Dynatrace Cluster – Detailed Architecture Overview

# What is a Dynatrace Cluster?

A Dynatrace Cluster is the core backend infrastructure used in Dynatrace Managed to collect, process, and visualize monitoring data from OneAgents. It consists of one or more nodes running Dynatrace Server software and associated services.

# Dynatrace Cluster (Managed) vs SaaS

Dynatrace Cluster is used in Dynatrace Managed (on-premises), whereas SaaS deployments use Dynatrace-hosted clusters.  
  
Managed vs SaaS:  
- Hosting: On-prem vs Cloud  
- Admin access: Full vs None  
- Updates: Manual/Auto vs Auto  
- Internet dependency: Optional vs Required

# Key Components of a Dynatrace Cluster

• Cluster Nodes: Core servers running Dynatrace Server  
• Cluster Management Console (CMC): UI for cluster config  
• ElasticSearch: Metadata indexing  
• Cassandra: Configuration and metadata store  
• Timeseries DB: Metrics storage  
• Log Storage (optional): For ingested logs  
• Nginx Proxy: Route external/internal traffic  
• ActiveGates: Data routing and remote monitoring  
• OneAgents: Installed on monitored hosts

# Dynatrace Cluster Topology

In a 3-node HA cluster, nodes share roles and replicate data:  
- CMC interfaces with all nodes  
- Nodes include Cassandra, Timeseries DB, and App Servers  
- ActiveGates route agent data securely to the cluster

# High Availability (HA)

• Recommended: 3+ nodes  
• Features: Replication, auto-failover  
• Use load balancers or DNS round-robin for access

# Security

• Secure SSL/TLS communication  
• Signed channels for agent-gate-cluster traffic  
• RBAC and LDAP/SSO support

# Update Management

• Cluster updates can be manual or automatic via CMC  
• Policy-driven rollout supported per node group

# Monitoring & Admin Tasks (via CMC)

• Monitor cluster health and resources  
• Configure backup schedules  
• Setup external storage  
• Manage licenses and firewall rules

# Data Storage Overview

• Metrics: Timeseries DB  
• Events/Problems: Cassandra  
• Logs: Local or external storage  
• Topology: ElasticSearch  
• Session Replay: Object/Disk storage

# Backup and Disaster Recovery

• Scheduled backups via CMC  
• Includes: Cassandra, Elasticsearch, Configuration  
• External backup storage recommended (e.g., S3, NFS)

# Summary

Dynatrace Cluster (Managed) provides a full-stack monitoring backend on-premises, with high availability, security, and scalability features.  
  
Key components include:  
- Cluster Nodes  
- ActiveGates  
- OneAgents  
- CMC  
- Timeseries DB, Cassandra, ElasticSearch  
Supports HA, role-based access, backups, and manual/automated updates.