



Docker Certified Associate

Sizing Requirement Considerations

Cluster Sizing Requirements

It depends... in general, sizing your environment for a Docker Swarm Cluster is going to be the same process that you would use for any application in your ecosystem. You would need to consider things like:

- **CPU, Memory and Disk**
 - Your containerized application will have the same requirements that it would if running on any other infrastructure (physical or virtual). Be sure your underlying host(s) have the necessary horsepower.
- **Concurrency**
 - What are the load requirements of the application at peak and in total? These will determine optimal placement and the amount of hardware resources (constraints) you need to allocate.



Universal Control Plane (UCP) System Requirements

Breakdown of Manager Nodes for Fault Tolerance

Hosts	Direction	Port	Purpose
managers, workers	in	TCP 443 (configurable)	Port for the UCP web UI and API
managers	in	TCP 2376 (configurable)	Port for the Docker Swarm manager. Used for backwards compatibility
managers, workers	in	TCP 2377 (configurable)	Port for communication between swarm nodes
workers	out	TCP 2377 (configurable)	Port for communication between swarm nodes
managers, workers	in, out	UDP 4789	Port for overlay networking
managers, workers	in, out	TCP, UDP 7946	Port for gossip-based clustering
managers, workers	in	TCP 12376	Port for a TLS proxy that provides access to UCP, Docker Engine, and Docker Swarm
managers	in	TCP 12379	Port for internal node configuration, cluster configuration, and HA
managers	in	TCP 12380	Port for internal node configuration, cluster configuration, and HA
managers	in	TCP 12381	Port for the certificate authority
managers	in	TCP 12382	Port for the UCP certificate authority
managers	in	TCP 12383	Port for the authentication storage backend
managers	in	TCP 12384	Port for the authentication storage backend for replication across managers
managers	in	TCP 12385	Port for the authentication service API
managers	in	TCP 12386	Port for the authentication worker
managers	in	TCP 12387	Port for the metrics service

Minimum Requirements

- 8gb RAM (Managers or DTR Nodes)
- 4gb RAM (Workers)
- 3gb Free Disk

Recommended Requirements

- 16gb RAM (Managers or DTR Nodes)
- 4vCPUs (Workers or DTR Nodes)
- 25-100gb Disk Space



Requirements (UCP, DTR and Docker EE)

Performance Considerations (Timing)

Component	Timeout (ms)	Configurable
Raft consensus between manager nodes	3000	no
Gossip protocol for overlay networking	5000	no
etcd	500	yes
RethinkDB	10000	no
Stand-alone swarm	90000	no

Recommendations

- **Plan for Load Balancing**
- **Use External Certificate Authority for Production**

Special Notes

- **Docker EE includes**
 - Docker Engine with Support
 - Docker Trusted Registry
 - Universal Control Plane
- **Compatibility**
 - Docker Engine 17.06+
 - DTR 2.3+
 - UCP 2.2+

