MetalLB Installation Guide for OpenShift 4.17

Introduction

This guide explains how to set up MetalLB on an OpenShift 4.17 bare-metal cluster.
It covers two approaches:
1. Operator-based installation (recommended)
2. Manual installation with YAML resources

1. Prerequisites

- OpenShift 4.17 cluster (bare-metal or VM lab).
- Cluster admin access (oc CLI logged in).
- A pool of spare IP addresses in the same Layer2 network as worker nodes (not managed by DHCP).
  Example: 192.168.1.240–192.168.1.250.
- Access to the cluster to create custom resources.

2. Operator-based Installation - Step 1: Create Namespace

```
oc create namespace metallb-system
```

Step 2: Install MetalLB Operator

```
Option A – Web Console:
1. OpenShift Console → Operators → OperatorHub.
2. Search for MetalLB.
3. Install into namespace metallb-system.

Option B – CLI YAML:


apiVersion: operators.coreos.com/v1
kind: OperatorGroup
metadata:
  name: metallb-operatorgroup
  namespace: metallb-system
spec:
  targetNamespaces:
    - metallb-system
---
apiVersion: operators.coreos.com/v1alpha1
kind: Subscription
metadata:
  name: metallb-subscription
  namespace: metallb-system
spec:
  channel: stable
  name: metallb-operator
  source: redhat-operators
  sourceNamespace: openshift-marketplace
```

Step 3: Deploy a MetalLB Instance

```
apiVersion: metallb.io/v1beta1
kind: MetalLB
metadata:
  name: metallb
  namespace: metallb-system
```

Step 4: Configure IPAddressPool

```
apiVersion: metallb.io/v1beta1
kind: IPAddressPool
metadata:
  name: my-ip-pool
  namespace: metallb-system
spec:
  addresses:
  - 192.168.1.240-192.168.1.250
```

Step 5: Configure L2Advertisement

```
apiVersion: metallb.io/v1beta1
kind: L2Advertisement
metadata:
  name: l2adv
  namespace: metallb-system
spec:
  ipAddressPools:
  - my-ip-pool
```

Step 6: Test with LoadBalancer Service

```
oc new-project test-lb
oc create deployment nginx --image=nginx --replicas=2
oc expose deployment nginx --port=80
oc expose deployment nginx --type=LoadBalancer --port=80
oc get svc
curl http://192.168.1.240
```

3. Manual Installation Steps (Alternative)

If you don't use the Operator, you can deploy MetalLB by applying manifests manually.

Step 1: Create Namespace

```
oc create namespace metallb-system
```

Step 2: Deploy MetalLB Components

```
oc apply -f https://raw.githubusercontent.com/metallb/metallb/v0.13.12/config/manifests/metallb-nativ
```

Step 3: Configure IPAddressPool

```
apiVersion: metallb.io/v1beta1
kind: IPAddressPool
metadata:
  name: my-ip-pool
  namespace: metallb-system
spec:
  addresses:
  - 192.168.1.240-192.168.1.250
```

Step 4: Configure L2Advertisement

```
apiVersion: metallb.io/v1beta1
kind: L2Advertisement
metadata:
  name: l2adv
  namespace: metallb-system
spec:
  ipAddressPools:
  - my-ip-pool
```

Step 5: Test with LoadBalancer Service

```
oc new-project test-lb
oc create deployment nginx --image=nginx --replicas=2
oc expose deployment nginx --port=80
oc expose deployment nginx --type=LoadBalancer --port=80
oc get svc
curl http://192.168.1.240
```

4. Monitoring & Troubleshooting

```
- Check pods: oc get pods -n metallb-system
- Service details: oc describe svc <service-name>
- Logs: oc logs -n metallb-system deploy/controller
```

5. Optional: BGP Mode

For routed networks, configure: - BGPPeer - BGPAdvertisement Instead of L2 mode.