

# Working with Files

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## Note

All labs rely on previous courseware and lab information.

## Objectives

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In this lab, you will:

- Create a backup file of an entire folder structure using **tar**
- Log the creation of the backup in a file with the date, time, and file name of the backup file
- Transfer the backup file to another folder

## Duration

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This lab requires approximately **30 minutes** to complete.

## AWS service restrictions

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In this lab environment, access to AWS services and service actions might be restricted to the ones that you need to complete the lab instructions. You might encounter errors if you attempt to access other services or perform actions beyond the ones that this lab describes.

## Accessing the AWS Management Console

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1. At the top of these instructions, choose Start Lab to launch your lab.

A **Start Lab** panel opens, and it displays the lab status.

**Tip:** If you need more time to complete the lab, choose the Start Lab button again to restart the timer for the environment.

2. Wait until you see the message *Lab status: ready*, then close the **Start Lab** panel by choosing the **X**.

3. At the top of these instructions, choose .

This opens the AWS Management Console in a new browser tab. The system will automatically log you in.

**Tip:** If a new browser tab does not open, a banner or icon is usually at the top of your browser with a message that your browser is preventing the site from opening pop-up windows. Choose the banner or icon and then choose **Allow pop ups**.

4. Arrange the AWS Management Console tab so that it displays along side these instructions. Ideally, you will be able to see both browser tabs at the same time so that you can follow the lab steps more easily.

## Task 1: Use SSH to connect to an Amazon Linux EC2 instance

In this task, you will connect to a Amazon Linux EC2 instance. You will use an SSH utility to perform all of these operations. The following instructions vary slightly depending on whether you are using Windows or Mac/Linux.

### Windows Users: Using SSH to Connect

💬 These instructions are specifically for Windows users. If you are using macOS or Linux, [skip to the next section](#).

5. Select the  drop-down menu above these instructions you are currently reading, and then select . A Credentials window will be presented.

6. Select the **Download PPK** button and save the **labsuser.ppk** file.

*Typically your browser will save it to the Downloads directory.*

7. Make a note of the **PublicIP** address.

8. Then exit the Details panel by selecting the **X**.

9. Download **PuTTY** to SSH into the Amazon EC2 instance. If you do not have PuTTY installed on your computer, [download it here](#).

10. Open **putty.exe**

11. Configure your PuTTY session by following the directions in the following link: [Connect to your Linux instance using PuTTY](#)

12. Windows Users: [Select here to skip ahead to the next task](#).

### macOS and Linux Users

These instructions are specifically for Mac/Linux users. If you are a Windows user, [skip ahead to the next task](#).

13. Select the  drop-down menu above these instructions you are currently reading, and then select . A Credentials window will be presented.

14. Select the **Download PEM** button and save the **labsuser.pem** file.
15. Make a note of the **PublicIP** address.
16. Then exit the Details panel by selecting the **X**.
17. Open a terminal window, and change directory `cd` to the directory where the *labsuser.pem* file was downloaded. For example, if the *labsuser.pem* file was saved to your Downloads directory, run this command:

```
cd ~/Downloads
```

18. Change the permissions on the key to be read-only, by running this command:

```
chmod 400 labsuser.pem
```

19. Run the below command (*replace **<public-ip>** with the **PublicIP** address you copied earlier*).  
Alternatively, return to the EC2 Console and select **Instances**. Check the box next to the instance you want to connect to and in the *Description* tab copy the **IPv4 Public IP** value.:

```
ssh -i labsuser.pem ec2-user@<public-ip>
```

20. Type `yes` when prompted to allow the first connection to this remote SSH server.  
Because you are using a key pair for authentication, you will not be prompted for a password.

## Task 2: Create a backup

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In this task, you create a backup of an entire file structure.

Your work environment has the following folder structure:

```
/home/ec2-user/CompanyA/  
/home/ec2-user/CompanyA/Employees/  
/home/ec2-user/CompanyA/Employees/Schedules.csv  
/home/ec2-user/CompanyA/Finance/  
/home/ec2-user/CompanyA/Finance/Salary.csv  
/home/ec2-user/CompanyA/HR/  
/home/ec2-user/CompanyA/HR/Assessments.csvv  
/home/ec2-user/CompanyA/HR/Managers.csv  
/home/ec2-user/CompanyA/IA/  
/home/ec2-user/CompanyA/Management/  
/home/ec2-user/CompanyA/Management/Promotions.csv  
/home/ec2-user/CompanyA/Management/Sections.csv  
/home/ec2-user/CompanyA/SharedFolders.csv
```

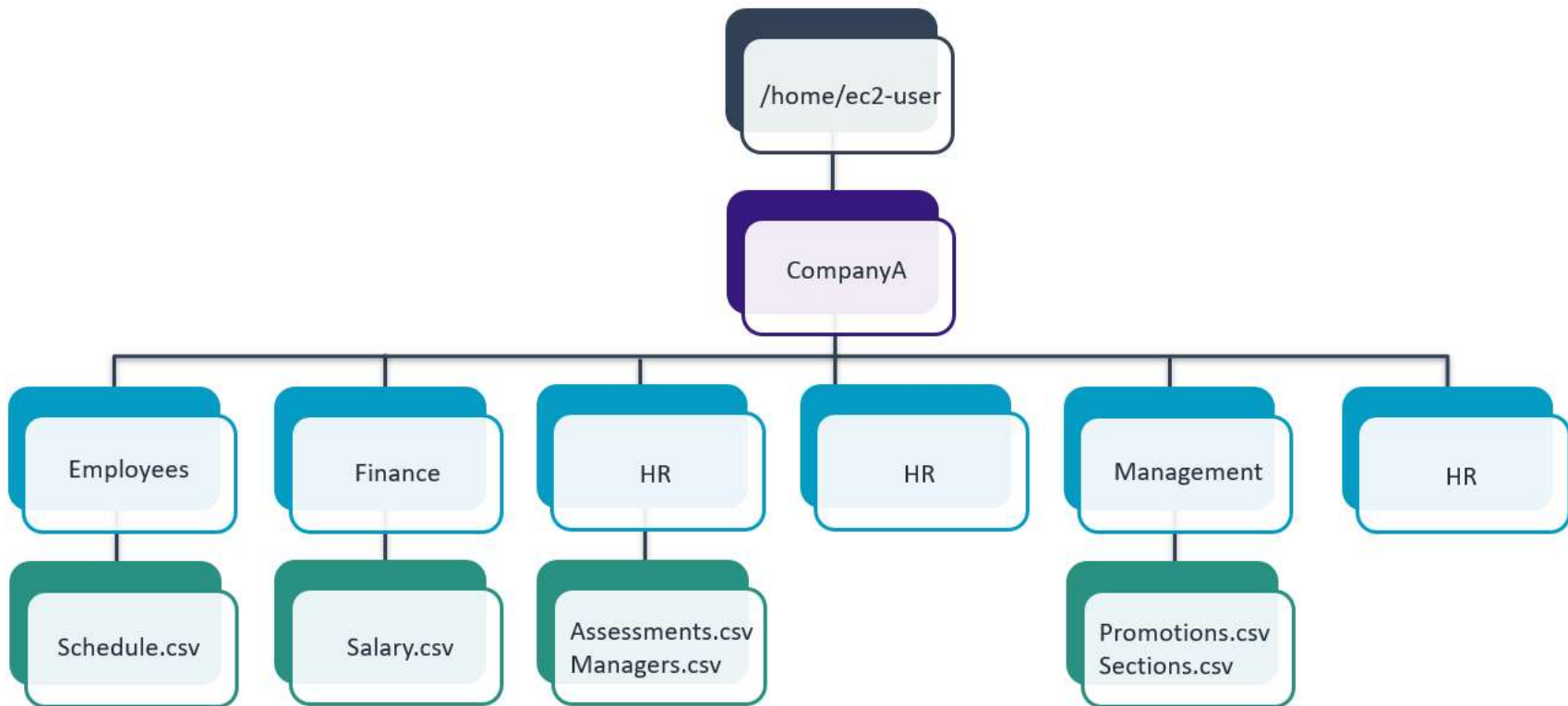


Figure: The image above shows the current folder structure with /home/ec2-user as the top with CompanyA directly below it. Within CompanyA, you have the following folders with corresponding files: Employees (Schedules.csv), Finance (Salary.csv), HR (Managers.csv and Assessments.csv), IA, Management (Promotions.csv and Sections.csv), and SharedFolders.

You use `tar` to create a backup.

21. To ensure that you are in the `/home/ec2-user/` folder, enter the following command into the terminal and press Enter.

```
pwd
```

**Expected output:**

```
[ec2-user@ ~]$ pwd  
/home/ec2-user
```

22. To validate that the **CompanyA** folder exists, enter the following command into the terminal and press Enter.

```
ls -R CompanyA
```

**Expected output:**

```
[ec2-user@ ~]$ ls /home/ec2-user/CompanyA  
CompanyA/:  
Employees  Finance  HR  IA  Management  SharedFolders  
  
CompanyA/Employees:  
Schedules.csv  
  
CompanyA/Finance:  
Salary.csv  
  
CompanyA/HR:  
Assessments.csv  Managers.csv  
  
CompanyA/IA:  
  
CompanyA/Management:  
Promotions.csv  Sections.csv
```

23. To back up the entire **CompanyA** folder structure recursively, enter the following command and press Enter.

```
tar -csvgzf backup.CompanyA.tar.gz CompanyA
```

**Expected output:**

```
CompanyA/
```

```
CompanyA/Management/  
CompanyA/Management/Sections.csv  
CompanyA/Management/Promotions.csv  
CompanyA/Employees/  
CompanyA/Employees/Schedules.csv  
CompanyA/Finance/  
CompanyA/Finance/Salary.csv  
CompanyA/HR/  
CompanyA/HR/Managers.csv  
CompanyA/HR/Assessments.csv  
CompanyA/IA/  
CompanyA/SharedFolders/
```

```
[ec2-user@ ~]$ ls  
backup.CompanyA.tar.gz  CompanyA
```

24. To verify that the archive was created, enter the following command and press Enter.

```
ls
```

**Expected output:**

```
[ec2-user@ ~]$ CompanyA backup.CompanyA.tar.gz
```

The **backup.CompanyA.tar.gz** folder contains all the folders and files in the **CompanyA** folder. You can copy it and unzip it to get the entire structure on another location or host.

## Task 3: Log the backup

In this task, you create a file for logging the date, time, and file name of the backup **tar** file that you created. This file indicates when you created backups and could be useful to avoid creating unnecessary backups in the future.

25. To navigate to the **CompanyA** folder, enter the following command into the terminal and press Enter.

```
cd /home/ec2-user/CompanyA
```

**Expected output:**

```
ec2-user@ ~]$ cd /home/ec2-user/CompanyA  
[ec2-user@ CompanyA]$
```

26. To create an empty backup file named **backups.csv**, enter the following command and press Enter.

```
touch SharedFolders/backups.csv
```

27. To add the date, time, and file name to the **backups.csv** file, enter the following command and press Enter.

```
echo "25 Aug 25 2021, 16:59, backup.CompanyA.tar.gz" | sudo tee SharedFolders/backups.csv
```

**Expected output:**

```
[ec2-user@ CompanyA]$ echo "25 Aug 25 2019, 16:59, backup.CompanyA.tar.gz" | sudo tee SharedFolders/backups.csv
25 Aug 25 2019, 16:59, backup.CompanyA.tar.gz
```

**Note**

You may be unfamiliar with the **tee** command and **|** redirector, but you will learn about them later. You can use the **tee** command to write information both in the terminal and in a file. The **|** redirector redirects the output of the **echo** command to the second command, **tee**, which writes it to both the terminal and the **SharedFolders/backups** file.

28. To display the content of the file, enter the following command and press Enter.

```
[ec2-user@ip-10-0-10-244 CompanyA]$ cat SharedFolders/backups.csv
```

**Expected output:**

```
[ec2-user@ CompanyA]$ cat SharedFolders/backups.csv
25 Aug 25 2021, 16:59, backup.CompanyA.tar.gz
```

## Task 4: Move the backup file

In this task, you transfer the backup file to the **IA** folder. In a real-life scenario, you could follow these step to make the file accessible to another user or team that does not have access to the folder where you created the backup file.

29. To validate that you are in the **CompanyA** folder in the terminal, enter the following command and press Enter.

```
pwd
```

**Expected output:**

```
[ec2-user@ CompanyA]$ pwd
/home/ec2-user/CompanyA
```

30. To transfer the backup file to the IA team computer, enter the following command and press Enter.

```
mv ../backup.CompanyA.tar.gz IA/
```

31. To verify that the backup file was moved, enter the following command and press Enter.

```
ls . IA
```

#### Expected output:

```
[ec2-user@ CompanyA]$ ls . IA
.:
Employees  Finance  HR  IA  Management  SharedFolders

IA:
backup.CompanyA.tar.gz
```

This commands lists the content of both the current folder, **CompanyA**, and the **IA** folder. The **b** file is not in the current folder anymore and was moved to the **IA** folder.

## Lab Complete

🚩 Congratulations! You have completed the lab.

32. Select  at the top of this page and then select  to confirm that you want to end the lab.

A panel will appear, indicating that "DELETE has been initiated... You may close this message box now."

33. Select the **X** in the top right corner to close the panel.

## About the AWS component

Amazon EC2 provides a wide selection of *instance types* optimized to fit different use cases. Instance types comprise varying combinations of CPU, memory, storage, and networking capacity and give you the flexibility to choose the appropriate mix of resources for your applications. Each instance type includes one or more *instance sizes* so that you can scale your resources to the requirements of your target workload.



This lab uses a **t3.micro** instance, which should be selected by default. This instance type has 1 virtual CPU and 1 GiB of memory.

## Additional resources

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- [Amazon EC2 Instance Types](#)
- [Amazon Machine Images \(AMI\)](#)
- [Status Checks for Your Instances](#)
- [Amazon EC2 Service Quotas](#)
- [Terminate Your Instance](#)

For more information about AWS Training and Certification, see <https://aws.amazon.com/training/>.

*Your feedback is welcome and appreciated.*

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