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India 2026

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# Longhorn: What's new & what's next for cloud native persistent storage

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# Agenda

- Longhorn overview
- Project and Release Status
- 1.12 Key Features
- Upcoming releases
- Community Highlights

# Longhorn overview

- Cloud Native “Distributed Block Storage” for Kubernetes
  - CNCF Incubating project
- Highly Available Persistent Volume
- Storage Space Efficiency
- Data Durability, Availability, Consistency, Protection (Snapshot, Backup), Recovery, Safety
- Advanced Volume Operations
- Operation Simplicity & Reliability
- Deployment Platform Agnostic
- Virtualization Workload Support, KubeVirt

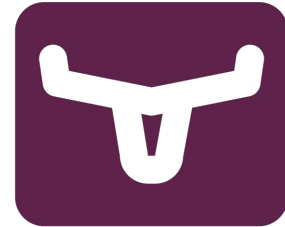


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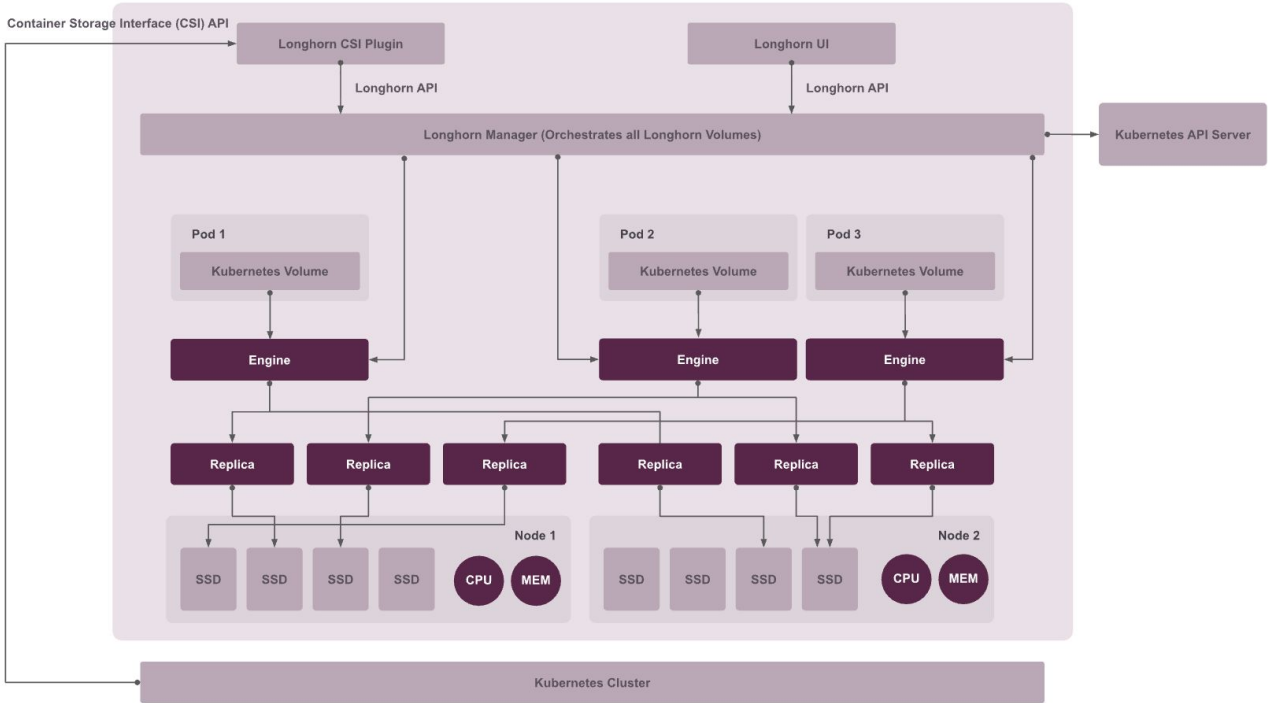
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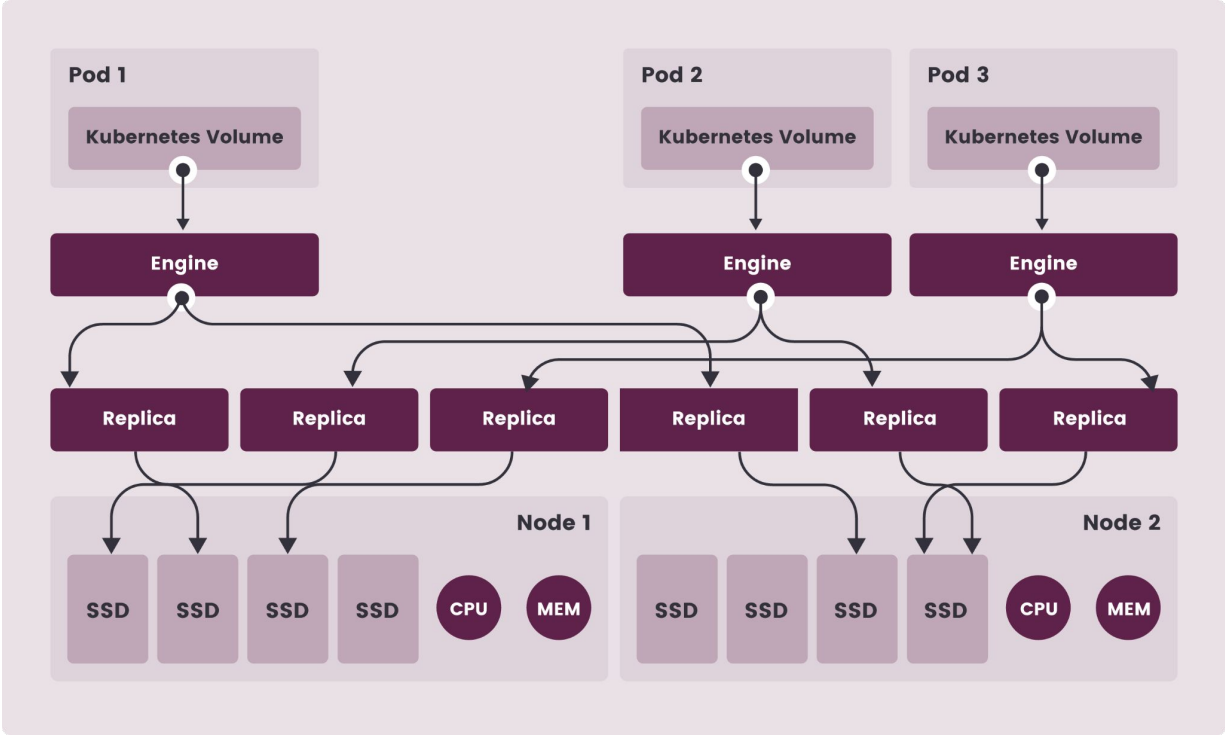
# LONGHORN

👉 <https://longhorn.io>

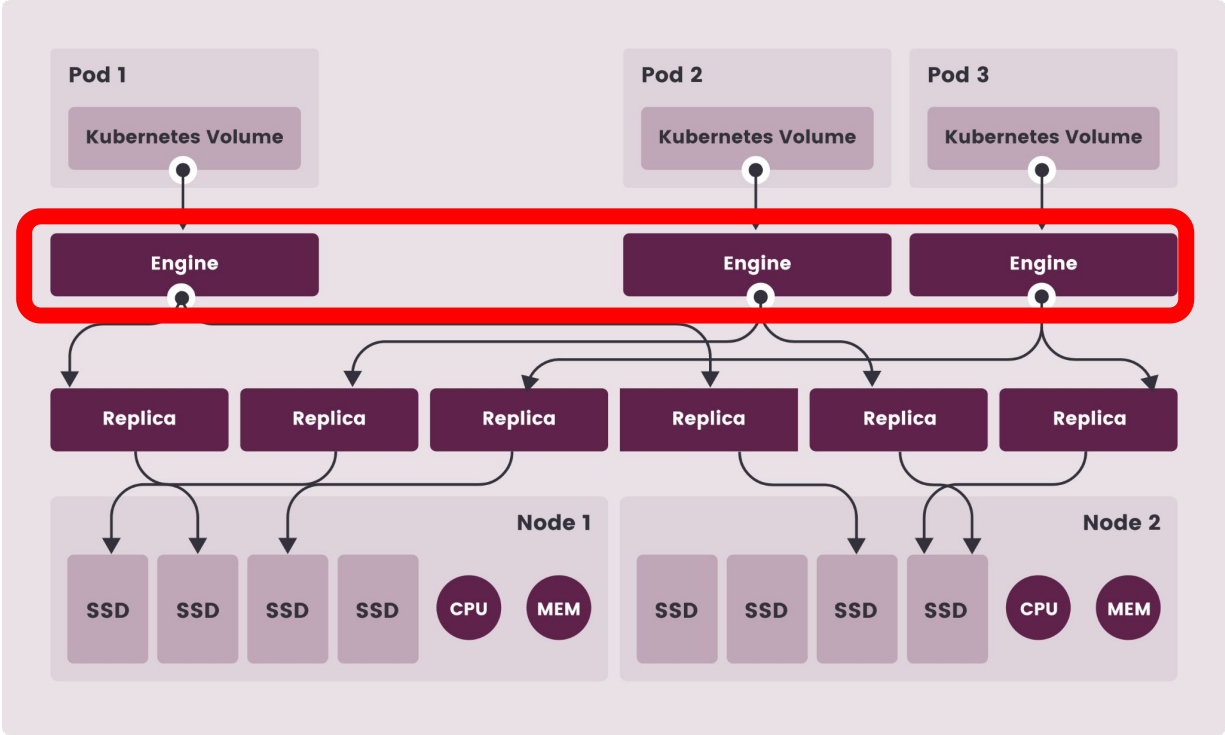
# Longhorn architecture



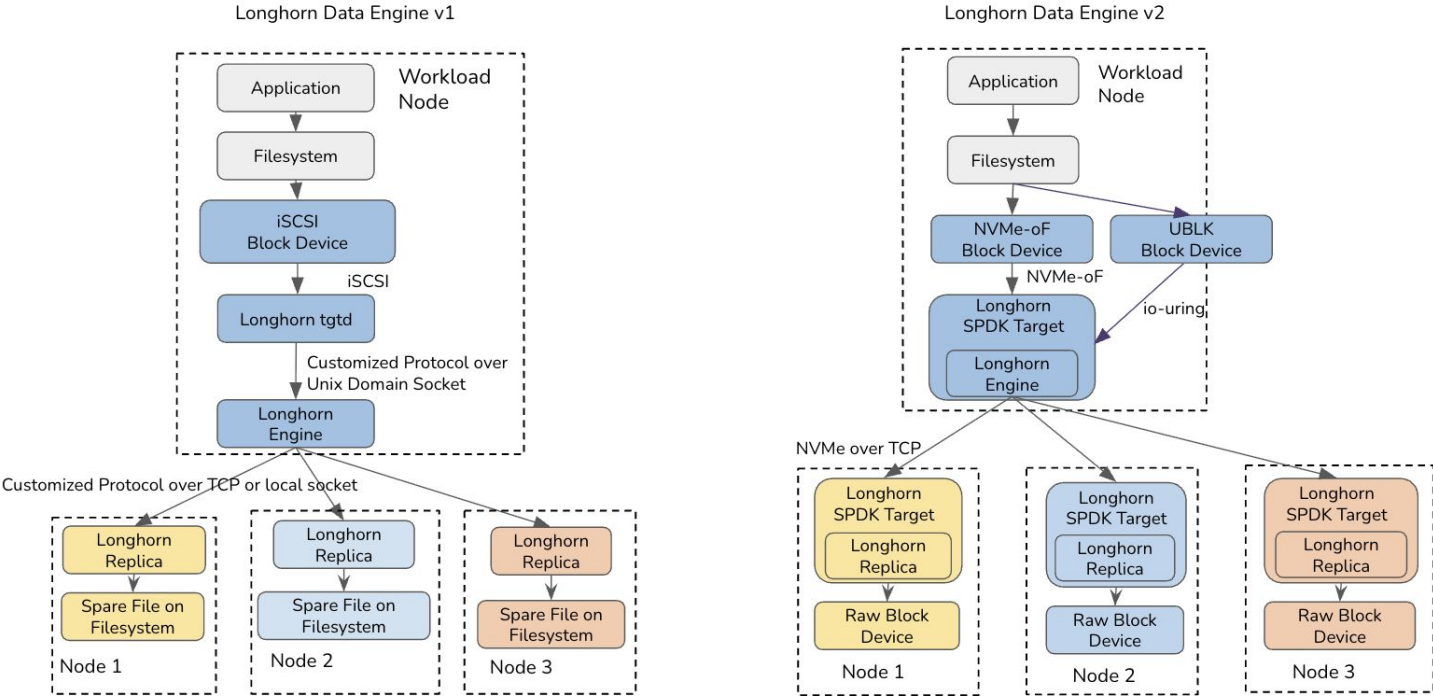
# Longhorn architecture



# Longhorn architecture



# Longhorn data engines



# Longhorn capabilities

- **Kubernetes Persistent Volume Support**
  - Block, FS volumes
  - RWO, RWX, RWX (block with migration capacity), RWOP
- **CSI Protocol Support**
  - Volume Provision, Attachment, Snapshot, Clone, Expansion
- **Volume Capabilities**
  - Thin provisioning
  - Snapshot, CoW
  - Trim, Expand
  - Live upgrade, Live migration, \*Engine migration (v2)
- **IO Performance**
  - Data Locality, Strict-Local Volume
  - V1, V2 Data Engines
- **Intuitive UI & CLI (longhornctl) & Monitoring Metrics**
- **Storage, Storage Topology, Replica Scheduling**
  - v1 & v2 Longhorn FS/Block disk managed by SPDK driver
  - Disk/Node/Zone replica scheduling anti-affinity
  - Storage tag
  - CSIStorageCapacity
- **Data Protection**
  - Data replication
  - Data encryption in transit & at rest
  - Bit-rot protection
- **Data Services**
  - In-cluster snapshot & revert
  - Out-of-cluster backup & restore
  - Disaster recovery volume
- **Data Reduction**
  - Space efficiency for Snapshot
  - Backup compression

# Project status

## Growth Metrics

- 7.8K GitHub Stars
- 238K Nodes
- 51.9K clusters

## Platform Agnostic

- On-Prem, Cloud, Edge
- AI, Telco, Data, Virtualization, Observability, and more
- End Users & Service/Solution Providers
- Dynamic and Immutable OSS (e.g., SL Micro, Talos, Google Container-Optimized OS)

## Achieving Graduation

- <https://github.com/longhorn/longhorn/blob/master/ADOPTERS.md>
- Community Sustainability



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**238k installations!**





# Project status - cont

Tags

**v1.12.0** xxx

2 days ago 9990b6d Immutable Notes Downloads

**v1.12.0-dev-20260531** xxx

last week e4e35a9

**v1.12.0-rc4** xxx

last week 2b712e2 Immutable Notes Downloads

**v1.12.0-rc3** xxx

2 weeks ago 9aa662b Immutable Notes Downloads

**v1.13.0-dev-20260517** xxx

3 weeks ago e8787b6

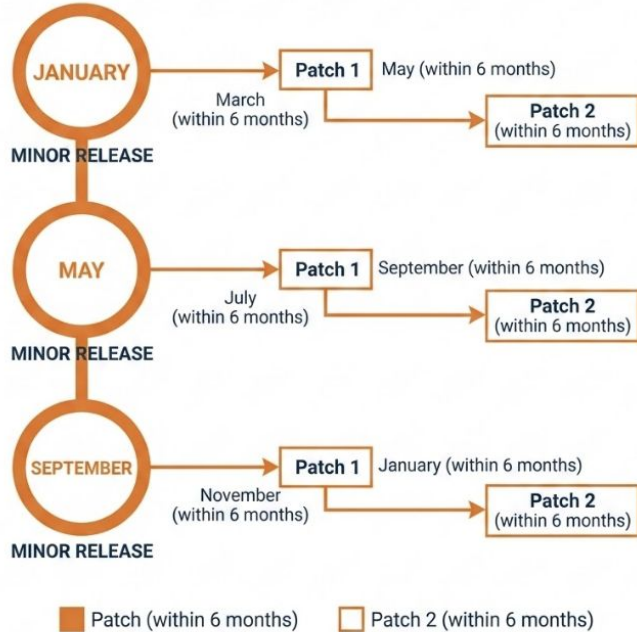
**v1.12.0-dev-20260517** xxx

3 weeks ago a626b68

**v1.12.0-rc2** xxx

3 weeks ago 81a3be2 Immutable Notes Downloads

# Release Status



## Released

- 1.11.0, January 2026
- 1.10.2, January 2026
- 1.11.1, March 2026
- 1.12.0, May 2026

## Upcoming Releases

- 1.12.1, July 2026
- 1.13.0, September 2026

# 1.12 Key Features

- **V2 Data Engine: now, generally available** 🎉
  - Milestone release for improvement in stability, operational safety, networking support, and feature maturity.
  - Better positioned for production use with with modern networking support, more precise scheduling behavior

Category	Feature	v1	v2	Doc	Target version
Data Protection	Snapshot	✓	✓	<a href="#">link</a>	
	Backup & Restore	✓	✓	<a href="#">link</a>	
	DR Volume	✓	✓	<a href="#">link</a>	
	System Backup & Restore	✓	✓	<a href="#">link</a>	
	Snapshot Data Integrity Check	✓		<a href="#">link</a>	TBU
RWX Volume	Creation/Deletion	✓	✓	<a href="#">link</a>	
	Encryption	✓	✓		
	Migratable RWX Volume	✓	✓		
Volume Operations	Volume Expansion	✓	✓	<a href="#">link, v2 ticket</a>	
	Volume Cloning	✓	✓	<a href="#">link, v2 ticket</a>	
	Fast Volume Cloning	✗	✓	<a href="#">v2 ticket</a>	
	Volume Encryption	✓	✓	<a href="#">link</a>	
	Filesystem Trim	✓	✓	<a href="#">link</a>	
Replica Scheduling	Replica Scheduling	✓	✓	<a href="#">link</a>	
	Replica Scheduling Strategy			<a href="#">link</a>	v1.13

# 1.12 Key Features

- **V2 Data Engine: now, generally available** 🎉
  - Does not support live upgrade **yet (planned for 1.13)**
  - Fast volume cloning for V2 data engine (**planned for 1.12.1**)
  - Sharding storage (experimental) (**planned for 1.12.1**)

Category	Feature	v1	v2	Doc	Target version
Data Protection	Snapshot	✓	✓	<a href="#">link</a>	
	Backup & Restore	✓	✓	<a href="#">link</a>	
	DR Volume	✓	✓	<a href="#">link</a>	
	System Backup & Restore	✓	✓	<a href="#">link</a>	
	Snapshot Data Integrity Check	✓		<a href="#">link</a>	TBU
RWX Volume	Creation/Deletion	✓	✓	<a href="#">link</a>	
	Encryption	✓	✓		
	Migratable RWX Volume	✓	✓		
Volume Operations	Volume Expansion	✓	✓	<a href="#">link, v2 ticket</a>	
	Volume Cloning	✓	✓	<a href="#">link, v2 ticket</a>	
	Fast Volume Cloning	✗	✓	<a href="#">v2 ticket</a>	
	Volume Encryption	✓	✓	<a href="#">link</a>	
	Filesystem Trim	✓	✓	<a href="#">link</a>	
Replica Scheduling	Replica Scheduling	✓	✓	<a href="#">link</a>	
	Replica Scheduling Strategy			<a href="#">link</a>	v1.13

# 1.12 Key Features

- **Topology-Aware PV Node Affinity Control**
  - Allows more precise control of PV *nodeAffinity* using the *csi-allowed-topology-keys* setting and *strictTopology* StorageClass parameter.
  - Empowers users to limit which topology keys are propagated and, with *WaitForFirstConsumer*, pin the PV to the selected node topology when needed.
- **IPv6 Support for V2 Volumes**
  - Support for single-stack IPv6 Kubernetes clusters.

# 1.12 Key Features

- **Dual-Stack Cluster Support**

- Supports dual-stack Kubernetes clusters when all nodes are configured with their IP families in the same order, either all IPv4-first or all IPv6-first.
- Applicable for both V1 and V2 data engines.

- **Default CPU Allocation**

- Default ***data-engine-cpu-mask*** changed from **0x1**, one CPU core, to **0x3**, two CPU cores.
- Improving responsiveness and operational stability of V2 Data Engine

# 1.12 Key Features

- **On-Demand Snapshot Checksum Calculation**
  - Adds *longhornctl* support for triggering on-demand snapshot checksum calculation
- **Toggle Kubernetes Metrics Server Integration**
  - Adds the Kubernetes Metrics Server Metrics Enabled setting to disable metrics-server-dependent metrics when the Kubernetes Metrics Server API is unavailable
- **Longhorn Manager Memory Optimization**
  - Optimizes longhorn-manager informer caching to reduce memory usage, especially in large clusters with high pod counts

# 1.12 Key Features

- **Configurable Engine Image Pod Liveness Probe**
  - Adds settings to configure the engine-image DaemonSet liveness probe period, timeout, and failure threshold.
  - Helps reduce unnecessary engine-image pod restarts on resource-constrained clusters, especially during upgrades or transient CPU spikes.

# Upcoming Releases

- 1.12.1 (July)
  - [V2 Data Engine Fast Cloning](#)
  - [V2 Data Engine Sharding \(Experimental\)](#)
- 1.13.0 (September)
  - V2 Volume Live Upgrade
  - V2 Sharding - preview
  - Volume group for application data consistency
  - V1 snapshot atomic management, WAL
  - Encrypt volume backup w/o in-cluster volume encryption
  - Storage topology aware scheduling of replicas
  - Resource constraints for Longhorn components
  - Replica scheduling with multiple factors
  - Restore a volume from an orphan replica
  - Security hardening
  - ... and more!



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# Community highlights



# Agenda

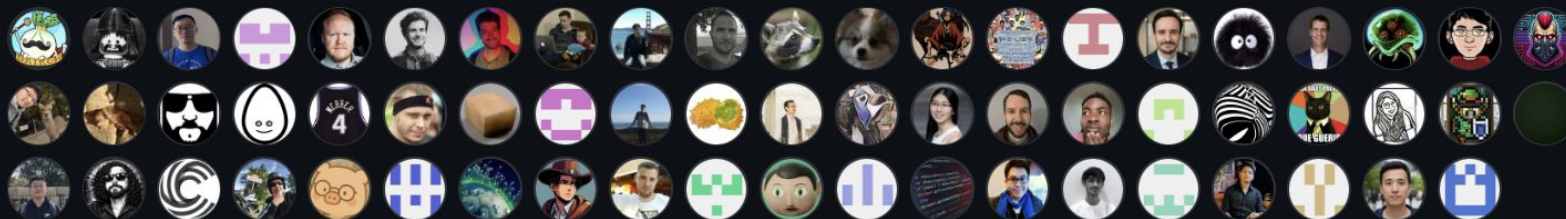
- Current status of the Longhorn community
  - The numbers
  - What's new
- Future roadmap

# The numbers

- Slack
  - [CNCF Slack](#): 1969
  - [Rancher Users Slack](#): 2359
- [YouTube](#): 436

# Contributor Engagement (v1.12.0)

## Contributors



# Bonus!

June 9, 2 PM UTC



## Global Online Meetup: Longhorn

Hosted by Divya Mohan ft special guest,  
David Ko



# LONGHORN

# Monthly community meetings

- Alternate between APAC and AMER/EU-friendly
- Recordings on official YouTube, whenever meetings are in quorum
- APAC-friendly: **6 AM UTC** (previous 8 AM UTC)
- AMER-friendly: **4 PM UTC**
- [Agenda doc](#)
  - For edit access, please join the mailing lists in the agenda doc

# Outreach

- New ways to stay updated with the Longhorn project
  - [LinkedIn](#)
  - [Twitter](#)
  - [Bluesky](#)

# Share your stories with us!

## Note

To encourage adoption of Longhorn and share your experience with the community, please add your information below.

## Adopter Types

- End-User: An organization that runs Longhorn in a production environment.
- Integration: An organization offering a product that integrates with Longhorn by providing additional services or functionality.
- Vendor: An organization that includes Longhorn as part of its packaged product.
- Hosted-Service: An organization that operates Longhorn within its hosted service, offered as a product to customers.

## Longhorn Adopters

Type	Name	Website	Use-Case
End-User	Nemlig	<a href="https://www.nemlig.com/">https://www.nemlig.com/</a>	A comprehensive, persistent storage solution on Kubernetes. Part of "Kubernemlig," Nemlig's internal, developer- and operations-friendly Platform-as-a-Service (PaaS).
End-User	Child Rescue Coalition	<a href="https://childrescuecoalition.org/">https://childrescuecoalition.org/</a>	Kubernetes persistent replicated storage with automated backups.
End-User	NAVER	<a href="https://www.navercorp.com/">https://www.navercorp.com/</a>	Production Kubernetes persistent storage supporting NAVER's internal platform and cloud-native services at scale.
End-User	Walkbase	<a href="https://walkbase.com/">https://walkbase.com/</a>	Walkbase uses Longhorn for persistent storage in our bare metal kubernetes clusters.

# Future roadmap

- Theme for this year: Improving project health
  - Building our governance structure
  - Identifying & dividing project into areas & roles for contribution
  - Devising a community ladder for transparency
  - Broadening our contributor pool - steady & drive-by
  - Growing existing contributors into maintainers
- If any of this interests **you**, let's talk!

# Stretch goals

- Participation in ecosystem-wide programs (LFX Mentorship etc.)
- Cross-ecosystem collaboration



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# Get started today!

- Onsite resources:
  - Visit our booth, S8, in the solutions showcase to engage with SMEs
- Offsite resources:
  - Sign up for our free **Longhorn Basics** course on Rancher Academy 🙌





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# Thank you!





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