

Glossary of Terms: Red Hat Linux Cluster

Red Hat Cluster Suite

A collection of software tools and services used for building and managing clusters in Red Hat Enterprise Linux (RHEL). It includes Pacemaker, Corosync, and other utilities for high availability and load balancing.

Node

An individual machine (physical or virtual) that is part of a cluster. Nodes work together to manage resources, services, or applications as part of the cluster.

High Availability (HA) Cluster

A type of cluster designed to ensure that critical services are always available, minimizing downtime by failing over services from one node to another in case of failure. High Availability clusters use HA services to eliminate single point failures. These type of clusters are also known as failover clusters.

Load Balancing Cluster

A cluster setup where the workload is distributed across multiple nodes to improve performance, efficiency, and fault tolerance.

Cluster Resource Manager (CRM)

A service responsible for managing cluster resources. In Red Hat clusters, Pacemaker is the CRM that ensures resource availability and manages failover.

Pacemaker

The primary cluster resource manager (CRM) in Red Hat clusters, responsible for starting, stopping, and monitoring services in a cluster. It handles failover and resource management.

Cluster Information Base (CIB)

A data repository within the Pacemaker cluster that stores the current state of the cluster, including resource configurations, node states, and dependencies.

Shoot The Other Node In The Head (STONITH)

A fencing method that forcibly isolates a failed or unresponsive node to prevent it from corrupting shared resources. It typically involves powering off the node or cutting off its network access.

Corosync

A cluster communication and quorum service that ensures reliable messaging and membership information between nodes in a cluster.

Quorum

A method used in clusters to ensure that there are enough operational nodes to make decisions. If quorum is lost (due to too many node failures), the cluster may halt services to avoid data corruption.

CMAN (Cluster Manager)

The older cluster manager used in Red Hat Cluster Suite prior to Pacemaker. CMAN provided membership and quorum services but has been largely replaced by Corosync in newer implementations.

Failover

The process of automatically transferring services or resources from a failed node to a healthy one, ensuring service continuity.

Failback

The process of moving a service back to its original node after the node has recovered from a failure.

Cluster Resource

Any service, application, IP address, or storage that the cluster manages. Pacemaker is responsible for ensuring that resources are available and moved between nodes as needed.

Fencing

A mechanism used to isolate or power off a node that is misbehaving or has lost communication with the cluster. This ensures that a faulty node cannot cause data corruption by continuing to access shared resources.

Clustered Filesystem

A filesystem designed for simultaneous access by multiple nodes in a cluster. Red Hat's Global File System 2 (GFS2) allows nodes to share storage resources while maintaining data integrity.

Shared Storage

A storage resource (e.g., SAN, NAS) accessible by all nodes in the cluster, often used in high availability setups for storing critical data.

Distributed Replicated Block Device (DRBD)

A tool used for mirroring the contents of block devices (like hard drives) between servers. Often used in Red Hat clusters for high availability and disaster recovery.

Heartbeat

A signal sent between nodes in a cluster to monitor their health. If the heartbeat signal is lost, the cluster assumes the node has failed and initiates failover.

CRM Shell (crmsh)

A command-line interface used to configure and manage the Pacemaker cluster. Administrators use crmsh to add, remove, or modify resources, as well as monitor the cluster's status.

Split-brain

A scenario in a cluster where nodes lose communication with each other but continue to function independently, leading to the possibility of conflicting changes to shared resources. Fencing and quorum are used to prevent this scenario.

STONITH Device

A hardware or software component used in fencing to isolate a misbehaving node. Examples include power switches, IPMI, and fence agents.

crm_mon

A command-line tool used to monitor the real-time status of a Pacemaker cluster. It displays information about nodes, resources, and their current state.

Cluster Resource Agents

Scripts or programs used by Pacemaker to manage cluster resources. Resource agents handle the starting, stopping, and monitoring of cluster-managed services.

Red Hat Insights

A Red Hat tool that provides monitoring, diagnostics, and analytics for Red Hat Enterprise Linux (RHEL) systems, including clusters. It helps identify and resolve potential issues proactively.

IP Failover

A method where the cluster automatically assigns an IP address to a healthy node when another node fails, ensuring that services are still reachable by clients.