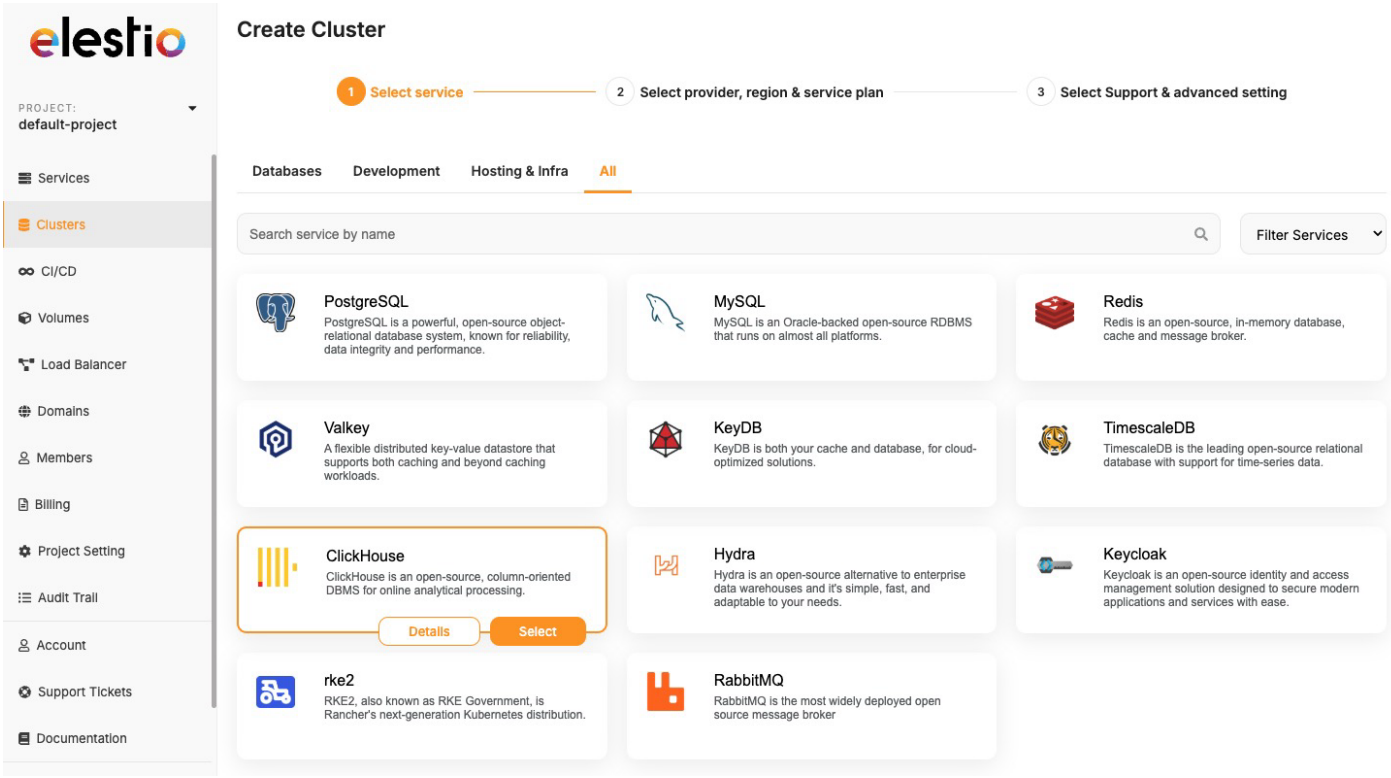
Overview

Elestio provides a complete solution for setting up and managing software clusters. This helps users deploy, scale, and maintain applications more reliably. Clustering improves performance and ensures that services remain available, even if one part of the system fails. Elestio supports different cluster setups to handle various technical needs like load balancing, failover, and data replication.

Supported Software for Clustering:

Elestio supports clustering for a wide range of open-source software. Each is designed to support different use cases like databases, caching, and analytics:

- **MySQL**:
  Supports Single Node, Primary/Replica, and Multi-Master cluster types. These allow users to create simple setups or more advanced ones where reads and writes are distributed across nodes. In a Primary/Replica setup, replicas are updated continuously through replication. These configurations are useful for high-traffic applications that need fast and reliable access to data.
- **PostgreSQL**:
  PostgreSQL clusters can be configured for read scalability and failover protection. Replication ensures that data written to the primary node is copied to replicas. Clustering PostgreSQL also improves query throughput by offloading read queries to replicas. Elestio handles replication setup and node failover automatically.
- **Redis/KeyDB/Valkey**:
  These in-memory data stores support clustering to improve speed and fault tolerance. Clustering divides data across multiple nodes (sharding), allowing horizontal scaling. These tools are commonly used for caching and real-time applications, so fast failover and data availability are critical.
- **Hydra and TimescaleDB**:
  These support distributed and time-series workloads, respectively. Clustering helps manage large datasets spread across many nodes. TimescaleDB, built on PostgreSQL, benefits from clustering by distributing time-based data for fast querying. Hydra uses clustering to process identity and access management workloads more efficiently in high-load environments.
- **ClickHouse:**
  ClickHouse supports distributed and replicated clustering modes, enabling high-performance analytics on large datasets. Clustering allows sharding across multiple nodes for horizontal scaling and replication for fault tolerance. This makes ClickHouse ideal for real-time dashboards, monitoring, and analytical workloads that require fast ingestion and low-latency queries. Elestio automates the setup of shards and replicas, making it easy to deploy robust ClickHouse clusters with minimal manual effort.



Cluster Configurations:

Elestio offers several clustering modes, each designed for a different balance between simplicity, speed, and reliability:

- **Single Node**:
  This setup has only one node and is easy to manage. It acts as a standalone Primary node. It's good for testing, development, or low-traffic applications. Later, you can scale to more nodes without rebuilding the entire setup. Elestio lets you expand this node into a full cluster with just a few clicks.
- **Primary/Replica**:
  One node (Primary) handles all write operations, and one or more Replicas handle read queries. Replication is usually asynchronous and ensures data is copied to all replicas. This improves read performance and provides redundancy if the primary node fails. Elestio manages automatic data syncing and failover setup.

Cluster Management Features:

Elestio's cluster dashboard includes tools for managing, monitoring, and securing your clusters. These help ensure stability and ease of use:

- **Node Management**:
  You can scale your cluster by adding or removing nodes as your app grows. Adding a node increases capacity; removing one helps reduce costs. Elestio handles provisioning and configuring nodes automatically, including replication setup. This makes it easier to scale horizontally without downtime.
- **Backups and Restores**:
  Elestio provides scheduled and on-demand backups for all nodes. Backups are stored

securely and can be restored if something goes wrong. You can also create a snapshot before major changes to your system. This helps protect against data loss due to failures, bugs, or human error.

- **Access Control**:
  You can limit access to your cluster using IP allowlists, ensuring only trusted sources can connect. Role-based access control (RBAC) can be applied for managing different user permissions. SSH and database passwords are generated securely and can be rotated easily from the dashboard. These access tools help reduce the risk of unauthorized access.
- **Monitoring and Alerts**:
  Real-time metrics like CPU, memory, disk usage, and network traffic are available through the dashboard. You can also check logs for troubleshooting and set alerts for high resource usage or failure events. Elestio uses built-in observability tools to monitor the health of your cluster and notify you if something needs attention. This allows you to catch problems early and take action.

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