

CSI Overview

The KumoScale™ Container Storage Interface (CSI) driver implements a standard interface between a Kubernetes™ cloud orchestration framework and KumoScale storage nodes and the KumoScale Provisioner service . The KumoScale CSI driver uses storage class parameters to provision storage to applications by storage type, thus enabling KumoScale software to optimally map the storage available to the application's storage requirements. For example, data resiliency is a storage class parameter.

The KumoScale CSI plug-in is delivered as a container provided by KIOXIA to be installed on every node in a Kubernetes cluster. This document explains how to install, configure, and use the CSI in a KumoScale deployment.

Intended Audience

The target audience for this document are storage administrators and DevOps engineers. It assumes the reader has a working knowledge of storage and networking concepts. The reader should also be familiar with the Kubernetes environment and its configuration as well as CSI concepts and terminology.

Environment Requirements

The CSI Driver supports KumoScale software for both appliance and managed modes using Kubernetes. Before you begin any implementation:

1. Confirm which version of KumoScale is installed in your environment: Appliance Mode or Managed Mode with Kubernetes. If you are using Managed Mode, you will need to ensure that the CSI Driver software has been extracted as documented in [Download KumoScale Software and Prepare for Installation](#).
2. All nodes in the Kubernetes cluster should have the NVMe-oF™ initiator configured for TCP and/or RDMA capabilities as documented in the installation guides.
3. KumoScale 3.22 has been tested with Kubernetes 1.20 and 1.21. It supports the Kubernetes Volume Snapshot feature which is generally available in version 1.20 and 1.21. Lower versions of Kubernetes are supported to the extent that Kubernetes supports backward compatibility as documented at <https://kubernetes.io/docs/reference/using-api/deprecation-policy/>. Users who want to use the Volume Snapshot feature in lower versions will need to enable this feature as explained in [Preparing the Environment for Features in Beta](#).
4. Users should be familiar with KumoScale software terminology and processes. More information can be found in the KumoScale software documents available on the KumoScale software web site at <https://kumoscale.kioxia.com/en/documents/kumoscale-software-v3-22>.
5. You will need the following modules installed on your servers: nvme_tcp and nvme_rdma. Verify they are loaded. For example:

```
lsmod | grep nvme_tcp
lsmod | grep nvme_rdma
```

If they are not, load them now and add them to load on reboot For example:

```
modprobe nvme_tcp
echo nvme_tcp >> /etc/modules-load.d/mlx.conf
modprobe nvme_rdma
echo nvme_rdma >> /etc/modules-load.d/mlx.conf
```

Next: [Installing the CSI Driver](#)

