> **Important**
>
> All nodes and networking devices in a communication path must have the same MTU value. For bonded network interfaces, set the MTU value on the bonded interface and the underlying interfaces will inherit the same MTU value.

## Configuring Network Security

Configuring a separate `cluster` network might also increase cluster security and availability, by reducing the attack surface over the `public` network, thwarting some types of Denial of Service (DoS) attacks against the cluster, and preventing traffic disruption between OSDs. When traffic between OSDs gets disrupted, clients are prevented from reading and writing data.

Separating back-end OSD traffic onto its own network might help to prevent data breaches over the `public` network. To secure the back-end `cluster` network, ensure that traffic is not routed between the `cluster` and `public` networks.

### Configuring Firewall Rules

Ceph OSD and MDS daemons bind to TCP ports in the 6800 to 7300 range by default. To configure a different range, change the `ms_bind_port_min` and `ms_bind_port_max` settings.

The following table lists the default ports for Red Hat Ceph Storage 5.

**Default Ports by Red Hat Ceph Storage Service**

| Service name | Ports | Description |
|---|---|---|
| Monitor (MON) | 6789/TCP (msgr), 3300/TCP (msgr2) | Communication within the Ceph cluster |
| OSD | 6800-7300/TCP | Each OSD uses three ports in this range: one for communicating with clients and MONs over the public network; one for sending data to other OSDs over a cluster network, or over the public network if the former does not exist; and another for exchanging heartbeat packets over a cluster network or over the public network if the former does not exist. |
| Metadata Server (MDS) | 6800-7300/TCP | Communication with the Ceph Metadata Server |
| Dashboard/Manager (MGR) | 8443/TCP | Communication with the Ceph Manager Dashboard over SSL |
| Manager RESTful Module | 8003/TCP | Communication with the Ceph Manager RESTful module over SSL |
| Manager Prometheus Module | 9283/TCP | Communication with the Ceph Manager Prometheus plug-in |
| Prometheus Alertmanager | 9093/TCP | Communication with the Prometheus Alertmanager service |