

# Role Based Access Control

The Role Based Access Control extension (RBAC) allows you to assign roles to Users or Teams within an endpoint or group of endpoints. There are multiple different roles introduced with RBAC that can be assigned from within Portainer including:

Roles	
Search...	
Name	Description
Endpoint administrator	Full control of all resources in an endpoint
Helpdesk	Read-only access of all resources in an endpoint
Read-only user	Read-only access of assigned resources in an endpoint
Standard user	Full control of assigned resources in an endpoint

## *Different roles within Portainer*

**NOTE:** Please be aware that after enabling the RBAC extension, all existing access associated to endpoint and endpoint groups will be switched to read-only for security reasons. You'll need to update the access via the UI according to your needs.

## Abilities of each role

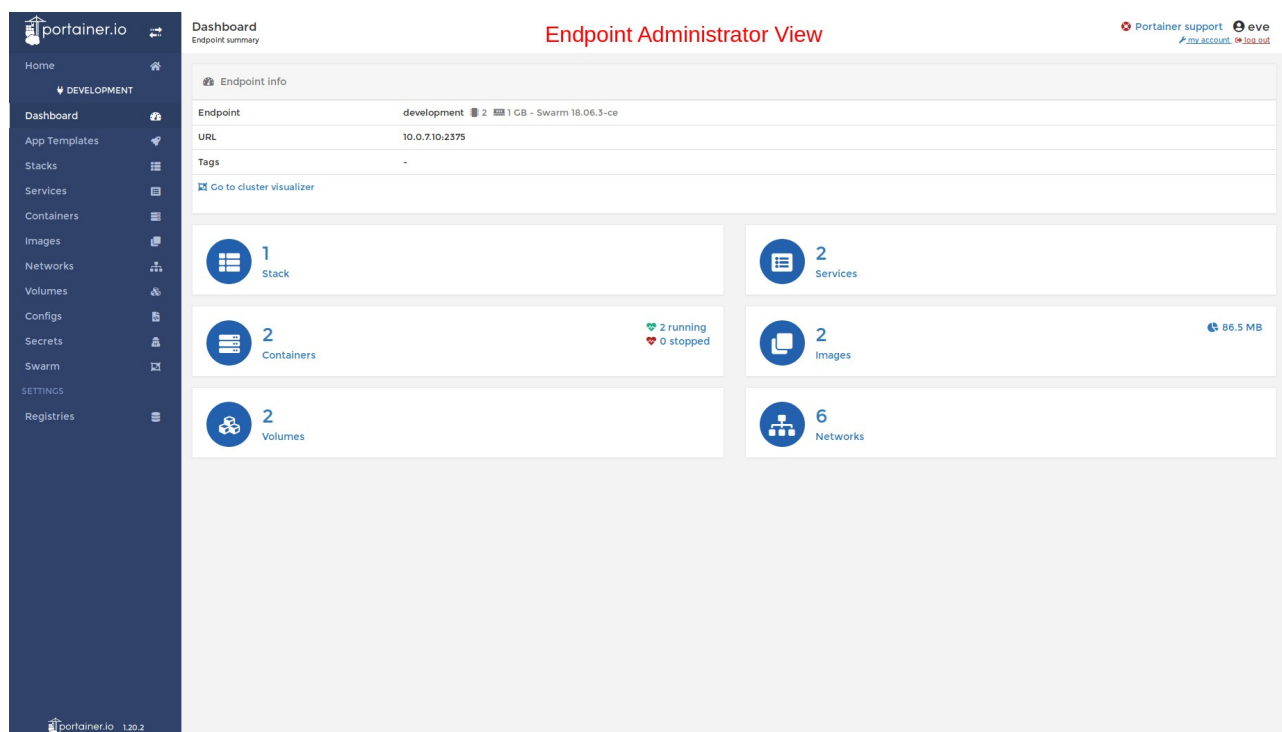
Each role introduced with the RBAC extension has abilities that are different from an administrator, which by default has control of every aspect of a Portainer deployment.

The screenshot shows the Portainer Admin View dashboard for a development endpoint. The left sidebar contains navigation links for Home, DEVELOPMENT, Dashboard, App Templates, Stacks, Services, Containers, Images, Networks, Volumes, Configs, Secrets, Swarm, SETTINGS, Extensions, Users, Endpoints, Registries, and Settings. The main content area displays 'Endpoint info' for the 'development' endpoint, showing 2 containers, 1 GB of memory, and 18.06.3-ce version. Below this, there are six resource cards: 1 Stack, 2 Services, 2 Containers (with 2 running and 0 stopped), 2 Images (86.5 MB), 2 Volumes, and 6 Networks. The top right corner shows 'Portainer support', 'admin', and links for 'my account' and 'log out'.

*Administrator view of the development endpoint*

# Endpoint Administrator

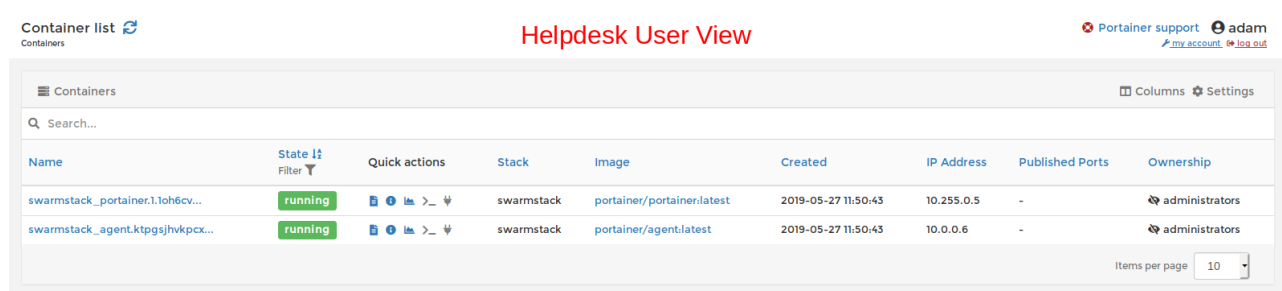
An endpoint administrator has full control of all the resources specific to the endpoint they are assigned to administer. They do not have the ability to manage the resources of other endpoints or other abilities specific to a global Portainer admin such as managing extensions. As such these options are removed from the Portainer interface for this role.



*Endpoint administrator view of the development endpoint*

# Helpdesk

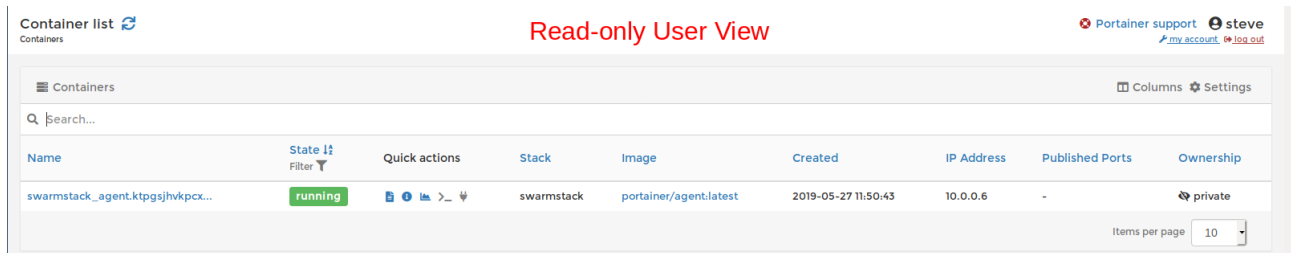
A Helpdesk user has read-only authorizations on all the resources inside an endpoint. A Helpdesk user will see the same dashboard and sidebar as an Endpoint administrator, however actions that modify these resources such as removing a container will be hidden from the Portainer UI.



*Helpdesk user view of container's list with actions such as remove a container hidden from the Portainer UI*

## Read-only user

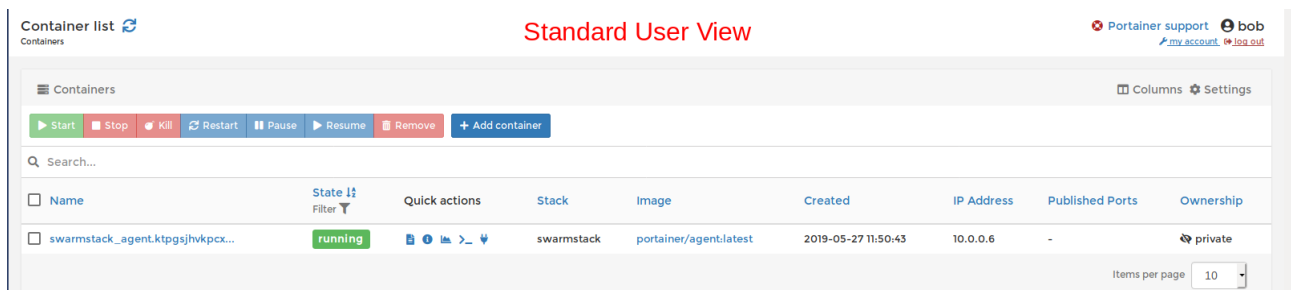
A read-only user can only view the resources within an endpoint that are assigned to them or made public through the resource's ownership menu. They will not see resources belonging to other users, such as the Portainer container owned by administrators that is visible to the Helpdesk user in the above image.



*Read-only user view of container's list with actions such as remove a container hidden from the Portainer UI*

## Standard user

A standard user has full control over resources that are created by them, assigned to them or made public through the resource's ownership menu. They will not see resources belonging to other users, such as the Portainer container owned by administrators that is visible to the Helpdesk user in the above image.



*Standard user view of container's list with actions such as remove a container available*

## Common use cases for the RBAC extension

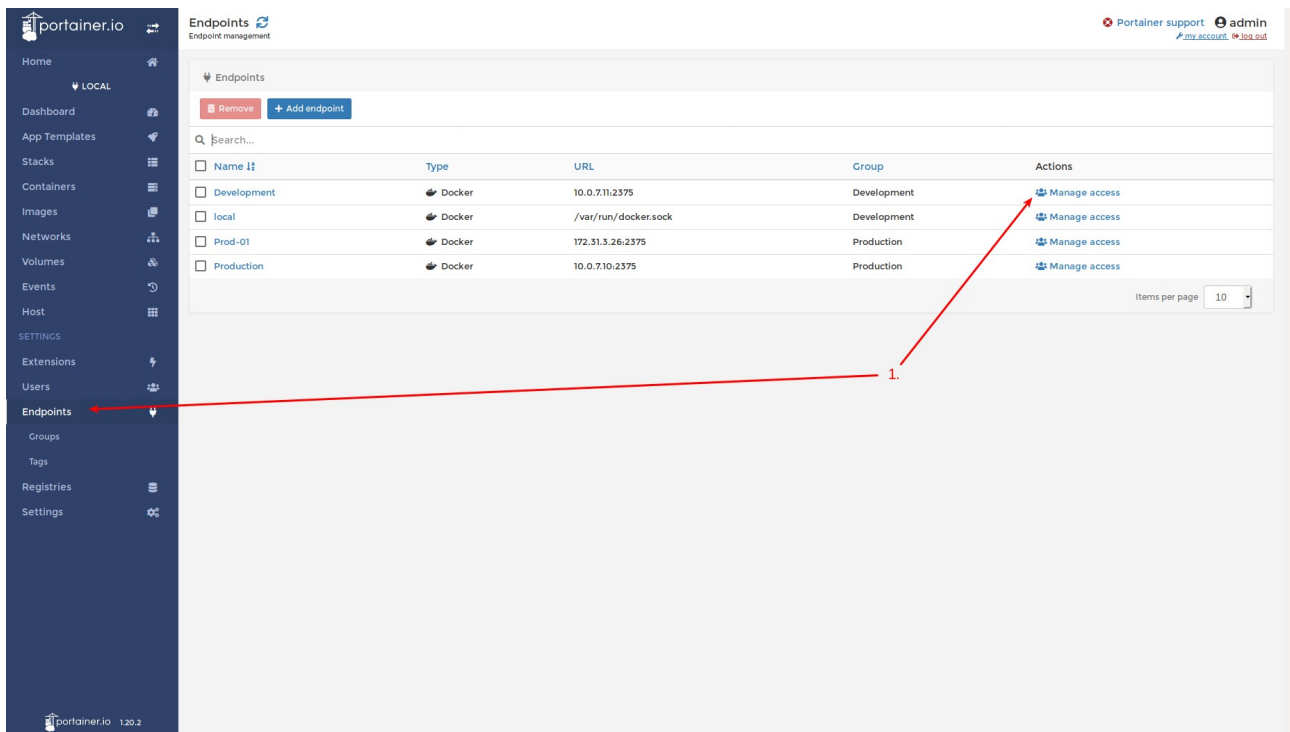
There are multiple different ways to configure RBAC, depending on your needs, here are some of the most common:

### Assign users roles against one or more individual endpoints

We want to assign the user; Adam, Endpoint administrator access to the Development endpoint.

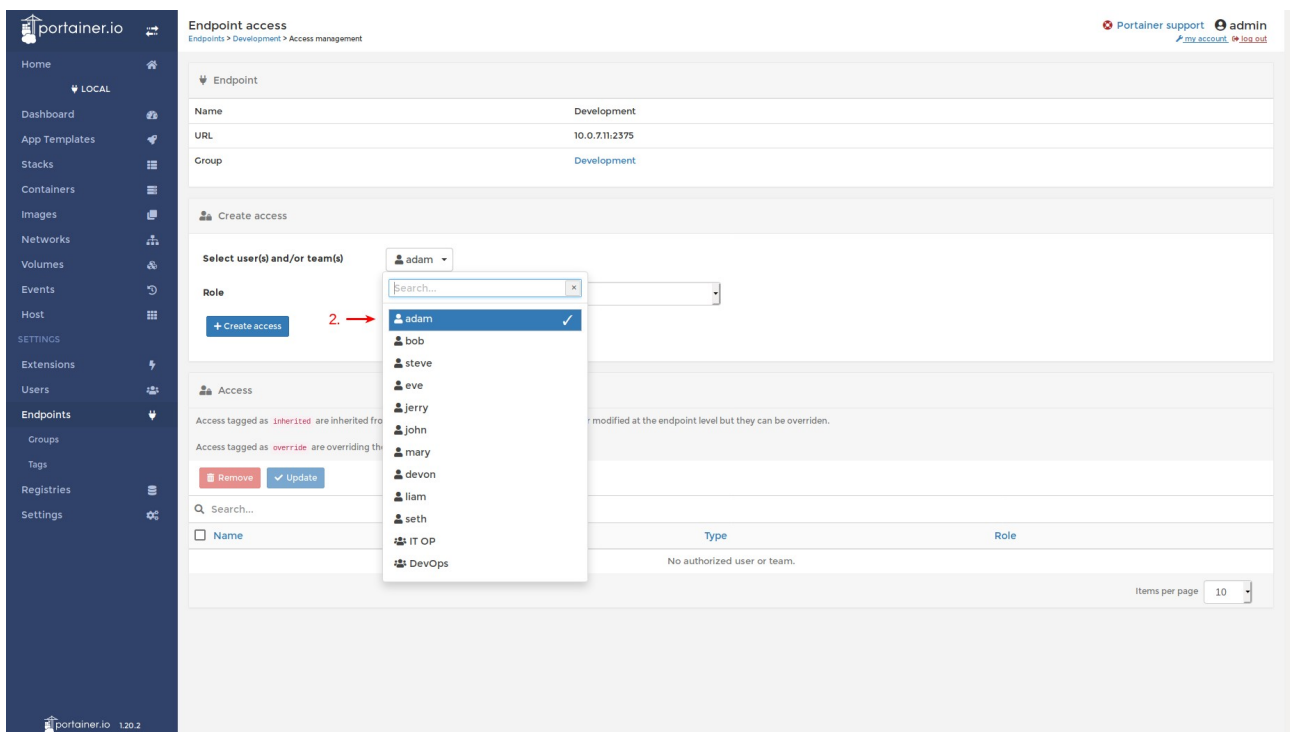
#### Part 1:

- **Step 1:** Navigate to the Endpoints view and select Manage access beside the Development endpoint.



### Managing access on the Development endpoint

- **Step 2:** Select the user Adam from the Select user(s) and/or team(s) drop-down.



### Selecting the user Adam

- **Step 3:** Select the Endpoint administrator role and click the Create access button.

Endpoint access

Endpoints > Development > Access management

Endpoint

Name	Development
URL	10.0.7.11:2375
Group	Development

Create access

Select user(s) and/or team(s) adam

Role Endpoint administrator

[+ Create access](#)

Access

Access tagged as **inherited** are inherited from the group access. They cannot be removed nor modified at the endpoint level but they can be overridden.

Access tagged as **override** are overriding the group access for the related users / teams.

[Remove](#) [Update](#)

Search...

<input type="checkbox"/>	Name	Type	Role
No authorized user or team.			

Items per page 10

*Assigning the Endpoint administrator role to the user Adam*

**Result:** You should see a green confirmation message appear in the top right of the screen if the role you selected was successfully applied. You should also now see the user Adam in the access list with the Endpoint administrator role you assigned to them.

Endpoint access

Endpoints > Development > Access management

Endpoint

Name	Development
URL	10.0.7.11:2375
Group	Development

Create access

Select user(s) and/or team(s) Select one or more users and/or teams

Role Endpoint administrator

[+ Create access](#)

Access

Access tagged as **inherited** are inherited from the group access. They cannot be removed nor modified at the endpoint level but they can be overridden.

Access tagged as **override** are overriding the group access for the related users / teams.

[Remove](#) [Update](#)

Search...

<input type="checkbox"/>	Name	Type	Role	
<input type="checkbox"/>	adam	user	Endpoint administrator	<a href="#">Edit</a>

Items per page 10

Access successfully updated

Result

*Endpoint administrator role successfully applied to the user Adam*

## Part 2:

Now we want to assign the user Adam the Helpdesk role against the Prod-01 endpoint.

- **Step 1:** Navigate to the Endpoints view and select the Manage access button beside the Prod-01 endpoint.
- **Step 2:** Repeat steps 2&3 from above but this time select the Helpdesk role.

**Result:** You should see a green confirmation message appear in the top right of the screen if the role you selected was successfully applied. You should also now see the user Adam in the access list with the Helpdesk role you assigned to them.

The screenshot shows the Portainer.io interface for managing endpoint access. The left sidebar lists various components like Home, 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 access' and shows details for the 'Prod-01' endpoint. Below this, there's a 'Create access' form with a dropdown for 'Select user(s) and/or team(s)' and a dropdown for 'Role' (currently set to 'Endpoint administrator'). A '+ Create access' button is present. Below the form is an 'Access' table with columns for Name, Type, and Role. The table lists user 'adam' with role 'Helpdesk'. A green notification banner at the top right states 'Access successfully updated'. Red arrows point from the word 'Result' to the notification banner, the 'Role' column, and the 'adam' user entry.

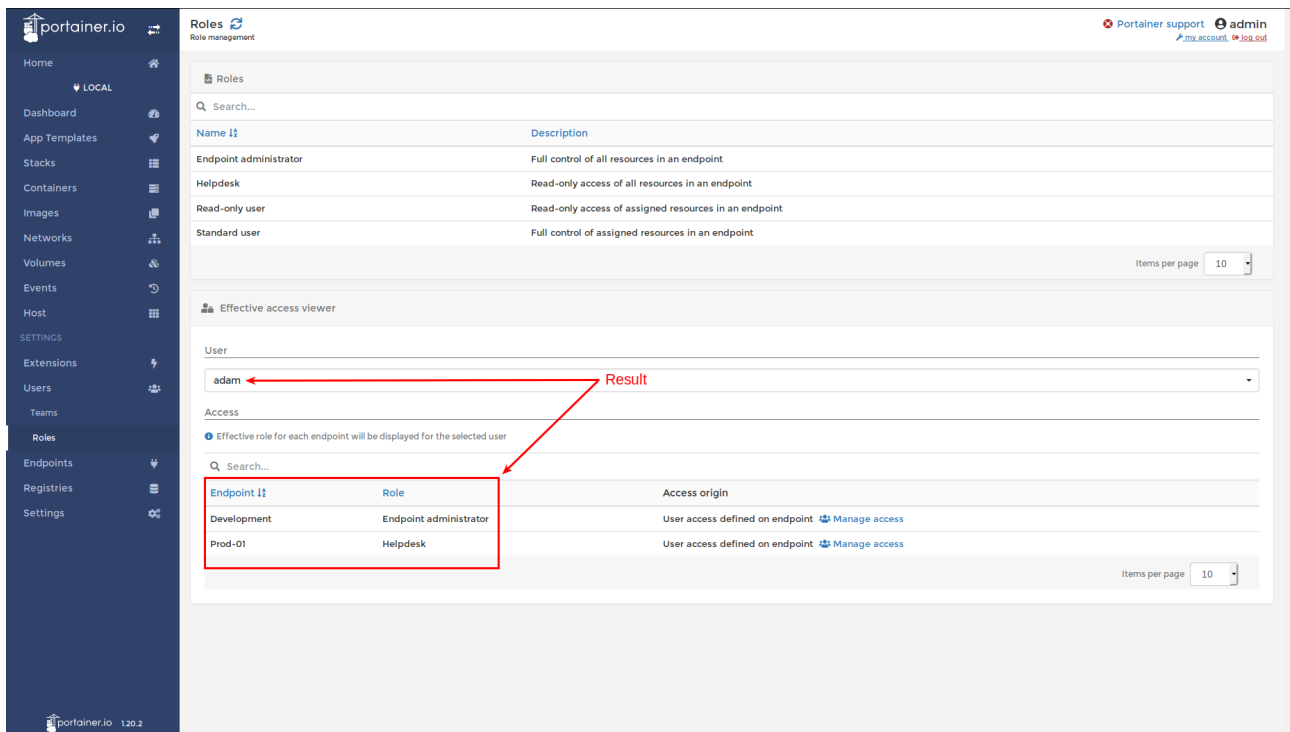
Name	Type	Role
adam	user	Helpdesk <a href="#">Edit</a>

*Helpdesk role successfully assigned to the user Adam*

## Part 3:

We should now be able to confirm that the user Adam has roles for our two different endpoints Development and Prod-01. We will use the effective access viewer feature of RBAC to do this. Instructions on using the effective access view are written later in this guide.

**Result:** You should now see that Adam has different roles against the endpoints you assigned them to.



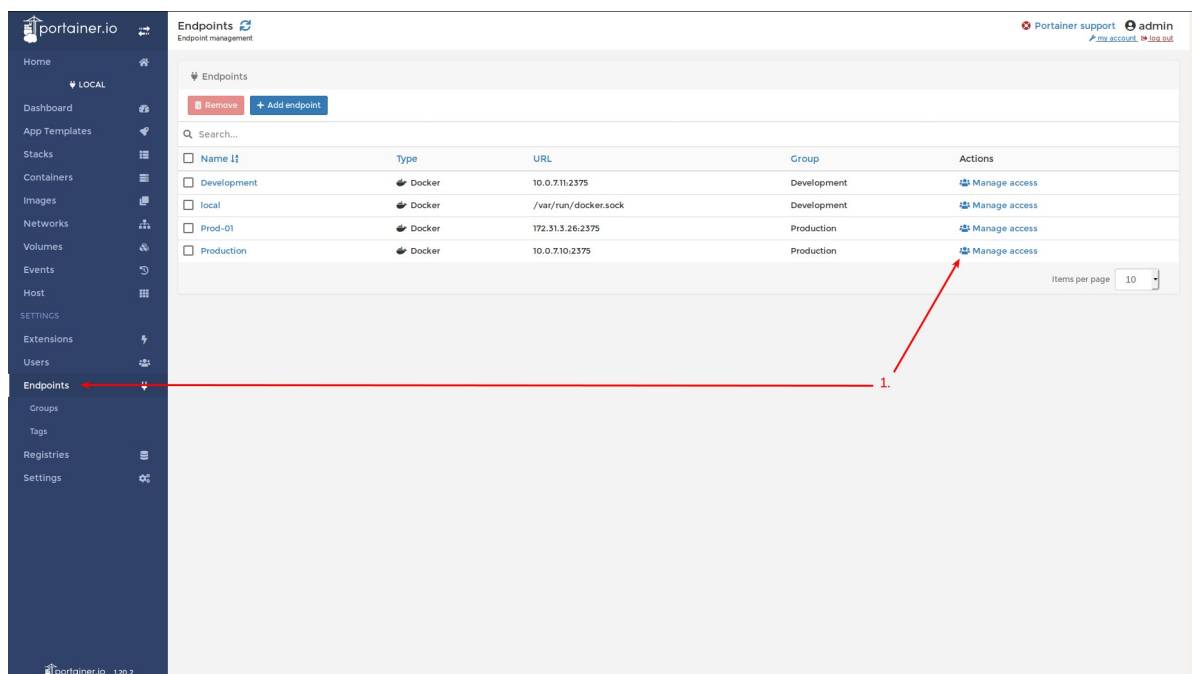
*Roles for user Adam on multiple different endpoints*

## Assign teams roles against one or more individual endpoints, with overrides for certain team members

### Part 1:

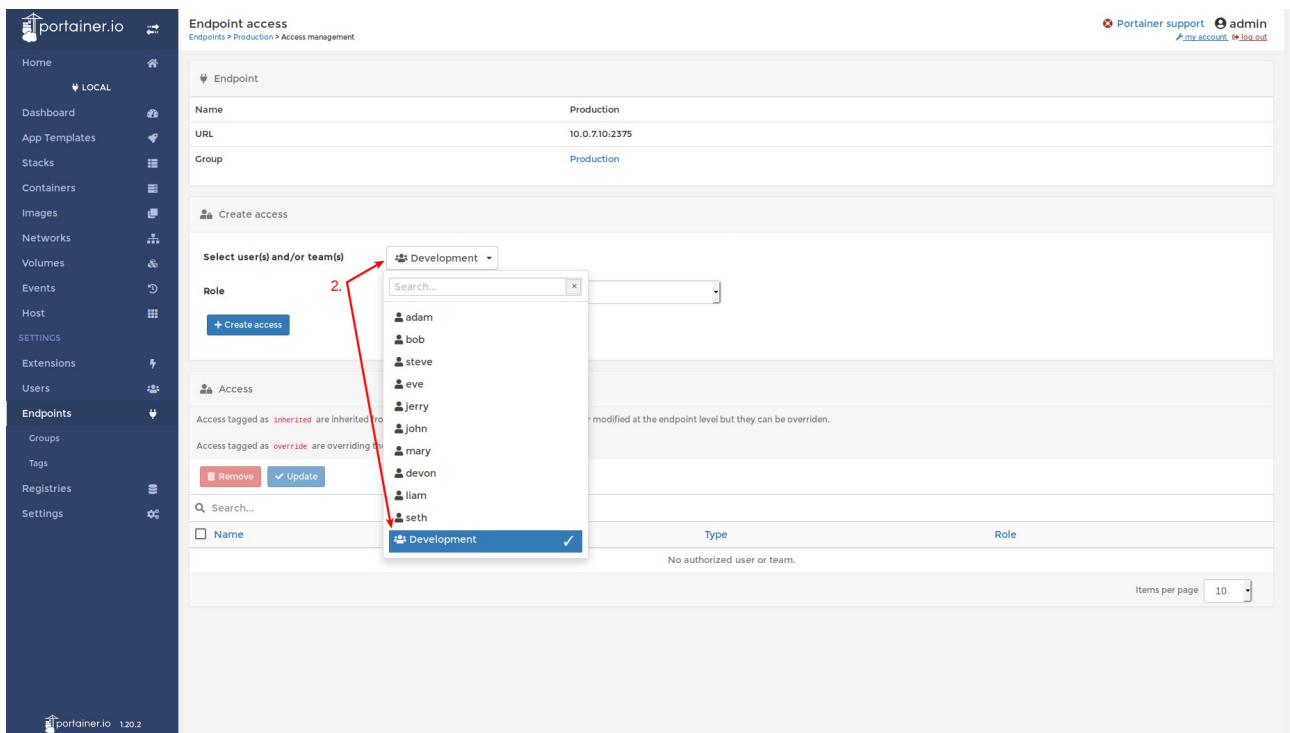
We want to assign the Helpdesk role to the Development team (consisting of the users Adam and eve and bob) against the Production endpoint.

- **Step 1:** Navigate to the Endpoints view and click the Manage access button beside the Production endpoint.



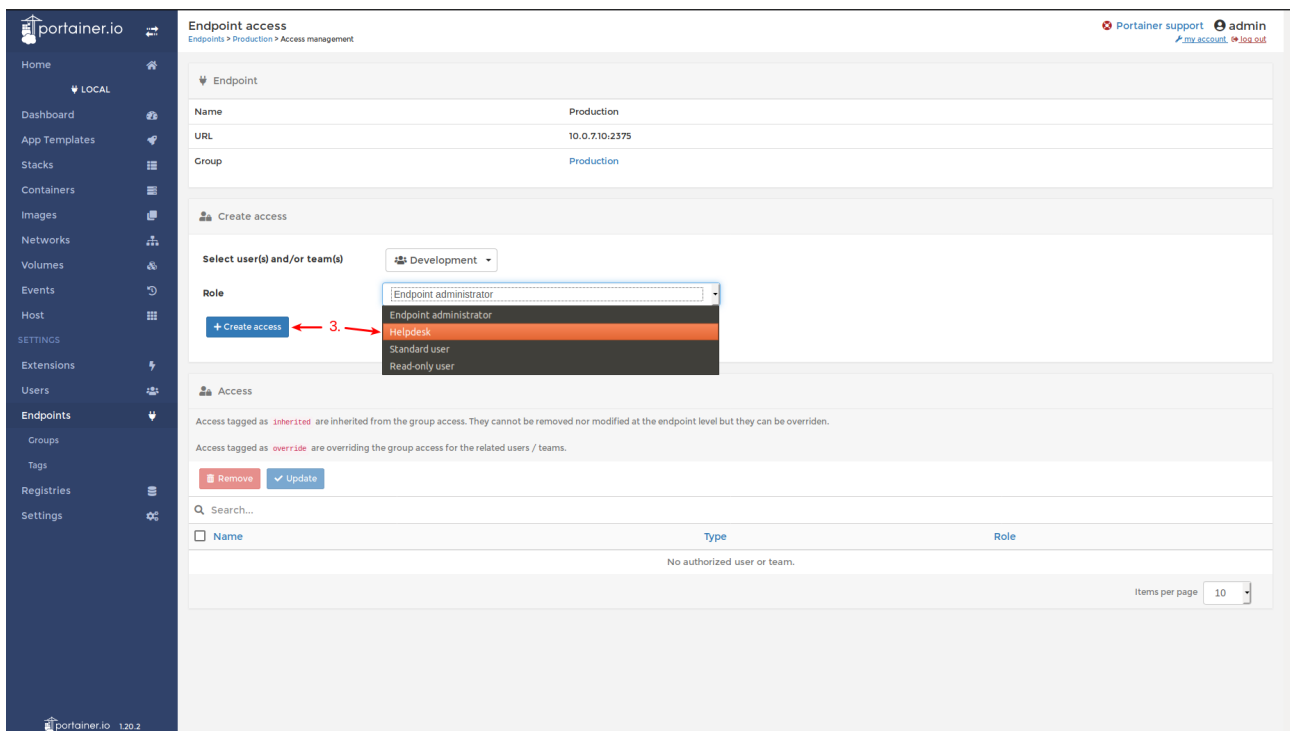
*Selecting Manage access on the Production endpoint*

- **Step 2:** Select the Development team from the Select user(s) and/or team(s) drop-down.



*Selecting the Development team from the drop-down.*

- **Step 3:** Select the Helpdesk role from the Role drop-down and click the Create access button.



*Selecting the Helpdesk role and applying it to the Development team*



**Result:** You should see a green confirmation message appear in the top right of the screen if the role you selected was successfully applied. You should also now see the Development team in the access list with the Helpdesk role you assigned to them.

The screenshot displays the Portainer.io 'Endpoint access' management page. The left sidebar shows the navigation menu with 'Endpoints' selected. The main content area shows the 'Production' endpoint configuration. The 'Create access' section has a dropdown for 'Select user(s) and/or team(s)' and a role dropdown set to 'Endpoint administrator'. Below this, the 'Access' section shows a table of access entries. The table has columns for 'Name', 'Type', and 'Role'. One entry is visible: 'Development' (team) with the role 'Helpdesk'. A green confirmation message 'Access successfully updated' is shown in the top right corner. Red arrows point from the word 'Result' to the confirmation message and the 'Helpdesk' role in the table.

Name	Type	Role
Development	team	Helpdesk <a href="#">Edit</a>

*Helpdesk role successfully assigned to the Development team on Production endpoint*

## Part 2:

We want to assign the Endpoint administrator role to the Development team (consisting of the users Adam and eve and bob) against the Development endpoint.

- **Step 1:** Navigate to the Endpoints view and click on the Manage access button beside the Development endpoint.
- **Step 2:** Repeat steps 2&3 from above but this time select the Endpoint administrator role.

**Result:** You should see a green confirmation message appear in the top right of the screen if the role you selected was successfully applied. You should also now see the Development team in the access list with the Endpoint administrator role you assigned to them.

Endpoint access

Endpoints > Development > Access management

Endpoint

Name	Development
URL	10.0.7.11:2375
Group	Development

Create access

Select user(s) and/or team(s)

Role

+ Create access

Access

Access tagged as **inherited** are inherited from the group access. They cannot be removed nor modified at the endpoint level but they can be overridden.

Access tagged as **override** are overriding the group access for the related users > teams.

Search...

<input type="checkbox"/>	Name	Type	Role
<input type="checkbox"/>	Development	team	Endpoint administrator <a href="#">Edit</a>

Items per page 10

Result

Access successfully updated

*Endpoint administrator role successfully assigned to the Development team on Development endpoint*

### Part 3:

We now want to assign the Endpoint administrator role for the user Adam against the Production endpoint.

- **Step 1:** Navigate to the Endpoints view and click on the Manage access button beside the Production endpoint.
- **Step 2:** Following the instructions at the start of this guide **Assign users roles against one or more individual endpoints**, assign the Endpoint administrator role for the user Adam.

We should now be able to confirm that the user Adam has roles for our two different endpoints Development and Production. We will use the effective access viewer feature of RBAC to do this. Instructions on using the effective access view are written later in this guide.

**Result:** You should now see that Adam has different roles against the endpoints you assigned them to.

**Note!** As shown below, user specific roles take precedence, so Adam has the Endpoint administrator role against the Production endpoint instead of his team's Helpdesk role.

**Roles**

Name	Description
Endpoint administrator	Full control of all resources in an endpoint
Helpdesk	Read-only access of all resources in an endpoint
Read-only user	Read-only access of assigned resources in an endpoint
Standard user	Full control of assigned resources in an endpoint

**Effective access viewer**

User:

Access:

Effective role for each endpoint will be displayed for the selected user

Search...

Endpoint	Role	Access origin
Development	Endpoint administrator	Team <b>Development</b> access defined on endpoint <a href="#">Manage access</a>
Production	Endpoint administrator	← <b>User Role</b> → User access defined on endpoint <a href="#">Manage access</a>

**Result**

**User Role Precedence**

*User role taking precedence over the role of a team they are a part of*

## Assign Teams roles against endpoint groups, with overrides for certain teams or team members against certain endpoints

### Background

In this scenario we have two teams, IT OP with two members and DevOps with 8 users.

**Team details**

Teams > IT OP

Team details

Name: IT OP [Delete this team](#)

Leaders: 0

Total users in team: 2

**Users**

[Add all users](#)

Name	Team Role
steve <a href="#">Add</a>	
seth <a href="#">Add</a>	
mary <a href="#">Add</a>	
liam <a href="#">Add</a>	
john <a href="#">Add</a>	
jerry <a href="#">Add</a>	
devon <a href="#">Add</a>	
bob <a href="#">Add</a>	

**Team members**

[Remove all users](#)

Name	Team Role
adam <a href="#">Remove</a>	Member <a href="#">Leader</a>
eve <a href="#">Remove</a>	Member <a href="#">Leader</a>

*IT OP team with two members*

Team details

Teams > DevOps

Portainer supportadmin

[my account](#)

[log out](#)

Team details

Name

DevOps

Delete this team

Leaders

0

Total users in team

8

Users

Items per page: 10

Add all users

Filter...

Name

▼

eve

Add

adam

Add

Team members

Items per page: 10

Remove all users

Filter...

Name

Team Role

▼

bob

Remove

Member

Leader

steve

Remove

Member

Leader

jerry

Remove

Member

Leader

john

Remove

Member

Leader

mary

Remove

Member

Leader

devon

Remove

Member

Leader

liam

Remove

Member

Leader

seth

Remove

Member

Leader

DevOps team with 8 members

Alongside this, we have the Production and Development endpoint groups, each containing two endpoints.

Endpoint group details

Groups > Production

Portainer supportadmin

[my account](#)

[log out](#)

Name

Production

Description

e.g. production environments...

Metadata

Tags

No tags available.

Associated endpoints

You can select which endpoint should be part of this group by moving them to the associated endpoints table. Simply click on any endpoint entry to move it from one table to the other.

Available endpoints

Search...

Name

▼

No endpoint available

Items per page 10

Associated endpoints

Search...

Name

▼

Prod-01

Production

Items per page 10

Actions

Update the group

Production group with two endpoints

Endpoint group details  
Groups > Development

Portainer support admin  
my account log out

Name: Development

Description: e.g. production environments...

Metadata

Tags: No tags available.

Associated endpoints

You can select which endpoint should be part of this group by moving them to the associated endpoints table. Simply click on any endpoint entry to move it from one table to the other.

Available endpoints

Search... Name

No endpoint available

Items per page 10

Associated endpoints

Search... Name

Development

local

Items per page 10

Actions

Update the group

*Development group with two endpoints*

## Part 1:

Now we want DevOps to have Endpoint administrator access on the Development endpoint group so they can manage it.

- **Step 1:** Navigate to the Groups view and click the manage access button beside the development endpoint group.

portainer.io

Endpoint groups  
Endpoint group management

Portainer support admin  
my account log out

Endpoint groups

Remove Add group

Search...

Name	Actions
<input type="checkbox"/> Development	<a href="#">Manage access</a>
<input type="checkbox"/> Production	<a href="#">Manage access</a>
<input type="checkbox"/> Unassigned	<a href="#">Manage access</a>

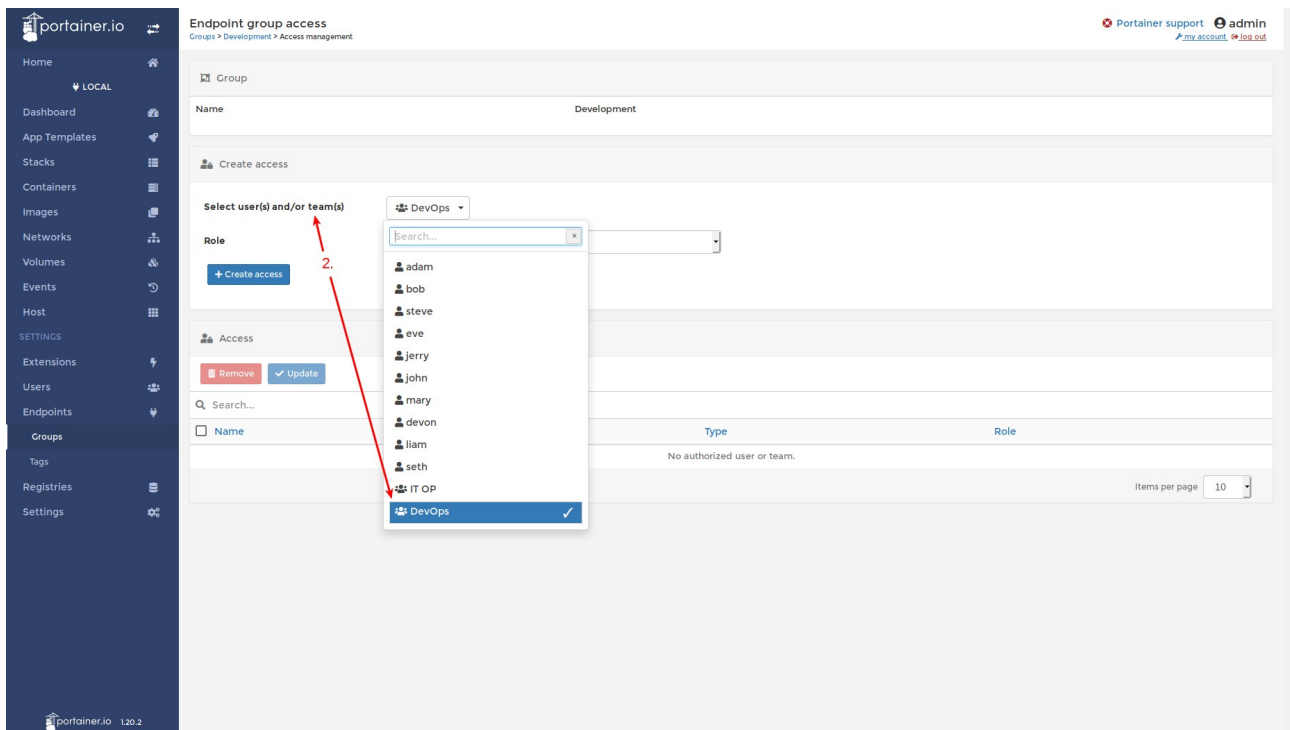
Items per page 10

portainer.io 1.20.2

Groups

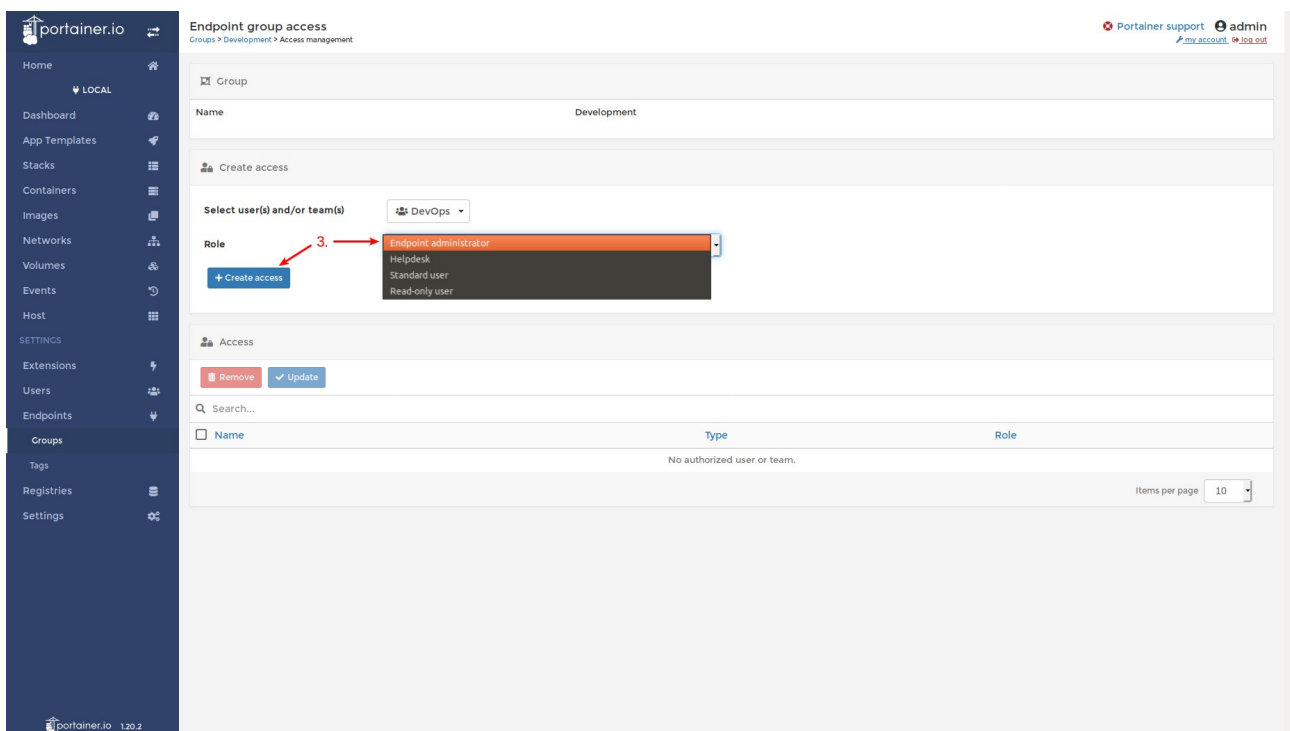
1.

- **Step 2:** From the 'Select users or teams' drop-down select the DevOps team.



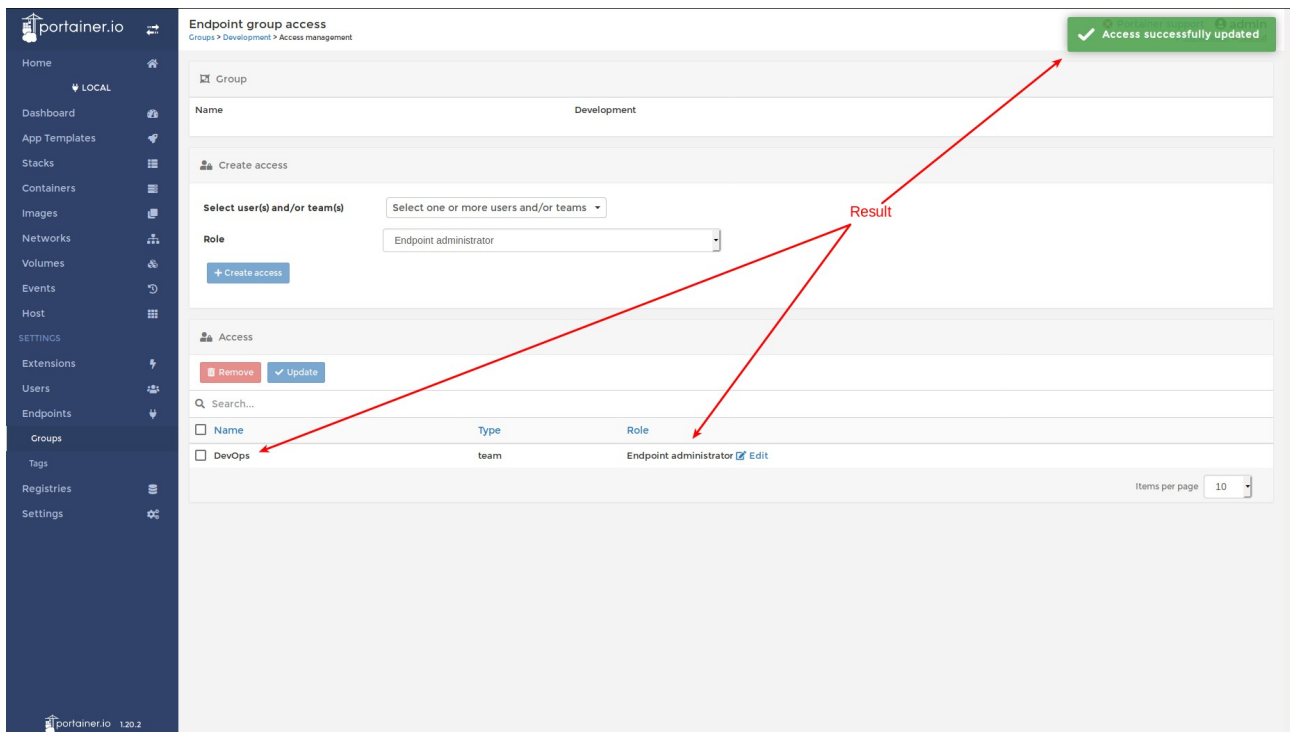
### *Selecting the DevOps team*

- **Step 3:** Select the Endpoint administrator role from the roles drop-down then select the create access button.



### *Assigning the Endpoint administrator role to the DevOps team*

**Result:** You should see a green confirmation message appear in the top right of the screen if the role you selected was successfully applied. You should also now see these DevOps team in the access list with the Endpoint administrator role you assigned.

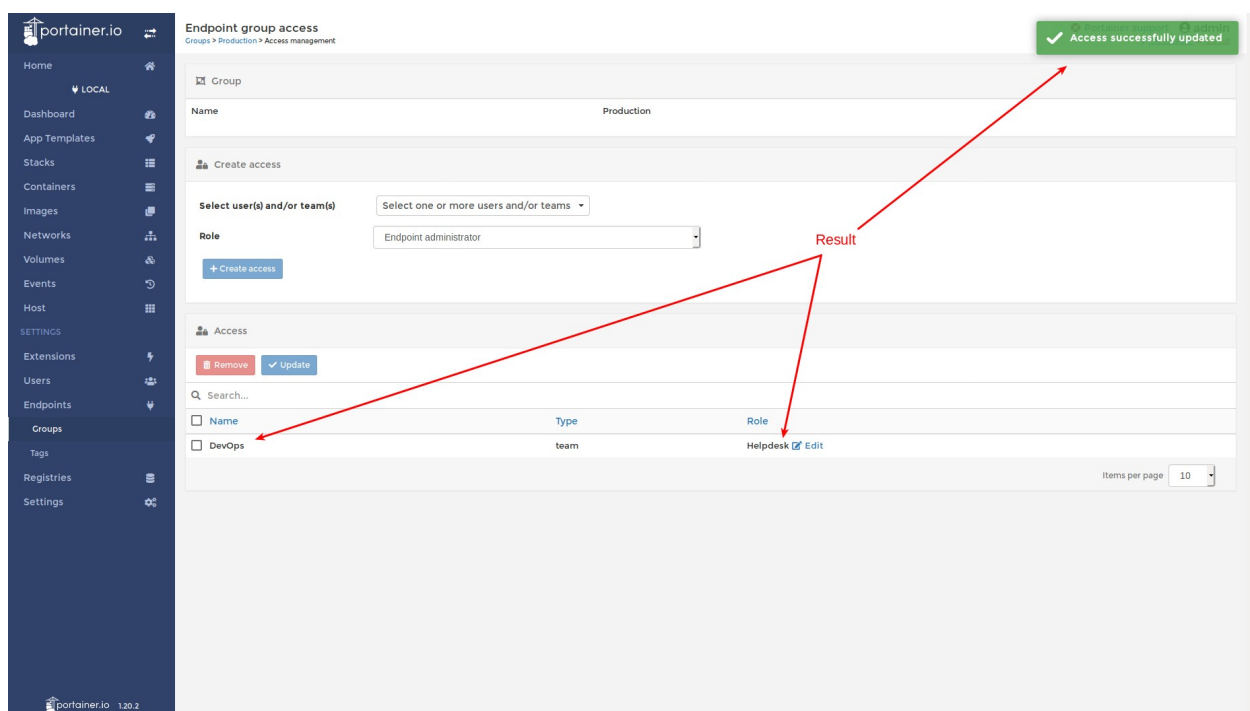


*Endpoint administrator role successfully assigned to DevOps team*

Now we want to assign the DevOps team Helpdesk access to the Production group so they can monitor it.

- **Steps:** You can repeat the previous steps against the Production endpoint group, the DevOps team and the Helpdesk role.

**Result:** You should see a green confirmation message appear in the top right of the screen if the role you selected was successfully applied. You should also now see the DevOps team in the access list with the Helpdesk role assigned to them.



*DevOps team with Helpdesk role on Production endpoint group*

## Part 3:

Now we want to assign the IT OP team the reverse of these accesses, that is the Endpoint administrator role against the Production endpoint group and the Helpdesk role against the Development endpoint group.

Following the above steps with the IP OP team, you should end up with these configurations:

Endpoint group access  
Groups > Production > Access management

Group  
Name: Production

Create access

Select user(s) and/or team(s): Select one or more users and/or teams

Role: Endpoint administrator

+ Create access

Access

Remove Update

Search...

Name	Type	Role
<input type="checkbox"/> IT OP	team	Endpoint administrator <a href="#">Edit</a>
<input type="checkbox"/> DevOps	team	Helpdesk <a href="#">Edit</a>

Items per page: 10

Access successfully updated

Result

*IT OP with Endpoint administrator role against Production endpoint group*

Endpoint group access  
Groups > Development > Access management

Group  
Name: Development

Create access

Select user(s) and/or team(s): Select one or more users and/or teams

Role: Endpoint administrator

+ Create access

Access

Remove Update

Search...

Name	Type	Role
<input type="checkbox"/> IT OP	team	Helpdesk <a href="#">Edit</a>
<input type="checkbox"/> DevOps	team	Endpoint administrator <a href="#">Edit</a>

Items per page: 10

Access successfully updated

Result

*IT OP with Helpdesk role against Development endpoint group*



## Part 3:

Now we have decided to give the user bob the Endpoint administrator role against the Production endpoint group so that he can manage it.

- **Step 1:** Navigate to the Groups view as you have done in previous steps and select the Manage access button beside the Production endpoint group.
- **Step 2:** This time select the user bob and the Endpoint administrator role and click the Create access button.

Endpoint group access  
Groups > Production > Access management

Group  
Name: Production

Create access

Select user(s) and/or team(s): bob

Role: Endpoint administrator

+ Create access

Access

Remove Update

Search...

Name	Type	Role
IT OP	team	Endpoint administrator <a href="#">Edit</a>
DevOps	team	Helpdesk <a href="#">Edit</a>

Items per page: 10

*Selecting user bob and assigning Endpoint administrator role against Production*

**Result:** You should see a green confirmation message appear in the top right of the screen if the role you selected was successfully applied. You should also now see the user bob in the access list with the Endpoint administrator role you assigned to them.

Endpoint group access

Groups > Production > Access management

Group: Production

Create access

Select user(s) and/or team(s): Select one or more users and/or teams

Role: Endpoint administrator

+ Create access

Access

Remove Update

Search...

Name	Type	Role
<input type="checkbox"/> bob	user	Endpoint administrator <a href="#">Edit</a>
<input type="checkbox"/> IT OP	team	Endpoint administrator <a href="#">Edit</a>
<input type="checkbox"/> DevOps	team	Helpdesk <a href="#">Edit</a>

Items per page: 10

*Endpoint administrator role assigned to user bob on Production endpoint group*

## Part 4:

In this situation, we don't want bob to have Endpoint administrator on the Prod-01 endpoint which he has inherited from his Endpoint administrator access on the Production endpoint group, so we wish to override it.

Endpoint access

Endpoints > Prod-01 > Access management

Endpoint: Prod-01

URL: 172.31.3.26:2375

Group: Production

Create access

Select user(s) and/or team(s): Select one or more users and/or teams

Role: Endpoint administrator

+ Create access

Access

Remove Update

Search...

Name	Type	Role
<input type="checkbox"/> bob <i>Inherited</i>	user	Endpoint administrator
<input type="checkbox"/> DevOps <i>Inherited</i>	team	Helpdesk
<input type="checkbox"/> IT OP <i>Inherited</i>	team	Endpoint administrator

Items per page: 10

*User bob inherits Endpoint administrator access from the role assigned to him on the Production endpoint group*

- **Step 1:** Navigate to the Endpoints view and click on the Manage access button for the Prod-01 endpoint.

- **Step 2:** Following the guide below on overriding a role, apply the Standard user role.

**Result:** You should see a green confirmation message appear in the top right of the screen if the role you selected was successfully applied. You should also now see the user bob in the access list with the Standard user role and the override tag.

The screenshot shows the Portainer.io interface for managing endpoint access. The 'Endpoint access' page for 'Prod-01' is displayed. At the top right, a green message states 'Access successfully updated'. Below this, the 'Create access' form is visible, showing a dropdown for 'Role' set to 'Endpoint administrator'. The 'Access' table below lists users and teams with their roles and tags. The 'bob' user is listed with the role 'Standard user' and the tag 'override'. The 'DevOps' team is listed with the role 'Helpdesk' and the tag 'inherited'. The 'IT OP' team is listed with the role 'Endpoint administrator' and the tag 'inherited'.

Name	Type	Role
<input type="checkbox"/> bob <b>override</b>	user	Standard user <a href="#">Edit</a>
<input type="checkbox"/> DevOps <b>inherited</b>	team	Helpdesk
<input type="checkbox"/> IT OP <b>inherited</b>	team	Endpoint administrator

*Overriding the Endpoint administrator role for bob on the Prod-01 endpoint*

## Role Inheritance and Override

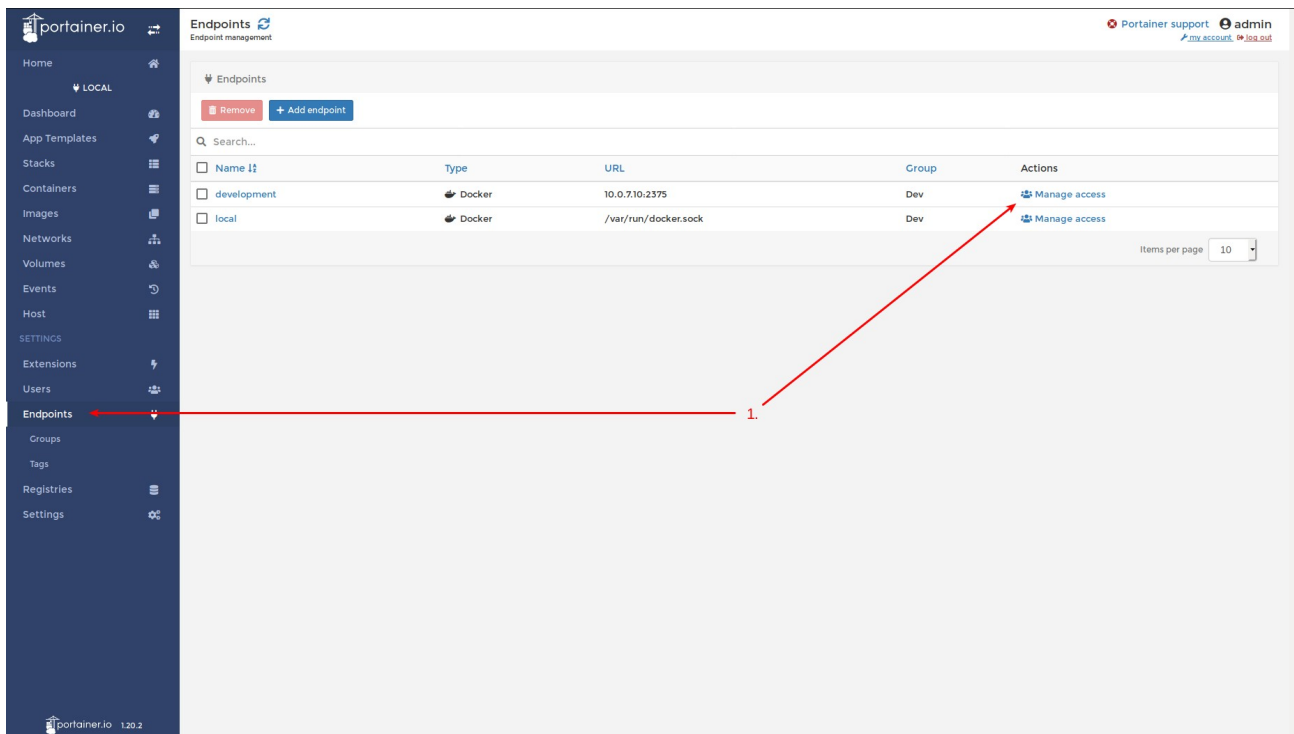
The RBAC extension introduces the concepts of Inheritance and Override for roles you assign on endpoint groups and the endpoints within these groups.

- **Inheritance** - When a role is set for a user or team at the endpoint group level, they will inherit this access on each endpoint within the group, shown with the inherited tag: **inherited**
- **Override** - A role set for a user or team on an endpoint group that is inherited on an endpoint within the endpoint group can be overridden, this is shown with the override tag: **override**

## Overriding a role

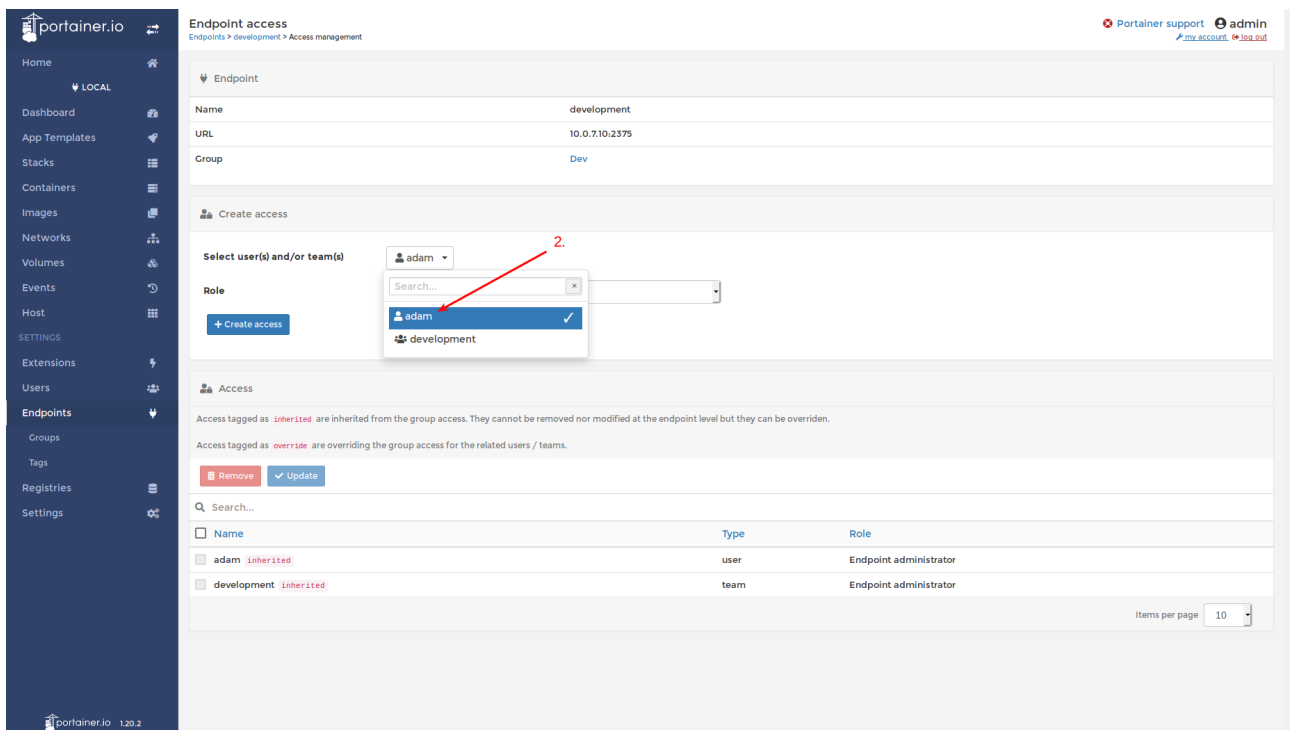
### Background:

- **Step 1:** Navigate to the Endpoints view and select the Manage access button for the endpoint you wish to manage.



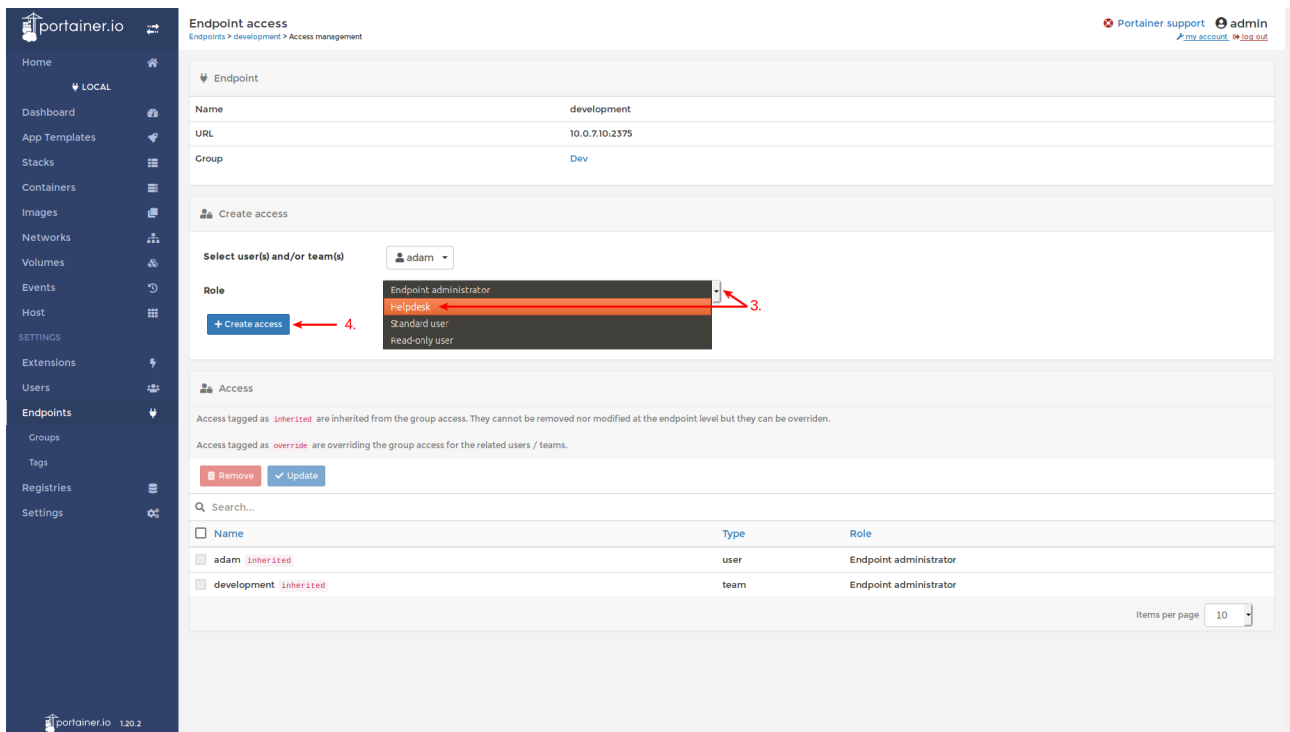
*Selecting an endpoint to manage access for within the Endpoints view*

- **Step 2:** Select the user(s) or team(s) with a role you wish to override.



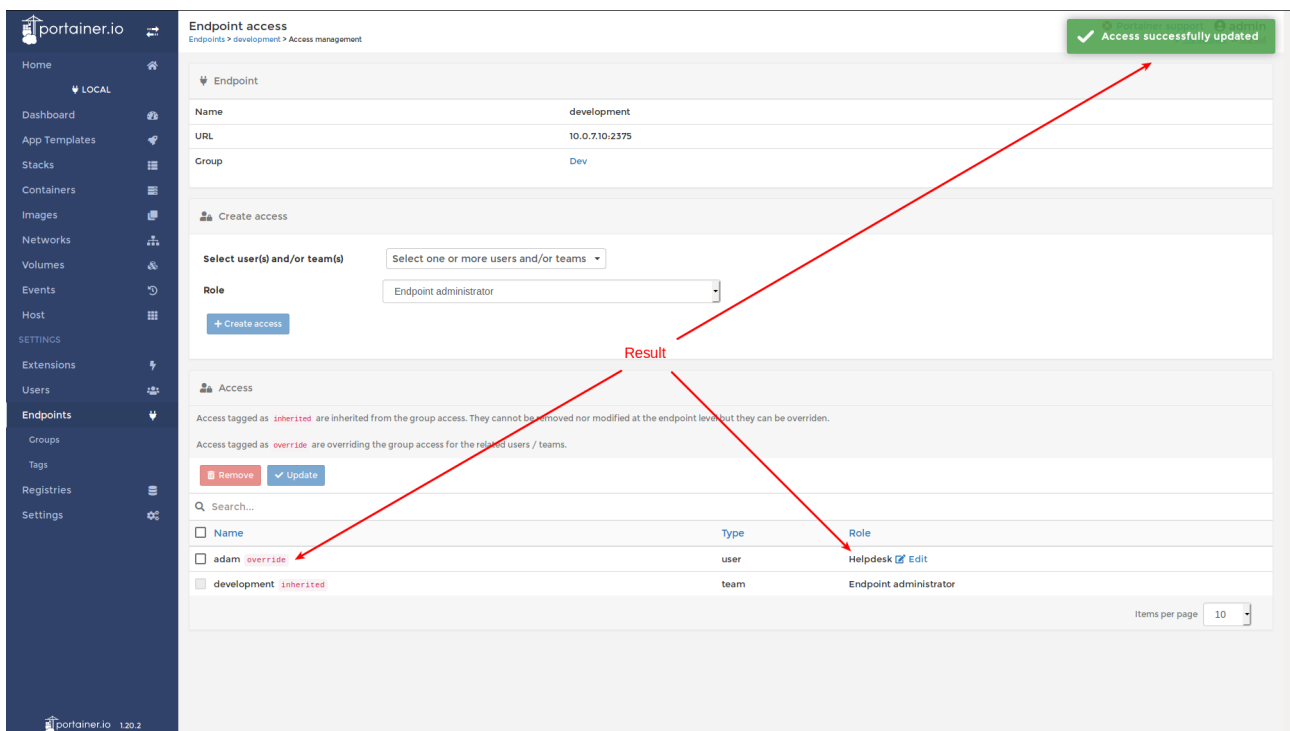
*Selecting user(s) or team(s) to override access for on an endpoint*

- **Step 3:** Click the role drop-down and select the overriding role you wish to set.
- **Step 4:** Click the Create access button to confirm the role you are setting.



*Selecting a role to overriding role for a user on an endpoint*

**Result:** You should see a green confirmation message appear in the top right of the screen if the overriding role you selected for the selected user(s) or team(s) was successfully applied. You should also now see the override tag beside these user(s) or team(s) whose role you overrode in the access list, along with their new role.

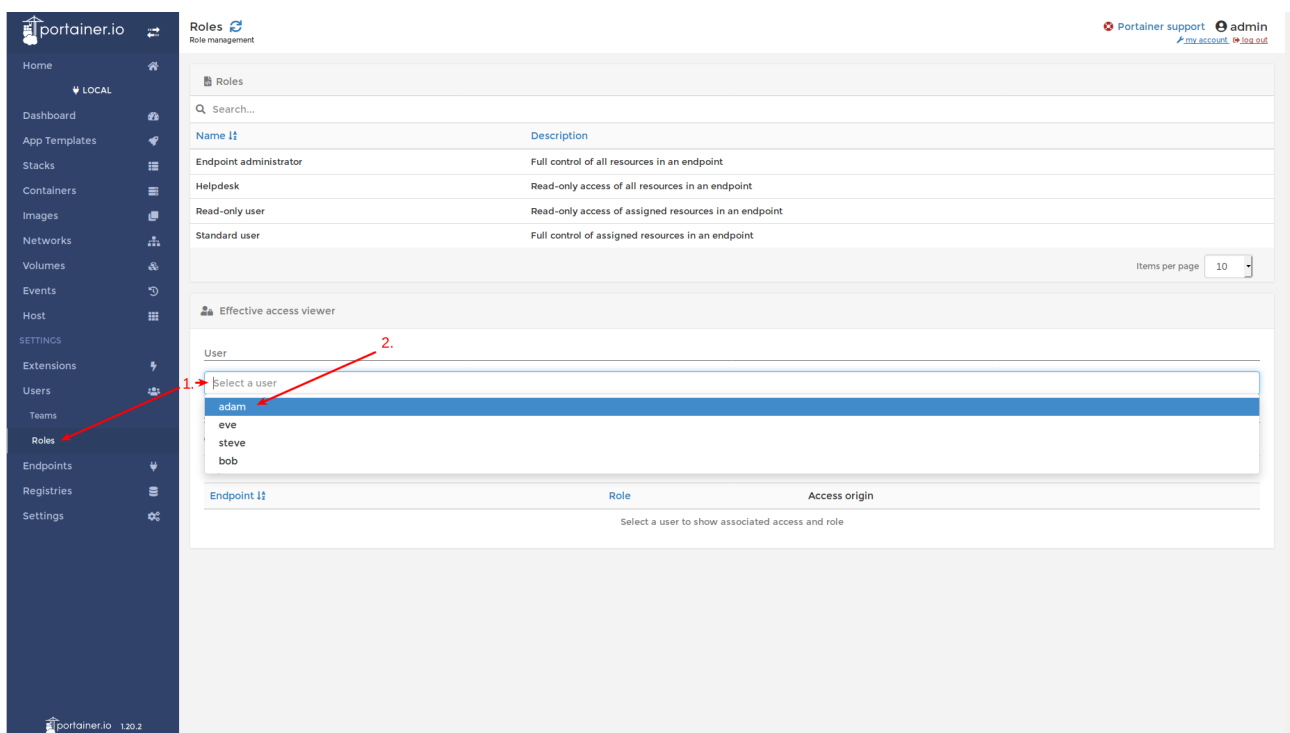


*Overriding role successfully applied with override tag beside the user (s) or team (s) with the overridden role*

# Checking the role assigned to a user or team

One of the features introduced with the RBAC extension is the ability to check the effective access (role) that a user has on each endpoint.

- **Step 1:** Navigate to the Roles view and click on the Select a user drop-down/search box.
- **Optional step:** Type the name of the user you wish to view to filter the list of displayed users.
- **Step 2:** Select the user you wish to view from the list of displayed users.



*Selecting a user to view their effective roles*

**Result:** You should now see the effective roles of the selected user, the endpoint the roles apply to and the origin of where the role is set listed in the Effective access viewer table.

portainer.io

Home

LOCAL

Dashboard

App Templates

Stacks

Containers

Images

Networks

Volumes

Events

Host

SETTINGS

Extensions

Users

Teams

Roles

Endpoints

Registries

Settings

Roles

Role management

Portainer supportadminmy accountlog out

Roles

Search...

Name ID	Description
Endpoint administrator	Full control of all resources in an endpoint
Helpdesk	Read-only access of all resources in an endpoint
Read-only user	Read-only access of assigned resources in an endpoint
Standard user	Full control of assigned resources in an endpoint

Items per page10

Effective access viewer

User

adam

Access

Effective role for each endpoint will be displayed for the selected user

Search...

Endpoint ID	Role	Access origin
development	Helpdesk	User access defined on endpoint Manage access
local	Endpoint administrator	User access defined on endpoint group Dev Manage access

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*Effective roles of the user and other information displayed in the Effective access table*