

OpenStack Log Root Cause Analysis (RAG Context Document)

1. OpenStack Component Overview

Component Overview:

Nova: Manages VMs (compute) - /var/log/nova/nova-compute.log

Neutron: Networking - /var/log/neutron/neutron-server.log

Cinder: Block Storage - /var/log/cinder/cinder-volume.log

Keystone: Identity service - /var/log/keystone/keystone.log

Glance: Image service - /var/log/glance/glance-api.log

Horizon: Dashboard - /var/log/apache2/horizon_error.log

Heat: Orchestration - /var/log/heat/heat-engine.log

Placement: Resource tracking - /var/log/placement/placement-api.log

2. Log Format Cheat Sheet

Typical log line format:

<timestamp> <log level> <component> [<PID>] <message>

Example:

2024-06-01 12:42:15.738 ERROR nova.compute.manager [req-1234abcd] Instance failed to spawn: NoValidHost: No valid host was found.

Log levels:

DEBUG, INFO, WARNING, ERROR, CRITICAL

3. Common Errors and Root Causes

NoValidHost - Nova/Scheduler - Not enough resources or filter issues

TimeoutError - Neutron/Cinder - Service unavailable or endpoint misconfig

Unauthorized - Keystone - Invalid or expired token

ConnectionRefusedError - Any - Down or misconfigured service

Instance failed to spawn - Nova - Image/volume issues or NoValidHost

VolumeNotFound - Cinder - Deleted or invalid volume ID

Failed to allocate network - Neutron - Network or DHCP agent issues

4. RCA Workflow Prompts

Identify component:

"Which OpenStack component is associated with this log entry?"

Determine severity:

"What is the log level and does it indicate a failure?"

Find root cause:

"Based on error message '{message}', what is the probable root cause?"

Suggest resolution:

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"Given the error '{message}', what are recommended next steps?"

5. Example Analysis Scenario

Log:

2024-06-01 15:23:12.558 ERROR cinder.volume.manager [req-4567efgh] VolumeNotFound: Volume 12345-6789 not found.

Component: Cinder

Issue: Volume ID invalid or deleted

Root Cause: Orphaned volume reference or deleted manually

Resolution: Check with `openstack volume list` or recover from snapshot