

## KumoScale 3.22 Release Notes

This page provides release notes for all KumoScale software components.

KIOXIA KumoScale™ software supports NVMe over Fabric™ (NVMe-oF™) protocol version 1.0, which defines the transport layer to carry NVMe commands over RDMA and TCP networks. This page provides release notes for all KumoScale software components:

- [KumoScale™ Storage Software v. 3.22](#) including the KumoScale target kernels and embedded engine.
- [KumoScale Provisioner Software for Kubernetes™](#) is the KumoScale service for provisioning storage across a cluster.
- [KumoScale Cluster Manager CLI Software](#) is a new tool that supports remote access for managing a KumoScale Cluster using KumoScale Operators and the KumoScale Provisioner.
- [KumoScale Operator Software for Kubernetes](#) are used for installing and configuring a KumoScale Kubernetes cluster.
- [KumoScale CSI Software for Kubernetes Orchestration](#) contains the CSI plugin driver for accessing the KumoScale storage cluster.
- [KumoScale Software Ansible™ Modules](#) contains Ansible™ modules and example playbooks that may be used to manage BareMetal or Virtual Machine (VM) Hosts and the KumoScale storage cluster
- [KumoScale Software for OpenStack™ Platforms](#) for accessing KumoScale storage clusters includes a KumoScale NVMe-oF connector, Cinder driver, and agent module for OpenStack™ Yoga.

### KumoScale™ Storage Software v. 3.22

KumoScale Storage Software is available in both Managed and Appliance modes.

**KumoScale for Managed Mode** is designed to be used with your own Kubernetes cluster. The software includes a:

- Target kernel component,
- Embedded engine,
- REST API,
- Command Line Interface (CLI) for management and control, and a
- Packaging tool (**sh**) for packing the above into a single password protected downloaded file.

**KumoScale for Appliance Mode** integrates all components into a single image with a customized Linux™ kernel 4.18.0-240.22.1 (RHEL 8.3) and Kubernetes (v1.17.5)

#### KumoScale Storage Node Software for Managed Mode Deployment

Item	Description	Revision
KumoScale Storage Node Engine Software	KumoScale Storage Node Engine software for Managed Mode deployment	3.22-15989
KumoScale Storage Node CLI Software	KumoScale Storage Node CLI software for Managed Mode deployment	3.22-15989
KumoScale Storage Node Target Software	KumoScale Storage Node Target Source Code software for Managed Mode deployment	3.22-2343

#### KumoScale Storage Node Software for Appliance Mode Deployment

Item	Description	Revision
KumoScale ISO Network Installation	The KumoScale storage node software ISO Network Installation package supports remote installation for appliance mode using a Preboot Execution Environment (PXE).	3.22-15989
KumoScale ISO USB Installation	The KumoScale storage node software ISO USB Installation package supports local installation for appliance mode using USB.	3.22-15989
KumoScale Virtual CD Installation	The KumoScale storage node software Virtual CD Installation supports remote installation for appliance mode using a server with IPMI/iLO/iDRAC.	3.22-15989
KumoScale Storage Node Installation	KumoScale Storage Node Installation Package for Appliance Mode	3.22-15989

#### KumoScale Storage Node Software: Hardware Requirements

See the [Hardware Compatibility List \(HCL\)](#).

KumoScale Storage Node Software: New Features

KumoScale Storage Node 3.22-15989 software is based on KumoScale Storage Node 3.21-15549 software and includes the following changes:

- Target host across the cluster
- Support for backend migration of volumes between storage nodes
- Ability to delete volumes with snapshots
- Support for a single replica volume with ability to modify to multiple replicas
- Support for a name-based cluster address (VIP DNS)
- Interactive menu to facilitate installation of KumoScale for Appliance Mode
- KumoScale 3.21 Bug Fixing and small improvements

KumoScale Storage Node Software: Deprecated Features

None

KumoScale Storage Node Software: Fixed Issues and Improvements from Previous Release

Engine

Bug ID	Description
NOF-7246	/etc/init.d/KumoScale status shows the system is running while systemctl status is inactive.
NOF-7313	When REST API software-upload returns an error, log the gpg-pass parameter value within the StorageNode log.
NOF-7357	Enable a Solutions team operation to specify additional RDMA NIC models.
NOF-7373	Improve the ks_pkg_builder shell script to report an error when an invalid argument is provided.
NOF-7375	A faulty SSD might result in a storage node not being able to discover any SSDs after reboot if its NVMe PCI driver failed to initialize the faulty SSD device.

Target

Bug ID	Description
NOF-7397	Support Oracle Linux 8.5.
NOF-7456	Core affinity for Intel™ E810 not assigning correct cores for RDMA.

KumosScale Kubernetes

Bug ID	Description
NOF-7368	KumoScale Kubernetes might get corrupted when adding a third master storage node.

KumoScale Storage Node CLI

Bug ID	Description
NOF-7213	Managed Mode for bare-metal : ks_cli : Change the error message to improve readability.
NOF-7291	ks-cli reset-factory : Add a validation that will check if a token was created.
NOF-7328	Improve the software upgrade warning message to indicate that a reboot might be needed.

Installation for Appliance Mode

Bug ID	Description
NOF-7001	Add support for modifying the VIP.
NOF-7439	Intel E810- can't connect to RoCEv2 RDMA targets.
NOF-7445	Improve the progress messages of the Golden Image installation.
NOF-7510	Add validation as part of Golden Image installation menu for "Static IP and Gateway to reside on the same subnet."
NOF-7548	When the Golden Image installation fails with an error about previous installations on the drives, improve the error with the exact information for the devices that need to be purged.

KumoScale Storage Node Software: Open Issues and Known Limitations

Critical Issues

None

High-Impact Issues

None

Medium-Impact Issues

Bug ID	Description
NOF-7374	The KumoScale Provisioner failed to correctly discover a storage node with 16K volumes. The storage node is reported as unavailable. <i>Mitigation</i> : Avoid having more then 14K volumes per storage node.
NOF-7048	When the system is under configuration load (more than 16k volumes), Grafana™ dashboard responds slowly. IOps summary loaded with errors and volume status summary seems broken. No Mitigation for this issue.
NOF-4319	Small Memory leak as a result of TCP session transport disconnection.No Mitigation was found yet for this issue.The issue was reported to the Linux NVMe open-source community as it was seen also with open source NVMe-TCP target implementation.
NOF-3023	When a duplicate portal IP is detected on another appliance, all the targets are disconnected and the initiator crashes. <i>Mitigation</i> : Avoid configuring duplicate portal IPs.
NOF-2487	When simulating 2000 initiators using 4 compute nodes that get connected to a single KumoScale target with ~14,000 sessions, if one of the compute nodes that had ~11,000 sessions crashes, the target also lost sessions from other compute nodes to this target. <i>Mitigation</i> : It is advised not to connect so many initiators to a single target.
NOF-1482	DHCP IP Portal change as a result of DHCP IP renew is not reflected until KumoScale is rebooted or the user manually deletes and creates the Portal. <i>Mitigation</i> : If the DHCP portal changes, remove the portal and create it again with the new IP.

Low-Impact Issues

Bug ID	Description
NOF-8169	Backend migration aborts when the source storage node NVMe-oF controller is in reconnect state; complete successfully but keep the session state as reconnect.
NOF-5332	Cluster VIP might not be accessible if the management interface was connected after the deployment completed. This issue might happen only during the first storage node deployment done via USB with a static management IP and Cluster VIP when none of the network interfaces are connected. <i>Mitigation</i> : Make sure the management interface is connected during a boot. If the system is brought up before the management interface was connected reboot the system.
NOF-5098	Deployment without a VIP parameter will report kubelet errors within the storage node logs until it joins a KumoScale cluster. <i>Mitigation</i> : Ignore kubelet errors prior joining the cluster.

KumoScale Provisioner Service

The KumoScale Provisioner Software for Kubernetes provides a central storage provisioning service across KumoScale Server platforms. It assists a large-scale data center orchestrator to select the best KumoScale appliance to store a required volume. The KumoScale Provisioner Software is delivered to customers as a binary container for Kubernetes deployment.

KumoScale Provisioner: Released Components

Item	Description	Revision
KumoScale Provisioner Software	KumoScale Provisioner Software for provisioning with a Kubernetes cluster.	3.22-1974

KumoScale Provisioner: System Requirements

See the KumoScale Installation instructions for your implementation mode

KumoScale Provisioner: New Features

KumoScale Provisioner 3.22 software is based on KumoScale Provisioner 3.21 software and includes the following changes:

- Target host across the cluster
- Support for backend migration of volumes between storage nodes
- Ability to delete volumes with snapshots
- Support for a single replica volume with ability to modify to multiple replicas
- Trial licenses are available for testing and evaluation
- KumoScale Provisioner 3.21 Bug Fixing and small improvements

KumoScale Provisioner: Modified Features

- Bug Fixing and small improvements

KumoScale Provisioner:Deprecated Features

None

KumoScale Provisioner: Fixed Issues from Previous Release

Bug ID	Description
NOF-7125	Add a trial period to a KumoScale deployment.
NOF-7344	Improve tenant visibility: Rename "default" tenant to "All Tenants".
NOF-7550	Remove the privileged requirement for the Provisioner pod.
NOF-7679	Add support for the set-license command to support the use of a local license file without requiring a file transfer from a remote host.
NOF-7708	Add support for Migrate Volume for replicable volumes with only one available leg.
NOF-8136	CLI Volume publish/unpublish operations should be part of the Connect/Disconnect commands.

KumoScale Provisioner: Open Issues and Known Limitations

High-Impact Issues

None

Medium-Impact Issues

Bug ID	Description
NOF-7374	KumoScale Provisioner failed to correctly discover a storage node with 16K Volumes. The storage node is reported as unavailable. <i>Mitigation:</i> Avoid having more then 14K Volumes per storage node.

Low-Impact Issues

Bug ID	Description
NOF-8021	Cloned volume after backend migration set its Max Replica Downtime back to 0This is expected behavior when migrating cloned volume as the volume becomes a simple thick volume; thus there is no meaning for max replica downtime
NOF-4358	KumoScale Provisioner reports for a thin volume includes only its initially configured reserved space. <i>Mitigation:</i> In order to know the exact thin volume reserve space, query the volume backend.

KumoScale Cluster Manager CLI Software

KumoScale Cluster Manager CLI Software for Linux is a new tool that allows remote access for managing a KumoScale Cluster using KumoScale Operators and the KumoScale Provisioner. The too isl supported on RPM/Debian™ Linux OS hosts.

KumoScale Cluster Manager CLI: Released Components

Item	Description	Revision
KumoScale Cluster Manager CLI Software for Linux	KumoScale Cluster Manager CLI Software for Linux	3.22-282

KumoScale Cluster Manager CLI: Open Issues and Known Limitations

High-Impact Issues

None

Medium-Impact Issues

Bug ID	Description
NOF-8168 NOF-7855	Deletion of KumoScale cluster telemetry configurations via the KumoScale Operator or Cluster Manager CLI after previous modifications, reported as deleted successfully although it is not deleted from the cluster. <i>Mitigation:</i> Recreate the cluster telemetry configuration with the same name and delete it again without modification.

Low-Impact Issues

Bug ID	Description
NOF-8166	Readme file for installing the Cluster Manager CLI includes the unneeded step of “pip3 install python3-kubernetes”; it should be removed.
NOF-8163	Output of the ssd-show command presents the ssd life left percentage with two % symbols instead of one.

KumoScale Operators for Kubernetes

The KumoScale Operator Software for Kubernetes provides operators for installing and configuring a KumoScale Kubernetes storage cluster. The KumoScale Operator Software is delivered as a binary container for Kubernetes deployment.

KumoScale Operators: Released Components

Item	Description	Revision
KumoScale Operators Software for Kubernetes	KumoScale Operator Software for Kubernetes	3.22-2093

KumoScale Operators: New Features

KumoScale Operators 3.22 software is based on KumoScale Operators 3.21 software and includes the following changes:

- Support for backend migration of volumes between storage nodes
- Support for a single replica volume with ability to modify to multiple replicas
- Trial licenses are available for testing and evaluation
- Operators 21 Bug Fixing and small improvements

KumoScale Operators: Modified Features

- Bug fixing and small improvements

KumoScale Operators Deprecated Software

None

KumoScale Operators Fixed Issues and Improvements from Previous Release

Bug ID	Description
NOF-7369	Add support for certificate(JKS/PEM) configurations for operators and the Provisioner
NOF-7551	Add support in the Provisioner Custom Resource (CR) file to use externalName instead of external IPS,; to create a node port service without external IPs.
NOF-7552	Add operators-managed yamls to the install operator pods on any node, not just masters. Add support in the Provisioner CR to allow running on other nodes than masters (set runOnlyOnMasters: false)
NOF-7772	Minor spelling improvement in software upgrade events reports.
NOF-7784	Improve error message report when trying to stop the software upgrade process when it's not allowed.

KumoScale Operators:Open Issues and Known Limitations

High- Impact Issues

None

Medium-Impact Issues

Bug ID	Description
NOF-8168 NOF-7855	Deletion of KumoScale cluster telemetry configurations via the KumoScale Operator or Cluster Manager CLI after previous modifications, reported as deleted successfully although it is not deleted from the cluster. <i>Mitigation:</i> Recreate the cluster telemetry configuration with the same name and delete it again without modification.

Low-Impact Issues

Bug ID	Description
NOF-8088	Modifying the VIP DNS IP Address on a single node appliance cluster is not supported.
NOF-7019	Software upgrade from KumoScale 3.19 to 3.20 completed successfully although the error “secrets kumoscale-provisioner not found” was reported. <i>Mitigation:</i> Ignore the error.

KumoScale CSI Software for Kubernetes Orchestration

KumoScale CSI Software for Kubernetes provides a

- KumoScale CSI plugin driver for accessing both KumoScale Server platforms and the KumoScale Provisioner. The KumoScale CSI plugin driver is written in the go language, released as open-source code, and delivered to customers as a binary container that can be downloaded from the KIOXIA web site and loaded into a customer’s local image repository using the Docker™ load command.
- KumoScale Agent for bare metal or VM provides the CSI functionality for non-Kubernetes deployments.

KumoScale CSI Software: Released Components

Item	Description	Revision
KumoScale CSI software	KumoScale CSI Software for Kubernetes and agent for bare metal.	3.22-2098

KumoScale CSI: Software Requirements

- Kubernetes Orchestration Version Number 1.14 or greater
- CentOS™/RHEL™ 7.x/8.x or Ubuntu™ 18.x/20.x

KumoScale CSI: New Features

The KumoScale CSI 3.22 software is based on KumoScale CSI 3.21 software and includes the following changes:

- Target host across the cluster
- Support for backend migration of volumes between storage nodes
- Support for a single replica volume with ability to modify to multiple replicas
- Support for attaching a replicated snapshot volume to any host
- KumoScale CSI 3.21 Bug Fixing and small improvements

KumoScale CSI: Modified Features

- Bug Fixing and small improvements

KumoScale CSI: Deprecated Features

None

KumoScale CSI: Fixed Issues and Improvements from Previous Release

Bug ID	Description
NOF-7379	Add support for NVMe-oF MPIO Multipathing for Kubernetes CSI.
NOF-7380	Add support for NVMe-oF MPIO Multipathing for bare-metal servers.
NOF-7381	Support attaching a replicated snapshot volume to any host
NOF-7708	Add support for Migrate Volume for replicable volumes with only one available leg.

Open Issues and Known Limitations

High- Impact Issues

None

Medium-Impact Issues

None

Low- Impact Issues

None

KumoScale Software Ansible Modules

KumoScale Software Ansible Modules includes Ansible playbooks which may be used as a design reference for configuring and provisioning KumoScale storage nodes via the KumoScale Provisioner service. The KumoScale Ansible software is packaged in a tar format.

KumoScale Ansible: Released Components

Item	Description	Revision
KumoScale Ansible Software	KumoScale Ansible software modules	3.22-477

KumoScale Ansible: System Requirements

The Ansible client may run on a physical or virtual machine (VM) and connect to KumoScale storage nodes via the machines' management ports.

- **Python™ Version:** Python version on the initiators and the Ansible client  $\geq 3$ .
- **Ansible Module Version:** KumoScale Software Ansible Modules assume version 3.

KumoScale Ansible: New Features

KumoScale Ansible 3.22 software is based on KumoScale Ansible 3.21 software and includes the following changes:

- Simplified Ansible modules and example playbooks

- Ansible 3.21 bug fixing and small improvements

**KumoScale Ansible: Modified Features**

- Bug Fixing and small improvements

**KumoScale Ansible: Deprecated Features**

None

**KumoScale Ansible: Fixed Issues and Improvements from Previous Release**

Bug ID	Description
NOF-6838	Upgrade the token of the ks-agent after changing the authorization mode

**KumoScale Ansible: Open Issues and Known Limitations**

**High-Impact Issues**

None

**Medium-Impact Issues**

None

**Low-Impact Issues**

None

**KumoScale Software for OpenStack Platforms**

KumoScale OpenStack Software includes a KumoScale NVMe-oF Connector , Cinder Driver and Agent module for the OpenStack Yoga release. It enables the OpenStack cluster to provision KumoScale volumes and includes a KumoScale Cinder driver for the control plane as well as a KumoScale software NVMe-oF connector that is used by the NOVA OS brick layer.

**KumoScale for OpenStack: Released Components**

Item	Description	Revision
KumoScale OpenStack platform software agent	KumoScale OpenStack Yoga Software	3.22.170

**KumoScale for OpenStack: New Features**

KumoScale OpenStack Yoga 3.22 software is based on the OpenStack Yoga release and KumoScale OpenStack 3.21 and includes the following changes:

- Target host across the cluster
- Support for backend migration of volumes between storage nodes
- Support for a single replica volume with ability to modify to multiple replicas
- Support for attaching a replicated snapshot volume to any host
- KumoScale OpenStack 3.21 Bug Fixing and small improvements

**KumoScale for OpenStack: Modified Features**

- Bug Fixing and small improvements

**KumoScale for OpenStack: Fixed Issues and Improvements from Previous Release**

Bug ID	Description
NOF-7708	Add support for Migrate Volume for replicable volumes with only one available leg

**KumoScale for OpenStack: Open Issues and Known Limitations**

**High-Impact Issues**

None

**Medium-Impact Issues**

None

**Low-Impact Issues**

None

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