

Edge Agent Guide

The edge agent was created as a way to manage an edge compute environment where devices typically lack the networking capability to run the traditional Portainer agent.

Portainer must now expose port 8000

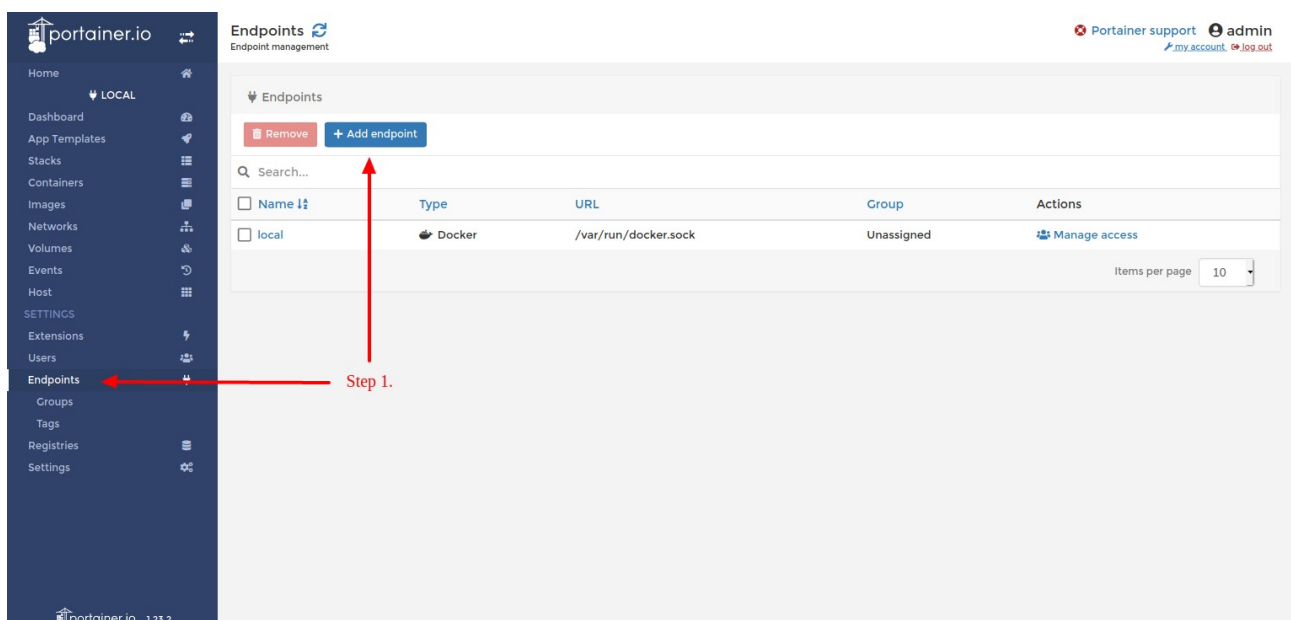
Portainer communicates with the edge agent over port 8000; through this port the edge agent can poll the Portainer instance, connect to Portainer, see when it is needed & initiate a tunnel or receive config updates. **Without port 8000 exposed on Portainer, you cannot access the edge endpoint.** If you already have Portainer deployed, you need to redeploy with port 8000 exposed alongside the port used to access Portainer.

Recommended Portainer deployment methods:

- **Portainer with TLS:** If your Portainer instance is deployed with TLS, the agent will use HTTPS for the connection it makes back to Portainer. This is the recommended approach.
- **Portainer with self-signed certs:** If you are using a self signed Portainer instance, the edge agent must be deployed with *the flag: -e EDGE_INSECURE_POLL=1*. If you do not deploy Portainer with this flag, then the agent will not be able to communicate with Portainer. This option is less secure than TLS.
- **Portainer fallback to HTTP:** If Portainer is not configured with either of the above options, it will fallback to using HTTP for the agent polling. This option is no longer recommended, as it is insecure.

Add an edge agent endpoint

- **Step 1:** Navigate to the Endpoints view and click on the *Add endpoint* button.



Adding a new endpoint from the Endpoints view

- **Step 2:** Click on the *edge agent* tab and enter the name and the URL for your Portainer instance (Used by the agent to connect to Portainer)

Note: Portainer prefills the URL with the domain name of the machine it is on. If it defaults to localhost, set the URL to *http://IP:PORT*, (replacing the IP and PORT with those you use to access the Portainer UI).

The screenshot shows the 'Create endpoint' page in Portainer. The 'Environment type' section has four tabs: 'Agent', 'Edge Agent' (selected), 'Docker', and 'Azure'. Below this, the 'Information' section explains that the Edge agent will initiate communications with the Portainer instance. The 'Environment details' section contains the following fields:

- Name:** 'edge' (with a red arrow pointing to it labeled 'Step 2.')
- Portainer server URL:** 'http://192.168.1.13:9000' (with a red arrow pointing to it labeled 'Step 2.')
- Metadata:**
 - Group:** 'Unassigned' (dropdown menu)
 - Tags:** 'No tags available.'
- Actions:** A blue button labeled '+ Add endpoint'.

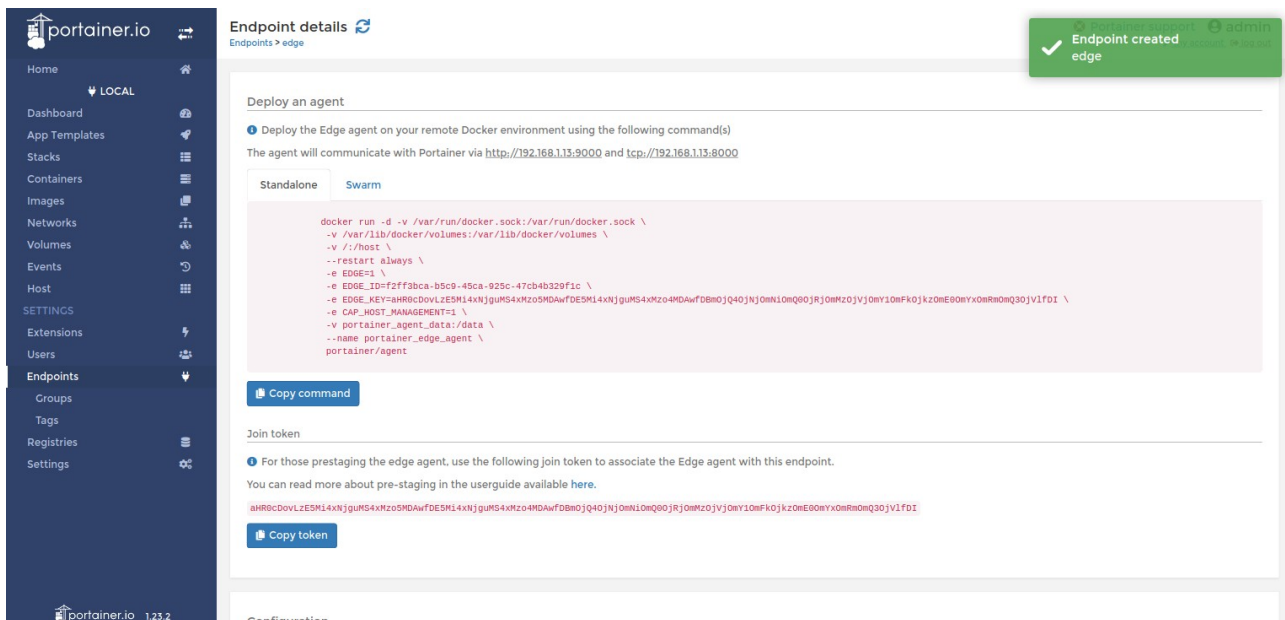
Configuring an edge endpoint with name and <IP:PORT> of your Portainer instance

- **Step 3:** Click the *Add endpoint* button

This screenshot is identical to the previous one, showing the 'Create endpoint' page with the 'Edge Agent' tab selected. The 'Name' is 'edge' and the 'Portainer server URL' is 'http://192.168.1.13:9000'. A red arrow points to the '+ Add endpoint' button in the 'Actions' section, labeled 'Step 3.'

Clicking the Add endpoint button

Result: You should see a green notification message appear in the top right of the screen if the endpoint was successfully initialized. You should now also be redirected to the Endpoint details view to configure this endpoint.



Endpoint successfully added and browser redirect to the endpoint configuration view

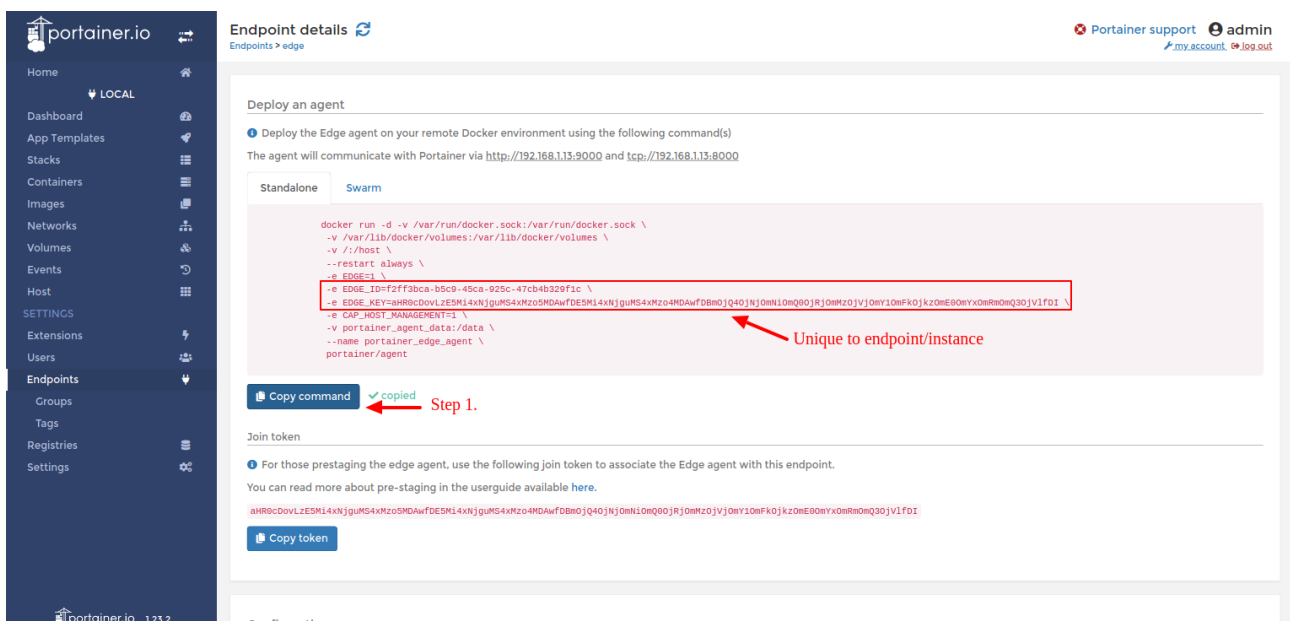
Deploy the edge agent

The next step is to deploy the edge agent on your edge compute environment. You have the option to do this on a standalone environment or as a service across the nodes in a Docker swarm (refer to the appropriate section below).

Deploy the edge agent in a standalone environment

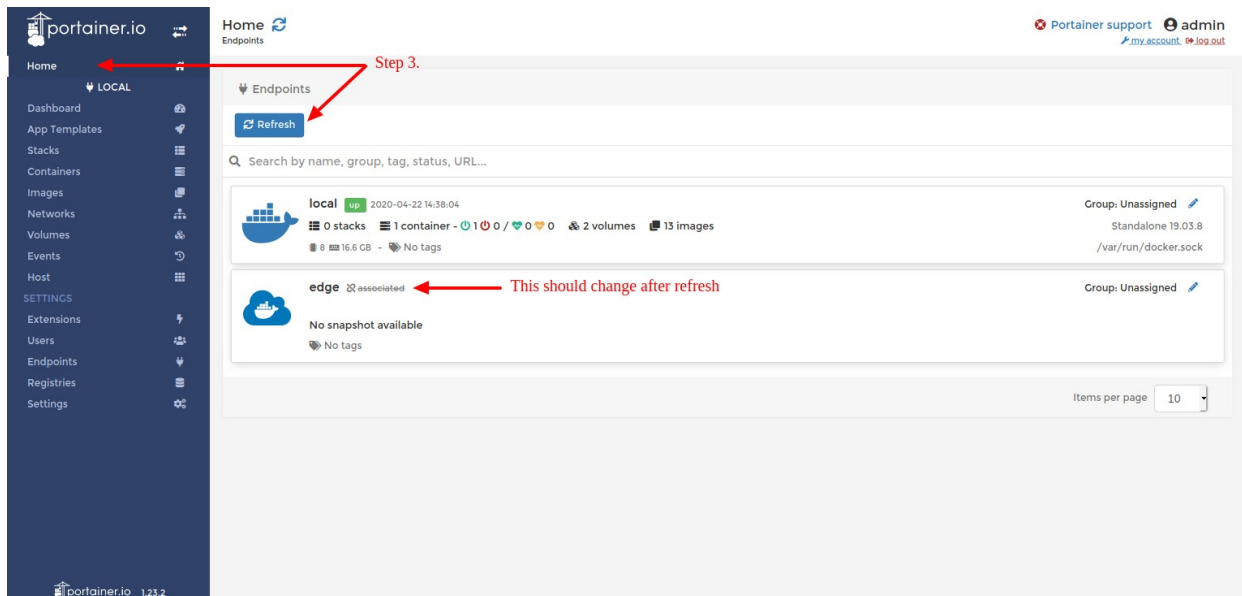
- **Step 1:** On the standalone tab, click on the *Copy command* button

Note: This command will contain an `EDGE_ID` and `EDGE_KEY` that are unique to the endpoint & instance so don't use the one in this example.



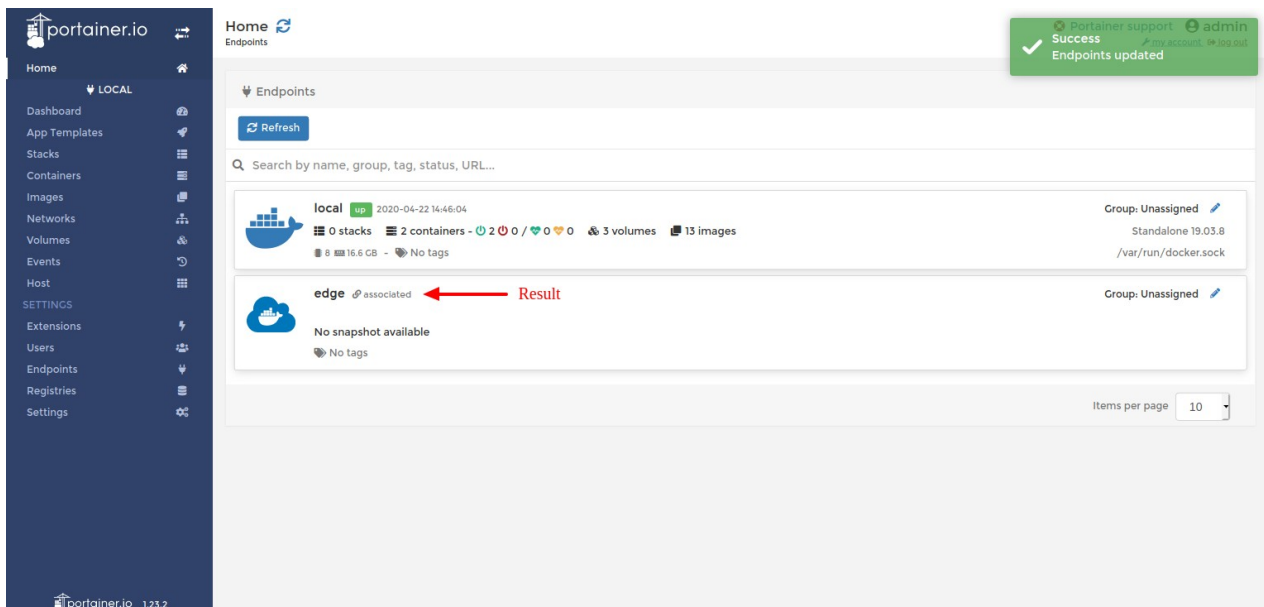
Click to copy edge agent deployment command for a standalone environment

- **Step 2:** Execute the command on the standalone Docker edge environment.
- **Step 3:** Navigate to the Home view and you should see the endpoint listed along with the word associated crossed out. Press the Refresh button.



Refreshing the endpoint status

Result: The endpoint status will now be updated and you should see this changed to associated.



Edge agent successfully associated with Portainer

Deploy the edge agent as a swarm service

- **Step 1:** On the swarm tab, click on the Copy command button.
Note: This command will contain an EDGE_ID that is unique to the endpoint you created, so don't use the one in this example.

Endpoint details

Endpoints > edge

Deploy an agent

Deploy the Edge agent on your remote Docker environment using the following command(s)
The agent will communicate with Portainer via <http://192.168.1.13:9000> and <tcp://192.168.1.13:9000>

Standalone Swarm

```
docker network create \
--driver overlay \
portainer_agent_network;

docker service create \
--name portainer_agent \
--network portainer_agent_network \
-e AGENT_CLUSTER_ADDR=tasks.portainer_agent \
-e EDGE_ID= \
-e EDGE_KEY= \
-e CAP_HOST_MANAGEMENT=1 \
--mode global \
--constraint 'node.platform.os == linux' \
--mount type=bind,src=/var/run/docker.sock,dst=/var/run/docker.sock \
--mount type=bind,src=/var/lib/docker/volumes,dst=/var/lib/docker/volumes \
--mount type=bind,src=/,dst=/host \
--mount type=volume,src=portainer_agent_data,dst=/data \
portainer/agent
```

Copy command ✓ copied

Join token

For those prestaging the edge agent, use the following join token to associate the Edge agent with this endpoint.
You can read more about pre-staging in the [userguide](#) available [here](#).

ahR0cDovL2ESM14xNjguMS4xMz05NDAwFDE5M14xNjguMS4xMz04NDAwFDM9OjB1OmQ3OmVhOjg3OmY5OjI5OjE2OjJkOmQ1OjMyOjNkOmVhOjM1OjA1OmVlFDEI

Copying the deployment command for a swarm environment

- **Step 2:** Execute the command on a manager node in the edge environment.
- **Step 3:** Navigate to the Home view and you should see the endpoint listed along with the word associated crossed out. Press the Refresh button.

Home

Endpoints

Refresh

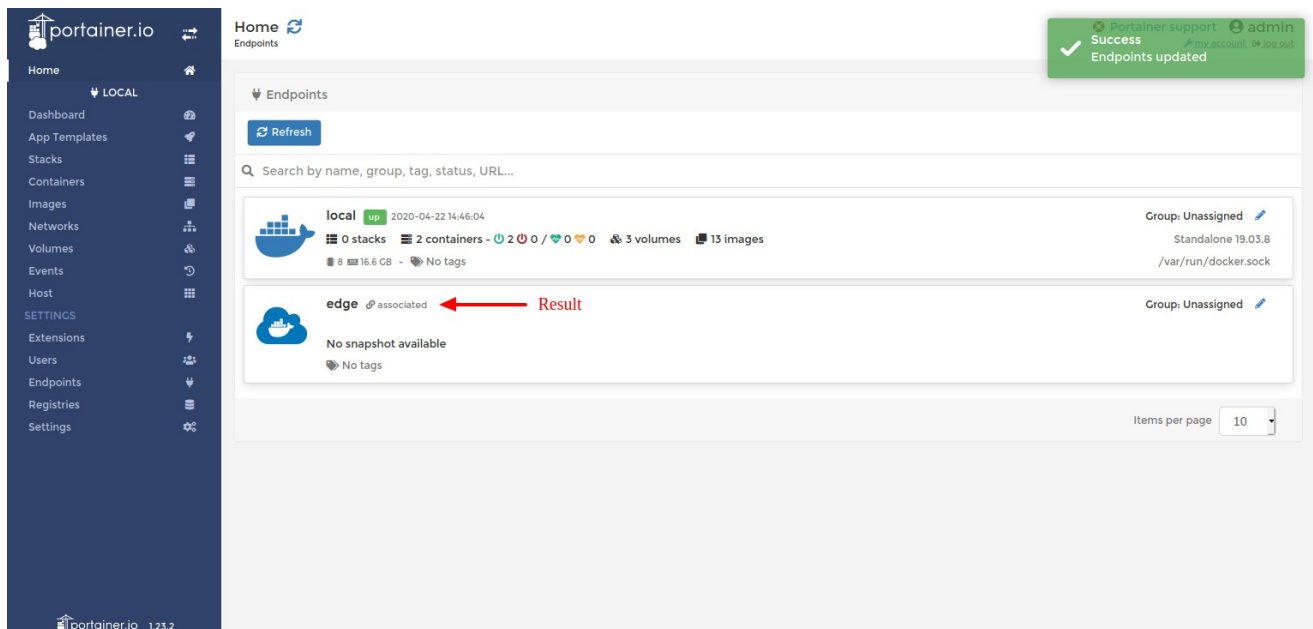
Search by name, group, tag, status, URL...

Endpoint	Status	Group
local	2020-04-22 14:38:04	Unassigned
edge	associated	Unassigned

Items per page 10

Refreshing the endpoint status

Result: The endpoint status will now be updated and you should see this changed to associated.



Prestaging the Agent (Advanced Deployment)

If the `EDGE_KEY` variable was omitted from the command used to start the Edge agent, the agent will start a HTTP server on port 80 where it will expose a UI to associate an Edge key. After associating a key via the UI, the UI server will then shutdown.

Note: For security reasons, the Edge server UI will shutdown after 15 minutes if no key has been specified. The agent will require a restart in order to access the Edge UI again.

- **Step 1:** After copying the deployment command in one of the previous sections, remove the `-e EDGE_KEY` environment variable and add `-p 80:80 \` (a port mapping for the agent HTTP server).

Note: You can change the port on the host that the server is exposed on if you wish, by adding this instead: `-p custom-port:80 \` and replacing `custom-port` with your port.

```
docker run -d -v /var/run/docker.sock:/var/run/docker.sock \
-v /var/lib/docker/volumes:/var/lib/docker/volumes \
-v /:/host \
--restart always \
-e EDGE=1 \
-e EDGE_ID=f2ff3bca-b5c9-45ca-925c-47cb4b329f1c \
-e EDGE_KEY=aHR0cDovLzE5Mi4xNjguMS4xMzo5MDAwfDE5Mi4xNjguMS4xMzo5MDAwfDBmOjQ0jNjOmNiOmQ0Q0jRjOmMzOjVjOmY1OmFkOjZOmE0OmYxOmRmOmQ3OjVlFDI= \
-p 80:80 \
-e CAP_HOST_MANAGEMENT=1 \
-v portainer_agent_data:/data \
--name portainer_edge_agent \
portainer/agent
```

- **Step 2:** In the UI, click the Copy token button to copy the token for use in step 3.

The screenshot shows the Portainer.io interface. On the left is a sidebar with navigation options like Home, LOCAL, Dashboard, App Templates, Stacks, Containers, Images, Networks, Volumes, Events, Host, SETTINGS, Extensions, Users, Endpoints, Groups, Tags, Registries, and Settings. The main content area is titled 'Endpoint details' with a sub-header 'Endpoints > edge'. It contains a 'Deploy an agent' section with a command to run the edge agent. Below this is a 'Join token' section with a long alphanumeric token. A 'Copy token' button is visible, and a red arrow points to it with the text 'Step 2.'.

Copying the join token from Portainer

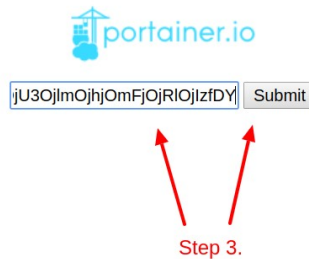
Note: If you have navigated off the page, you can click on the unassociated endpoint in the home view and you will be redirected to the endpoint details page and can copy the token from there. Alternatively you can click on the endpoint in the endpoints view.

- **Step 3:** Navigate to <edge-ip>:80 in a different tab in your browser replacing <edge-ip> with the IP of your edge environment. **If you chose a different port in your deployment command, you should replace 80 with the custom-port you specified.** You should see the Agent Pairing screen with the Portainer.io logo, a textbox and the submit button.



Edge agent waiting for the join token to be entered

- **Step 3:** Paste the join token in the text box and then click the *Submit* button.



Submitting the join token to pair the edge agent with Portainer

Note: If you do not enter the join token within 15minutes, this page will go offline for security reasons. To get it back, simply restart the edge agent service.

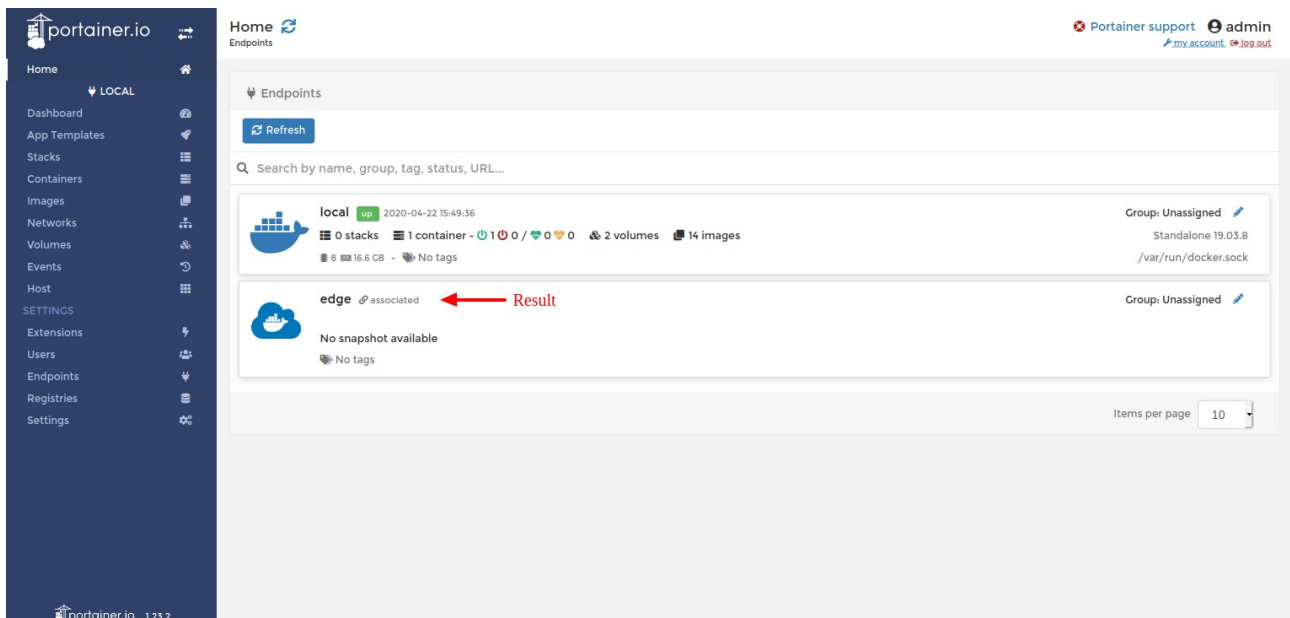
Result: You should now be redirected to `<edge-ip>:80/init` or `<edge-ip>:custom-port/init` and see confirmation text that the agent has successfully been set up. It will now initiate a connection with your Portainer instance.

Agent setup OK. You can close this page.



Agent has successfully saved the token and completed setup

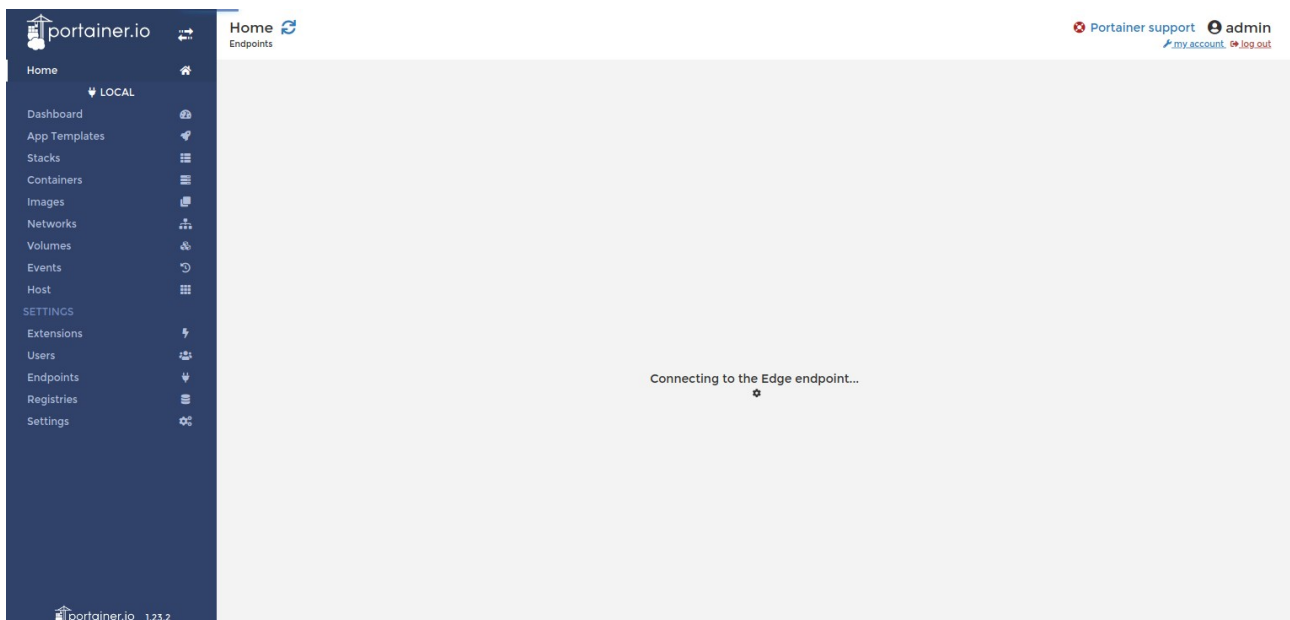
You should now also see in the home view that the agent has been successfully associated with your endpoint.



The agent was successfully associated to the edge endpoint

Using the Agent endpoint & agent poll frequency

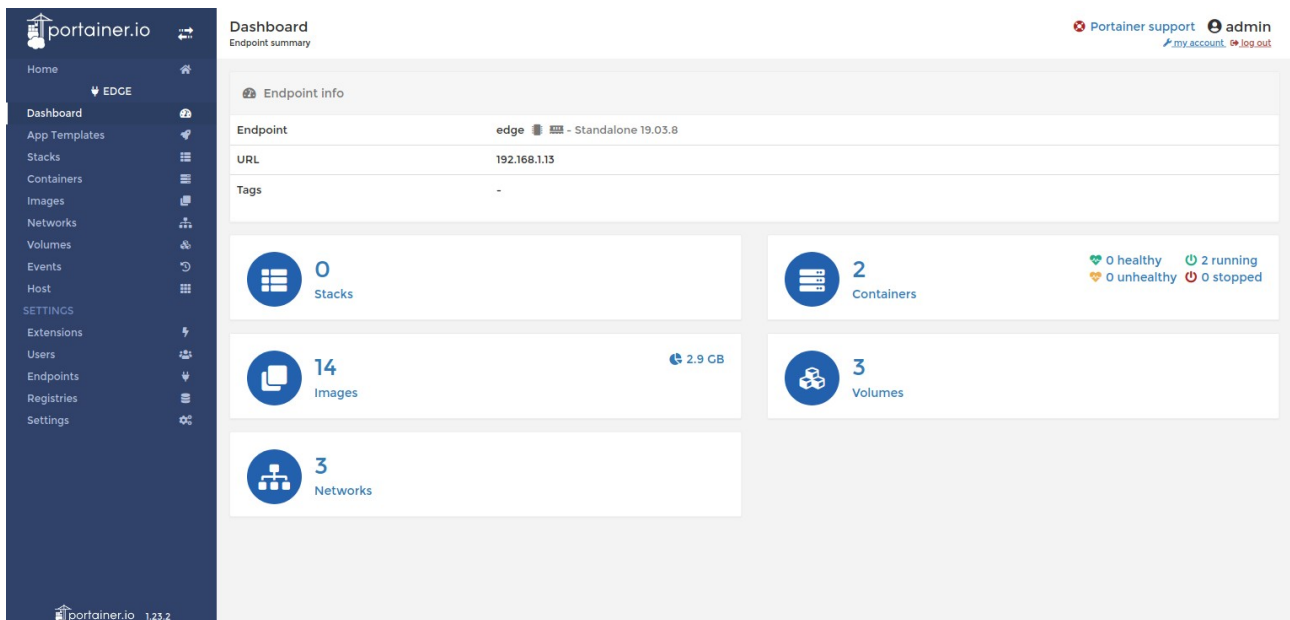
Once you have successfully associated the edge agent to Portainer, you can click on the endpoint to initiate the connection to the edge environment.



Connecting to the edge environment

Note: Depending on the edge agent poll frequency applied in the Portainer settings, this can take between 10 seconds to a minute. This is due to Portainer having to wait for the agent to establish a tunnel and connect back to Portainer.

Result: You should now be redirected to the dashboard view for the edge endpoint once the connection is established. You can now manage the endpoint as you would for any other endpoint.

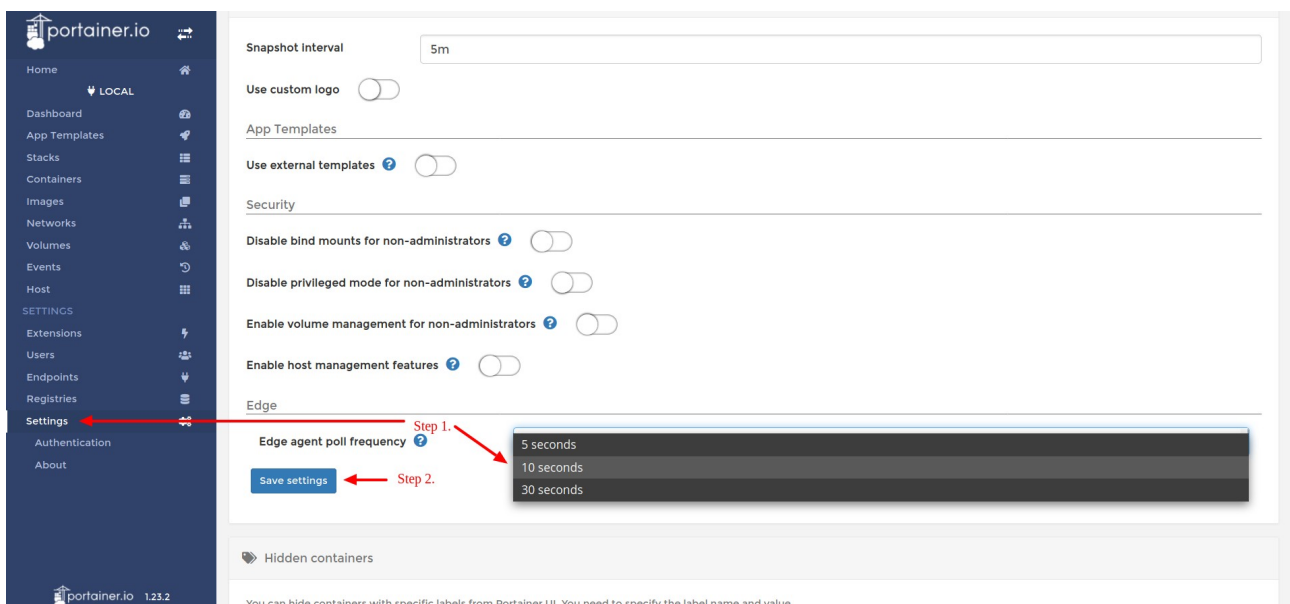


Successfully connected to the edge endpoint

Configure the edge agent poll frequency

Before starting a management session with the edge environment, it is recommended to change the edge agent poll frequency to a lower value. This will make the edge agent more responsive. You can then set it back to a higher value when the edge environment is not needed, to prevent unneeded polling by the agent.

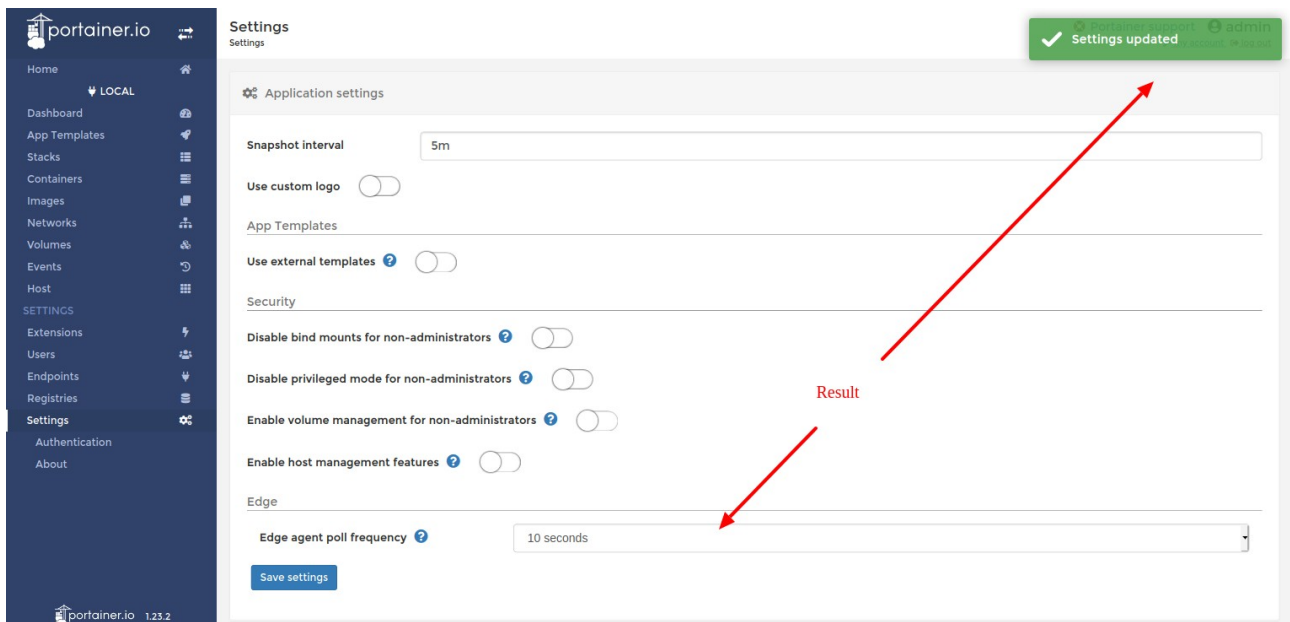
- **Step 1:** Navigate to the settings view, then select a poll frequency from the *Edge agent poll frequency* drop-down (default is 5 seconds)
- **Step 2:** Click the *Save settings* button to apply.



Configuring the edge agent poll frequency

Result: You should see the page refresh and a green notification message appear in the top right of the screen if *Edge agent poll frequency* was successfully updated.

You should now also see that the option you selected has been saved after the page refreshed.



Edge agent poll frequency successfully updated