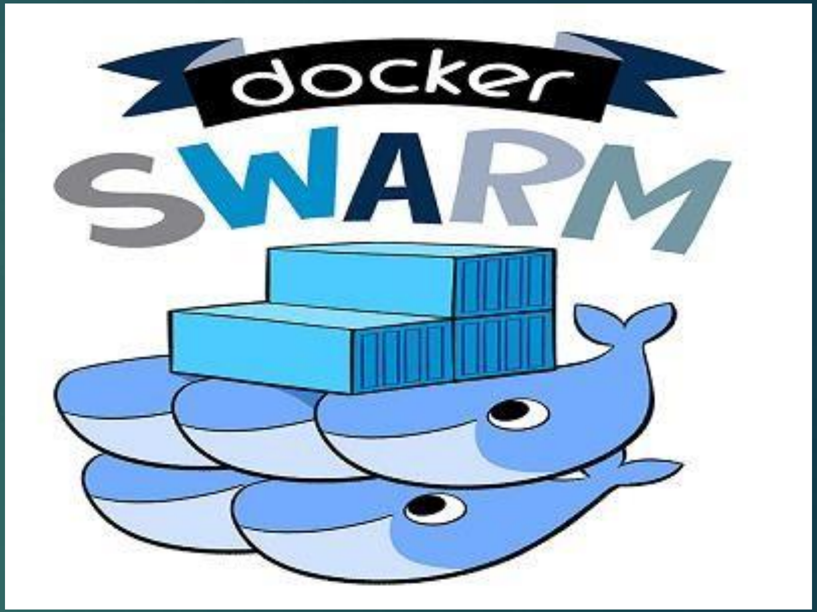
Docker Swarm

Docker Swarm

- Docker Swarm is clustering for Docker
- It turns several Docker hosts into a single virtual Docker host
- The regular Docker client works transparently with Swarm
- The Swarm is controlled by a Swarm Manager
- Each Docker node communicates with the manager
- It can be installed manually or by using Docker Machine



Swarm Architecture

- The Swarm is controlled by a Swarm Manager
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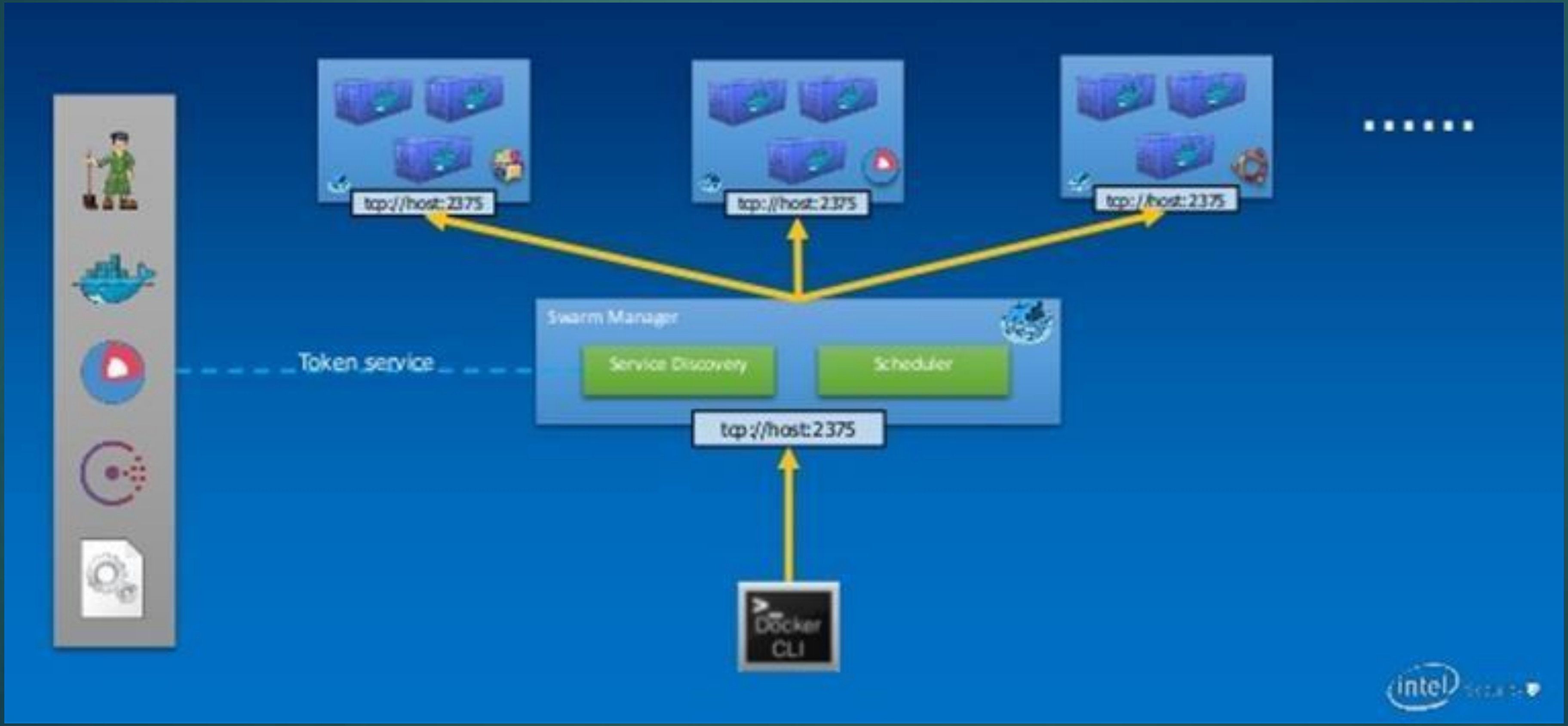

Creating a Swarm

- A machine needs to be designated as a manager
- There can be several managers
- The manager is created by initializing a Swarm
- Swarm must be performed on the manager machine

```
$ docker swarm init
Swarm initialized: current node (5lo6zmzvashexpfm8ipnlni37) is now a manager.

To add a worker to this swarm, run the following command:
    docker swarm join \
    --token SWMTKN-1-51icto7l3hfkym98e2cq0rflh6a6hkyqzxpyb8jaid3qzx5kmm-
864t0x9ebw4a2ymsms1kvq9s9 \
    192.168.0.38:2377

To add a manager to this swarm, run 'docker swarm join-token manager' and follow
the instructions.
```

Managing a Swarm

- The manager node is automatically added to the Swarm
- Information about the Swarm can be found using docker info

```
...
Swarm: active
 NodeID: 5lo6zmzvashexpfm8ipnlni37
 Is Manager: true
 ClusterID: e9ff1sv78oxyb1989xa0hvy77
 Managers: 1
 Nodes: 1
...
 Node Address: 192.168.0.38
...
```

Joining a Swarm

- Nodes can be added to the Swarm
- Ensure that firewall rules aren't blocking port 2377 on the manager
- The nodes can be listed

```
$ docker swarm join \
    --token SWMTKN-1-51icto7l3hfkym98e2cq0rflh6a6hkyqzxpyb8jaid3qzx5kmm-
864t0x9ebw4a2ymsms1kvq9s9 \
    192.168.0.38:2377

$ docker node ls


ID                            HOSTNAME               STATUS  AVAILABILITY  MANAGER STATUS
5lo6zmzvashexpfm8ipnlni37 *   hp                     Ready   Active        Leader
esc6tvcf01tx09zwzzr90no53     localhost.localdomain  Ready   Active
```

Docker Swarm—Services

- A Docker Service is a container
- Services run in Docker Swarm
- They can only be started on a Swarm Manager node
- Multiple copies of services can be run
- The Swarm Manager replicates the service on other nodes in the Swarm

Docker Swarm - Services (Contd.)

- A service can be added to the manager node
- A service is a container
- You can also inspect the service
- It also appears as a running container

```
$ docker service create --replicas 1 --name helloworld alpine
ping docker.com
1rw0x7pohbf4mvz9isdiecbe2

$ docker service ls
ID            NAME        REPLICAS  IMAGE   COMMAND
1rw0x7pohbf4  helloworld  0/1       alpine  ping docker.com

$ docker service inspect –pretty helloworld
$ docker ps
```

Docker Swarm Services - Scaling

- A service can be scaled
- The service will be duplicated and run on different nodes
- The service can be removed from all nodes

```
$ docker service ps helloworld
$ docker service scale helloworld=2
helloworld scaled to 2

$ docker service ps helloworld

ID                          NAME          IMAGE   NODE                   DESIRED STATE  CURRENT STATE
84lhnmfeob8y4r1tevkvsa0d9  helloworld.1  alpine  hp                     Running        Running
34u5pzw5yldnessr4radaip26  helloworld.2  alpine  localhost.localdomain  Running        Running

$ docker service rm helloworld
```

Applying Rolling Updates

- We will deploy a service based on the Redis 3.0.6 container image
- Then we will upgrade the service to use the Redis 3.0.7 container image using rolling updates
- We configure the rolling update policy at service deployment time
- The --update-delay flag configures the time delay between updates to a service task or sets of tasks
- By default the scheduler updates 1 task at a time
- By passing the --update-parallelism flag to configure the maximum number of service tasks that the scheduler updates simultaneously.

```
$ docker service create --replicas 3 --name redis --update-delay 10s redis:3.0.6
$ docker service inspect --pretty redis
```

```
$ docker service update --image redis:3.0.7 redis
$ docker service inspect --pretty redis
$ docker service update redis
$ docker service ps redis
```

THANK YOU