

## How to get Access to CSC Cloud Resources – and Create a Virtual Machine

In an old paper factory in Kajaani, Finland, there lies the CSC data center. Wrapped by [OpenStack](#), the computing infrastructure offers a variety of cloud resources to researchers and students in Finland, and in whole Europe.



Image Source: CSC.fi

CSC (the IT Center for Science) has a catalogue of cloud services, however, for this course, we will be mostly utilizing **cPouta**, which offers you internet-accessible virtual machines, the control over their networking, such as virtual networks and floating IPs. It is closely related to AWS's EC2 (Elastic Compute Cloud), and Azure's Azure Virtual Machine.

### **cPouta Web Interface – How to Make an Account and Get Access**

The cPouta web interface is used to create virtual machines in CSC. To get access to CSC resources, students need to sign up on CSC using Haka authentication method, using their Tampere University credentials.

## Step-by-Step Instructions to Get Access to CSC

1. TUNI x CSC Auth: Go to [CreateAccount](#) , and select the Haka authentication.
2. Select “Tampere Universities” from the drop-down list.
3. You will be asked to login via your TUNI credentials, so, do that. After successful authentication, click “accept” the CSC service to connect with your TUNI account.
4. Successful authentication will take you to the CSC Sign Up page. Since we are not using CSC for business purposes, you will select “Research/Study” and click next.

The screenshot shows the 'CSC Registration using Federated Identity' page. On the left, a purple sidebar contains the title and two bullet points: 'CSC resources and services are available to users from higher education institutes, research institutes and industrial companies. Some conditions apply.' and 'When registered as a CSC user you will get access to eligible resources and service offerings as well as being able to manage your account and projects. You can also benefit from support by CSC's experts.' The main content area has a progress bar with three steps: 'User Information' (active), 'Contact Information', and 'Password'. Below the progress bar, the form fields are: 'Name', 'Email' (with a placeholder ending in @tuni.fi), 'Country of citizenship', and 'Home organization' (with a placeholder 'tuni.fi'). There is a 'Preferred language' dropdown menu. Below that, the 'Primary purpose for use of CSC services' section has two radio buttons: 'Research / study' (selected) and 'Organizational administration'. A note below the radio buttons states: 'Select "Research / study" if you need to manage projects / apply for resources in My CSC.'

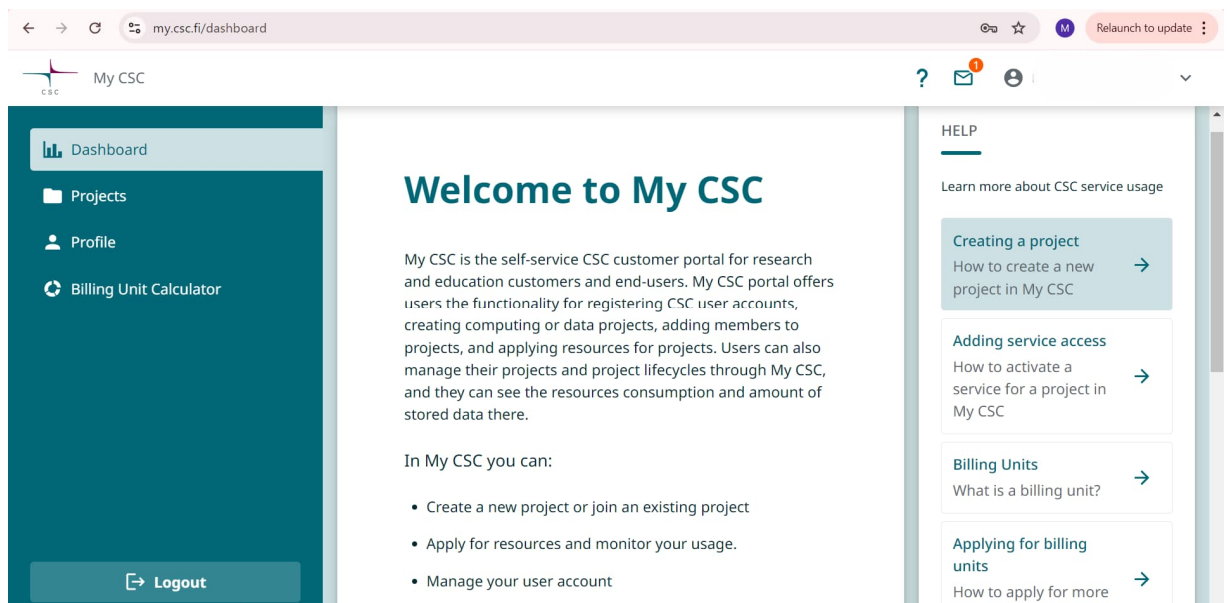
This Sign-Up page will ask for your personal information, so please fill out the required information. You will get a confirmation email from CSC, use the link in the email and set up a CSC-password.

NOTE: There are two ways to login to CSC: using Haka (+ Tuni credentials) or using CSC-login and password. Haka login is preferred, so you should not need to use this CSC - password unless you are not able to use Haka login.

NOTE: If you have problems with setting the password (link is too old), you can ask for a new link via <https://my.csc.fi/forgot-password> (your CSC username in in the email).

5. After successfully signing up open <https://my.csc.fi> and login using Haka (+ Tuni credentials).

You will be taken to the CSC dashboard. At this point, you do not have access to any services, such as cPouta. To do that, you need to apply for access to the service, so, let's do that.



On the left, click on “Projects,” and create a new project. Fill in the requested information and select cPouta – service (“base”-package) for your project:

**Project creation**  
Step 3  
**Services**

- Please select the services you want to use in this project. It is possible to enable services later.
- These selections will enable the services in the project when the project is submitted.
- The selections will help you to define the appropriate resources for the project in the next step.

Category Details **Services** Resources Confirmation

Select services for the project

☐ Allas  
Object storage environment for storing and sharing data

☒ cPouta  
Virtual machines for web services & software development

☐ IDA  
Continuous service for safe research data storage

☐ Mahti  
Node based supercomputing environment

☐ Puhti  
Core based supercomputing environment

☐ Rahti  
Web services & software development with easy application deployment

☐ SD Connect  
Secure storage and sharing of sensitive research data  
Please note that SD Connect uses the Allas cloud storage solution, therefore Allas is automatically activated.

☐ SD Desktop  
A web-based service for analysing sensitive research data

☐ Pukki DBaaS  
A self service on-demand database service

☐ Skip service and resource selection  
It is possible to enable services later:

[< Previous](#) [Cancel](#) [Next >](#)

It may take up to 30 min to get the service activated but after that, you will see that you are part of a new project, where you are the project manager and you have cPouta-service.

My CSC

Dashboard  
Projects  
Profile  
Service Catalog

Projects > 2015784

**PROJECT INFORMATION** [Edit](#)

**Project number**  
2015784

**Title**  
DevOps2

**Description**  
Testing devops pipelines

**Project type**  
Academic

**Project manager**  
Tina Partanen (tlinapar)  
[tina.partanen@tuni.fi](mailto:tina.partanen@tuni.fi)

**Home organization**  
Tampere University

**Unix group**  
project\_2015784

**Field of science**  
Electronic, automation and communications engineering, electronics

**PROJECT NOTIFICATIONS**  
No notifications

**PROJECT MANAGEMENT**  
**Lifetime**  
17.10.2025 - 17.10.2026  
[Extend](#) [Close](#)

**SERVICES** [+ Add services](#)

cPouta IaaS cloud  
[Login](#)

**FUNDING DECISIONS** [+ Add funding decision](#)

**MEMBERS** [Filter](#) [Generate invitation link](#) [+ Add members](#)

☐ Username ↑ Name ↑ Email ↑

**No members found**  
Get started by adding members to the project.  
[+ Add members](#)

**Funder name** ↓ **Grant number** ↑ **Type of funding** ↑

No funding decisions added

## Launch Your First Virtual Machine on CSC

After getting access to CSC, making a project, and adding the cPouta service in your project, it is now time to create a virtual machine. Select cPouta Login or go to <https://pouta.csc.fi>, and sign in using Haka (+Tuni credentials).

### Step 1. Create a Key Pair in the Web Interface:

1. Go to **Compute > Key Pairs** in your cloud interface.
2. Click **Create Key Pair** and give your key a name (Key Type: SSH Key).
3. A file (e.g., keyname.pem) will be downloaded to your computer. **Save this file carefully**—you won't be able to download it again. This file is used to access your server later.

### Step 2. Move and Set Permissions for the Key (Linux/Mac):

1. `mkdir -p ~/.ssh` # Create the .ssh directory if it doesn't exist
2. `chmod 700 ~/.ssh` # Set the directory's permissions (owner-only access)
3. `mv ~/Downloads/keyname.pem ~/.ssh` # Move the key to your .ssh folder
4. `chmod 400 ~/.ssh/keyname.pem` # Make the key readable only by you

Now your key is ready to be used for SSH connections! Detailed Instructions can be found [here](#).

### Step 3: Create a Security Group

1. In the cPouta dashboard > Network > Security Groups, create a new security group, name it for example DevOps, and click "Create Security Group" (You will see that only Egress (Outgoing) traffic is allowed, meaning you can access the internet, no port is open yet. )

2. Click on “**Add Rule**”, and from the first drop down menu, select SSH, and leave the other fields as they are, and finally, click “Add”. Your SG is created.

**Add Rule**

**Rule** \*

SSH

**Description** ⓘ

Allow ssh

**Remote** \*

CIDR

**CIDR** ⓘ

0.0.0.0/0

**Description:**

Rules define which traffic is allowed to instances assigned to the security group. A security group rule consists of three main parts:

**Rule:** You can specify the desired rule template or use custom rules, the options are Custom TCP Rule, Custom UDP Rule, or Custom ICMP Rule.

**Open Port/Port Range:** For TCP and UDP rules you may choose to open either a single port or a range of ports. Selecting the "Port Range" option will provide you with space to provide both the starting and ending ports for the range. For ICMP rules you instead specify an ICMP type and code in the spaces provided.

**Remote:** You must specify the source of the traffic to be allowed via this rule. You may do so either in the form of an IP address block (CIDR) or via a source group (Security Group). Selecting a security group as the source will allow any other instance in that security group access to any other instance via this rule.

Cancel Add

(by default, the CIDR range is 0.0.0.0, meaning anyone from the internet can access your VM via port 22 (SSH). This is not a good practice in production systems, however, for simplicity and ease, let's leave it that way.)

If you want to open more ports, such as 443 for HTTPS connections, you can do so by repeating step 2 and selecting the corresponding port. ([Detailed Instructions](#))

## Step 4: Launch a Virtual Machine

1. In the cPouta dashboard > Instance > Launch Instance.
2. Set the following:
  - a. **Details** → **Instance name**: Choose a name for your VM.

- b. **Source:** Select Ubuntu-22.04 as the operating system.
- c. **Flavor:** Choose standard.small.
- d. **Security Groups:** Select the **DevOps** security group you created earlier.
- e. **Key Pair:** Select the **SSH key pair** you created earlier, and finally,

click **launch**.

Launch Instance

Select the security groups to launch the instance in.

▼ Allocated 1

Displaying 1 item

Name	Description
DevOps	

Displaying 1 item

▼ Available 1

Select one or more

Click here for filters or full text search.

Displaying 1 item

Name	Description
default	Default security group

Displaying 1 item

Cancel < Back Next > Launch Instance

NOTE: Use the little arrows (up/down) to select items.

## Step 5: Assign a Public IP (Floating IP)

- Once the VM is launched, it will only have a private IP. You need to allocate a public IP address for it from the pool of Floating IPs.
- In the “Actions” column > down arrow (↓) drop down > Associate Floating IP

Displaying 1 item

Instance Name	Image Name	IP Address	Flavor	Key Pair	Status	Availability Zone	Task	Power State	Age	Actions
csc	Ubuntu-20.04	192.168.1.84	standard.small	csc	Active	nova	None	Running	0 minutes	Create Snapshot Associate Floating IP Attach Interface Detach Interface

Displaying 1 item

- In IP Addresses, click on Plus sign at the right, and create a new Floating IP from the pool, and then click on Allocate IP.

- Then associate the new IP address with your server by selecting the virtual machine's private IP and the newly created public IP and click "Associate".

Manage Floating IP Associations

IP Address

86.50.230.91

+

Port to be associated

deployment: 192.168.1.237

Select the IP address you wish to associate with the selected instance or port.

Cancel

Associate

## Step 6: Connect to Your Virtual Machine

- Note the **floating IP** of your VM from the cPouta web interface.

Project

API Access

Compute

Overview

Instances

Images

Key Pairs

Server Groups

Volumes

Network

Orchestration

Object Store

Identity

Project / Compute / Instances

Instances

Instance ID =

Filter

Launch Instance

Delete Instances

More Actions

Displaying 1 item

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Flavor	Key Pair	Status	Availability Zone	Task	Power State	Age	Actions	
<input type="checkbox"/>	deployment	Ubuntu-22.04	192.168.1.237, 86.50.230.91	standard.small	new_test	Active	us-east-1	nova	None	Running	6 minutes	Create Snapshot

Displaying 1 item

- Open an SSH connection to the VM using your private key:

```
ssh -i ~/.ssh/ your_keyname.pem ubuntu@your_floating_ip
```

Now you can log in to your virtual machine!

You are responsible for the security of the virtual machine,

Note: Sometimes, based on the machine and operating system you are using to connect to a VM via SSH, some permission errors can occur. To avoid such errors, you can consult the [official CSC documentation](#) for creating a VM from the Web UI.