage]
- Kube-apiserver: fixes an issue where an admission webhook can observe a v1 Pod object that does not have the `defaultMode` field set in the injected service account token volume (#104523, @liggitt) [SIG Auth]
- Kube-proxy health check ports used to listen to : for each of the services. This is not needed and opens ports in addresses the cluster user may not have intended. The PR limits listening to all node address which are controlled by `--nodeport-addresses` flag. if no addresses are provided then we default to existing behavior by listening to : for each service (#104742, @khenidak) [SIG Network]
- Kube-scheduler now doesn't print any usage message when unknown flag is specified (#104503, @sanposhiho) [SIG Scheduling]
- Metrics changes: Fix exposed buckets of `scheduler_volume_scheduling_duration_seconds_bucket` metric (#100720, @dntosas) [SIG Apps, Instrumentation, Scheduling and Storage]
- Scheduler resource metrics over fractional binary quantities (2.5Gi, 1.1Ki) were incorrectly reported as very small values. (#103751, @y-tag) [SIG API Machinery and Scheduling]

Other (Cleanup or Flake)

- Generic ephemeral volumes: better pod events ("waiting for ephemeral volume controller to create the persistentvolumeclaim"" instead of "persistentvolumeclaim not found") (#104605, @pohly) [SIG Scheduling and Storage]
- Kubeadm: remove the deprecated flags "–csr-only" and "–csr-dir" from "kubeadm certs renew". Please use "kubeadm certs generate-csr" instead. (#104796, @RA489) [SIG Cluster Lifecycle]
- Migrate `pkg/scheduler` to structured logging (#99273, @yangjunmyfm192085) [SIG Scheduling]
- Migrated pkg/proxy/userspace to structured logging (#104931, @shivanshu1333) [SIG Network]
- More detailed logging has been added to the EndpointSlice controller for Topology Aware Hints. (#104741, @robscott) [SIG Apps and Network]
- Support for Windows Server 2022 was added to the k8s.gcr.io/pause:3.6 image. (#104711, @claudiubelu) [SIG CLI, Cloud Provider, Cluster Lifecycle, Node, Release and Testing]
- The maximum length of the CSINode id field has increased to 256 bytes to match the CSI spec (#104160, @pacoxu) [SIG Storage]
- Update conformance image to use debian-base:buster-v1.9.0 (#104696, @PushkarJ) [SIG Architecture, Release, Security and Testing]
- `volume.kubernetes.io/storage-provisioner` annotation will be added to dynamic provisioning required PVC. `volume.beta.kubernetes.io/storage-provisioner` annotation is deprecated. (#104590, @Jiawei0227) [SIG Apps and Storage]

Dependencies

Added

- bazil.org/fuse: 371fbbd
- github.com/go-logr/zapr: v1.1.0
- github.com/kr/fs: v0.1.0
- github.com/pkg/sftp: v1.10.1

Changed

- github.com/Microsoft/go-winio: v0.4.15 → v0.4.17
- github.com/Microsoft/hcsshim: 5eafd15 → v0.8.22
- github.com/benbjohnson/clock: v1.0.3 → v1.1.0
- github.com/bketelsen/crypt: 5cbc8cc → v0.0.4
- github.com/containerd/cgroups: 0dbf7f0 → v1.0.1
- github.com/containerd/containerd: v1.4.4 → v1.4.9
- github.com/containerd/continuity: aaeac12 → v0.1.0
- github.com/containerd/fifo: a9fb20d → v1.0.0
- github.com/containerd/go-runc: 5a6d9f3 → v1.0.0
- github.com/containerd/typeurl: v1.0.1 → v1.0.2
- github.com/go-logr/logr: v0.4.0 → v1.1.0
- github.com/magiconair/properties: v1.8.1 → v1.8.5
- github.com/mitchellh/go-homedir: v1.1.0 → v1.0.0
- github.com/mitchellh/mapstructure: v1.1.2 → v1.4.1
- github.com/opencontainers/runc: v1.0.1 → v1.0.2
- github.com/pelletier/go-toml: v1.2.0 → v1.9.3
- github.com/spf13/afero: v1.2.2 → v1.6.0
- github.com/spf13/cast: v1.3.0 → v1.3.1
- github.com/spf13/cobra: v1.1.3 → v1.2.1
- github.com/spf13/jwalterweatherman: v1.0.0 → v1.1.0
- github.com/spf13/viper: v1.7.0 → v1.8.1
- github.com/yuin/goldmark: v1.3.5 → v1.4.0
- go.uber.org/zap: v1.17.0 → v1.19.0
- golang.org/x/crypto: 5ea612d → 32db794
- golang.org/x/net: abc4532 → 60bc85c
- golang.org/x/oauth2: f6687ab → 2bc19b1
- golang.org/x/sys: 59db8d7 → 41cdb87
- golang.org/x/term: 6a3ed07 → 6886f2d
- golang.org/x/tools: v0.1.2 → d4cc65f
- gopkg.in/ini.v1: v1.51.0 → v1.62.0
- k8s.io/klog/v2: v2.9.0 → v2.20.0
- k8s.io/utils: efc7438 → bdf08cb
- sigs.k8s.io/apiserver-network-proxy/konnectivity-client: v0.0.22 → v0.0.23

Removed

- github.com/coreos/bbolt: v1.3.2
- github.com/coreos/etcd: v3.3.13+incompatible
- github.com/coreos/go-systemd: 95778df
- github.com/coreos/pkg: 399ea9e
- github.com/dgrijalva/jwt-go: v3.2.0+incompatible
- gotest.tools: v2.2.0+incompatible

v1.23.0-alpha.1

Downloads for v1.23.0-alpha.1

Source Code

filename	sha512 hash
kubernetes.tar.gz	f7c76f1e077b5d98019347b2c9b79eaa0c79d428542b9c15dab23886c276ca16314f
kubernetes-src.tar.gz	f267f26eca20cd7018e68abeeed38aed5c10dbbae7c531c4e08e507196a4dd3f511eb

Client Binaries

filename	sha512 hash
kubernetes-client-darwin-amd64.tar.gz	deb110839c2c3cf94ca9b29df2f0b07b3fad6937d7bb6e9d2516d01345c8e324f6ab8
kubernetes-client-darwin-arm64.tar.gz	1473cb9fc4847b0daff6c9e3189ce55fadc22fb6190161e744e5438066a714cb467fde
kubernetes-client-linux-386.tar.gz	ed5f5b0777ca51790d185764afc2c812f82ae27c35d897570fc86cabee90dc0a445d9
kubernetes-client-linux-amd64.tar.gz	39f2a888e7a43c9e4a4018301894786f6babe23d79ab7a143e06444f69bc14aec2e15
kubernetes-client-linux-arm.tar.gz	b6b8333d8adb4bc6a943bcd2c6cd1a0aeaf0b926d06aa03b759e3c723c81ccc9180
kubernetes-client-linux-arm64.tar.gz	3cb8217b9a5363cebad4989253e02c8a37259b61eafc2f08681508c11c5f68448cad4
kubernetes-client-linux-ppc64le.tar.gz	e411700fb13b25deca6347983cdafe47199f0df00086ccd7b3e7d52a7b3bee7e96a85
kubernetes-client-linux-s390x.tar.gz	6c1395792a175de77436352d0893476363497b0f6a616f4415f91aed5e780d1f25b5
kubernetes-client-windows-386.tar.gz	f3aec7136c21d24a99145ce294a859078fcbf11bae132b8b4081555a6656c0d95ccba
kubernetes-client-windows-amd64.tar.gz	b29697ba0a25f3d871ffbe5800dcb23ec9fd27c0122a284e17c21f1258f7dd9d34181

Server Binaries

filename	sha512 hash
kubernetes-server-linux-amd64.tar.gz	a5b3edca559b84cd9d22b43b23d0607951d434e185dcb313b831604d83dd306cfc
kubernetes-server-linux-arm.tar.gz	2334dbcff3ba22a50f252998eb63991b6c816659dbaa5f749370fc1b1f78f0af7739e5
kubernetes-server-linux-arm64.tar.gz	58674443ce6e359a995dd7c4289bf730e616bcaf336837b77333a206d4e98693d935
kubernetes-server-linux-ppc64le.tar.gz	f60ebdd04e2348b1ba51540cad93fa24cb133fd25db97150000bffaff8ccb41e1b650
kubernetes-server-linux-s390x.tar.gz	ff008aa0ba1bf755f32c7251c6aceb12b6f9de00d2e2729302b51960e70e486bd82da

Node Binaries

filename	sha512 hash
kubernetes-node-linux-amd64.tar.gz	352502f10fbc4579bd9556e3f73ca7513184371ea563d12a39d655d39bb14ccf0f485
kubernetes-node-linux-arm.tar.gz	af9de95e2b9e4c1f39cb9757d4dca020f7d276b6702302a2d92e7a93e9986528615c
kubernetes-node-linux-arm64.tar.gz	45a286cb1d469b16d046af02047cf63a8407222e4a39fe696f5652e0587e0c9ffbdbal
kubernetes-node-linux-ppc64le.tar.gz	7a540a3ff0295998a1679b0ccd50cb1825faf1d0afd6ed08138ab3767c83a2743aa43
kubernetes-node-linux-s390x.tar.gz	3cd7656221ac2fa161abcf237878cff26c1d97cf77d9b784736c97a56841397ff859e4
kubernetes-node-windows-amd64.tar.gz	21e63913024e88a48244a598cd400fbae6ce8f8910202f1b635812fbc9281b7c6097e

Changelog since v1.22.0

Urgent Upgrade Notes

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

-

(#104389, @saschagrunert) [SIG Node] - Kubeadm: remove the deprecated flag –experimental-patches for the init|join|upgrade commands. The flag –patches is no longer allowed in a mixture with the flag –config. Please use the kubeadm configuration for setting patches for a node using {Init|Join}Configuration.patches. (#104065, @pacoxu) [SIG Cluster Lifecycle]

Changes by Kind

Deprecation

- Add apiserver_longrunning_requests metric to replace the soon to be deprecated apiserver_longrunning_gauge metric. (#103799, @jyz0309) [SIG API Machinery, Cluster Lifecycle and Instrumentation]
- Kubeadm: remove the –port flag from the manifest for the kube-controller-manager since the flag has been a NO-OP since 1.22 and insecure serving was removed for the component. (#104157, @knight42) [SIG Cluster Lifecycle]

API Change

- CSIDriver.Spec.StorageCapacity can now be modified. (#101789, @pohly) [SIG Storage]
- Kube-apiserver: The `rbac.authorization.k8s.io/v1alpha1` API version is removed; use the `rbac.authorization.k8s.io/v1` API, available since v1.8. The `scheduling.k8s.io/v1alpha1` API version is removed; use the `scheduling.k8s.io/v1` API, available since v1.14. (#104248, @liggitt) [SIG API Machinery, Auth, Network and Testing]
- Kube-controller-manager supports '–concurrent-ephemeralvolume-syncs' flag to set the number of ephemeral volume controller workers. (#102981, @SataQiu) [SIG API Machinery and Apps]

Feature

- Adding support for multiple –from-env-file flags (#101646, @lauchokyip) [SIG CLI]
- All folks to build kubernetes with a custom kube-cross image (#104185, @dims) [SIG Release and Testing]
- Allow node expansion of local volumes (#102886, @gnufied) [SIG Storage and Testing]
- Client-go event library allows customizing spam filtering function. It is now possible to override `SpamKeyFunc`, which is used by event filtering to detect spam in the events. (#103918, @olagacek) [SIG API Machinery and Instrumentation]
- Constants/variables from k8s.io for STABLE metrics is now supported (#103654, @coffeepac) [SIG Auth, Instrumentation, Node and Testing]

- Display Labels when kubectl describe ingress (#103894, @kabab) [SIG CLI]
- Expose a `NewUnstructuredExtractor` from apply configurations `meta/v1` package that enables extracting objects into unstructured apply configurations (#103564, @kevindelgado) [SIG API Machinery, Cluster Lifecycle, Release and Testing]
- Introduce a feature gate DisableKubeletCloudCredentialProviders which allows disabling the in-tree kubelet credential providers.

  The DisableKubeletCloudCredentialProviders FeatureGate is currently in Alpha, which means is currently disabled by default. Once the FeatureGate moves to beta, in-tree credential providers will be disabled by default, and users will need to migrate to using external credential providers. (#102507, @ostrain) [SIG Cloud Provider]
- Introduces a new metric: admission_webhook_request_total with the following labels: name (string) - the webhook name, type (string) - the admission type, operation (string) - the requested verb, code (int) - the HTTP status code, rejected (bool) - whether the request was rejected, namespace (string) - the namespace of the requested resource. (#103162, @rmoriar1) [SIG API Machinery and Instrumentation]
- Kube-up.sh installs csi-proxy v1.0.1-gke.0 (#104426, @mauriciopoppe) [SIG Cloud Provider, Storage and Windows]
- Kubeadm: add support for dry running "kubeadm join". The new flag "kubeadm join –dry-run" is similar to the existing flag for "kubeadm init/upgrade" and allows you to see what changes would be applied. (#103027, @Haleygo) [SIG Cluster Lifecycle]
- Kubernetes is now built with Golang 1.16.7 (#104199, @cpanato) [SIG Cloud Provider, Instrumentation, Release and Testing]
- The ServiceAccountIssuerDiscovery feature gate is removed. It reached GA in Kubernetes 1.21. (#103685, @mengjiao-liu) [SIG API Machinery and Auth]
- Updated Cluster Autosaler to version 1.22.0. Release notes: https://github.com/kubernetes/autoscaler/releases/tag/cluster-autoscaler-1.22.0 (#104293, @x13n) [SIG Autoscaling and Cloud Provider]
- Updates the following images to pick up CVE fixes:

  - debian to v1.9.0
  - debian-iptables to v1.6.6
  - setcap to v2.0.4 (#104142, @mengjiao-liu) [SIG API Machinery, Release and Testing]

Documentation

- Update description of –audit-log-maxbackup to describe behavior when value = 0 (#103843, @Arkessler) [SIG API Machinery]

Bug or Regression

-

    1. Changes json representation for a conflicted taint to Key=Effect when a conflicted taint occurs in kubectl taint. (#104011, @manugupt1) [SIG CLI]

- A new server run option 'shutdown-send-retry-after' has been introduced. If true the HTTP Server will continue listening until all non longrunning request(s) in flight have been drained, during this window all incoming requests will be rejected with a status code 429 and a 'Retry-After' response header. (#101257, @tkashem) [SIG API Machinery]
- Adds Kubernetes Events to the Kubelet Graceful Shutdown feature (#101081, @rphillips) [SIG Node]
- CA, certificate and key bundles for the generic-apiserver based servers will be reloaded immediately after the files are changed. (#104102, @tnqn) [SIG API Machinery and Testing]
- Fix kube-apiserver metric reporting for the deprecated watch path of /api//watch/... (#104161, @wojtek-t) [SIG API Machinery and Instrumentation]
- Fix: skip case sensitivity when checking Azure NSG rules (#104384, @feiskyer) [SIG Cloud Provider]
- Fixed an issue which didn't append OS's environment variables with the one provided in Credential Provider Config file, which may lead to failed execution of external credential provider binary. See https://github.com/kubernetes/kubernetes/issues/102750 (#103231, @n4j) [SIG Auth and Node]
- Fixed architecture within manifest for non `amd64` etcd images. (#104116, @saschagrunert) [SIG API Machinery]
- Fixed bug where kubectl would emit duplicate warning messages for flag names that contain an underscore and recommend using a nonexistent flag in some cases (#103852, @brianpursley) [SIG CLI and Cluster Lifecycle]

- Graceful node shutdown, allow the actual inhibit delay to be greater than the expected inhibit delay (#103137, @wzshiming) [SIG Node]
- Kube-apiserver: Avoids unnecessary repeated calls to admission webhooks that reject an update or delete request. (#104182, @liggitt) [SIG API Machinery]
- Kube-proxy: delete stale conntrack UDP entries for loadbalancer ingress IP. (#104009, @aojea) [SIG Network]
- Kubeadm: When adding an etcd peer to an existing cluster, if an error is returned indicating the peer has already been added, this is accepted and a ListMembers call is used instead to return the existing cluster. This helps diminish the exponential backoff when the first AddMember call times out, while still retaining a similar performance when the peer had already been added from a previous call. (#104134, @ihgann) [SIG Cluster Lifecycle]
- Pass additional flags to subpath mount to avoid flakes in certain conditions (#104253, @mauriciopoppe) [SIG Storage]
- Update Go used to build migrate script in etcd image to v1.16.7 (#104301, @serathius) [SIG API Machinery and Release]

Other (Cleanup or Flake)

- Deprecate apiserver_longrunning_gauge and apiserver_register_watchers in 1.23.0 (#103793, @yan-lgtm) [SIG API Machinery, Cluster Lifecycle and Instrumentation]
- Kube-apiserver: sets an upper-bound on the lifetime of idle keep-alive connections and time to read the headers of incoming requests (#103958, @liggitt) [SIG API Machinery and Node]
- Kubeadm: external etcd endpoints passed in the ClusterConfiguration that have Unicode characters are no longer IDNA encoded (converted to Punycode). They are now just URL encoded as per Go's implementation of RFC-3986, have duplicate "/" removed from the URL paths, and passed like that directly to the kube-apiserver –etcd-servers flag. If you have etcd endpoints that have Unicode characters, it is advisable to encode them in advance with tooling that is fully IDNA compliant. If you don't do that, the Go standard library (used in k8s and etcd) would do it for you when making requests to the endpoints. (#103801, @gkarthiks) [SIG Cluster Lifecycle]
- Kubeadm: update references to legacy artifacts locations, the 'ci-cross' prefix has been removed from the version match as it does not exist in the new 'gs://k8s-release-dev' bucket (#103813, @SataQiu) [SIG Cluster Lifecycle]

- Migratecmd/kube-proxy/app logs to structured logging (#98913, @yxxhero) [SIG Network]
- Surface warning when users don't set propagationPolicy for jobs while deleting (#104080, @ravisantoshgudimetla) [SIG Apps]
- The AllowInsecureBackendProxy feature gate is removed. It reached GA in Kubernetes 1.21. (#103796, @mengjiao-liu) [SIG API Machinery]
- The `StartupProbe` feature gate that is GA since v1.20 is unconditionally enabled, and can no longer be specified via the `--feature-gates` argument. (#104168, @ialidzhikov) [SIG Node]
- The apiserver exposes 4 new metrics that allow to track the status of the Service CIDRs allocations: - current number of available IPs per Service CIDR - current number of used IPs per Service CIDR - total number of allocation per Service CIDR - total number of allocation errors per ServiceCIDR (#104119, @aojea) [SIG Apps, Instrumentation and Network]
- The flag `--deployment-controller-sync-period` has no effect now, deprecate it and will be removed in v1.24. (#103538, @Pingan2017) [SIG Apps]
- Troubleshooting: informers log handlers that take more than 100 milliseconds to process an object if the DeltaFIFO queue starts to grow beyond 10 elements. (#103917, @aojea) [SIG API Machinery]
- Update cri-tools dependency to v1.22.0 (#104430, @saschagrunert) [SIG Cloud Provider and Node]
- `gcr.io/kubernetes-e2e-test-images` will no longer be used in E2E / CI testing, `k8s.gcr.io/e2e-test-images` will be used instead. (#103724, @claudiubelu) [SIG API Machinery and Testing]

Dependencies

Added

- github.com/google/martian/v3: v3.1.0
- github.com/kr/fs: v0.1.0
- github.com/pkg/sftp: v1.10.1

Changed

- cloud.google.com/go/bigquery: v1.4.0 → v1.8.0
- cloud.google.com/go/storage: v1.6.0 → v1.10.0
- cloud.google.com/go: v0.54.0 → v0.81.0
- github.com/GoogleCloudPlatform/k8s-cloud-provider: 7901bc8 → ea6160c

- github.com/bketelsen/crypt: 5cbc8cc → v0.0.4
- github.com/golang/mock: v1.4.4 → v1.5.0
- github.com/google/pprof: 1ebb73c → cbba55b
- github.com/hashicorp/golang-lru: v0.5.1 → v0.5.0
- github.com/ianlancetaylor/demangle: 5e5cf60 → 28f6c0f
- github.com/magiconair/properties: v1.8.1 → v1.8.5
- github.com/mitchellh/go-homedir: v1.1.0 → v1.0.0
- github.com/mitchellh/mapstructure: v1.1.2 → v1.4.1
- github.com/pelletier/go-toml: v1.2.0 → v1.9.3
- github.com/prometheus/common: v0.26.0 → v0.28.0
- github.com/spf13/afero: v1.2.2 → v1.6.0
- github.com/spf13/cast: v1.3.0 → v1.3.1
- github.com/spf13/cobra: v1.1.3 → v1.2.1
- github.com/spf13/jwalterweatherman: v1.0.0 → v1.1.0
- github.com/spf13/viper: v1.7.0 → v1.8.1
- go.opencensus.io: v0.22.3 → v0.23.0
- golang.org/x/net: 37e1c6a → abc4532
- golang.org/x/oauth2: bf48bf1 → f6687ab
- google.golang.org/api: v0.20.0 → v0.46.0
- google.golang.org/appengine: v1.6.5 → v1.6.7
- gopkg.in/ini.v1: v1.51.0 → v1.62.0
- honnef.co/go/tools: v0.0.1-2020.1.3 → v0.0.1-2020.1.4
- k8s.io/gengo: b6c5ce2 → 485abfe
- k8s.io/kube-openapi: 9528897 → 7fbd8d5
- k8s.io/utils: 4b05e18 → efc7438

Removed

- cloud.google.com/go/datastore: v1.1.0
- cloud.google.com/go/pubsub: v1.2.0
- github.com/alecthomas/units: f65c72e
- github.com/coreos/bbolt: v1.3.2
- github.com/coreos/etcd: v3.3.13+incompatible
- github.com/coreos/go-systemd: 95778df
- github.com/coreos/pkg: 399ea9e
- github.com/dgrijalva/jwt-go: v3.2.0+incompatible
- github.com/google/martian: v2.1.0+incompatible
- github.com/jpillora/backoff: v1.0.0