To use rclone with OneDrive on arc-dtn, you will need to install rclone on a desktop computer with a web browser first in order to generate your oauth2 token for arc-dtn.

Download rclone for your preferred desktop computer here:

> https://rclone.org/downloads/

Please follow the instructions for your desktop/computer type to install rclone.

You will use this to connect to Microsoft with your default browser to generate your oauth2 token for arc-dtn. This should be an automated process once and will be described below.

Obtain a OneDrive allocation by following the instructions here:

> OneDrive for Business - Getting Started

To configure rclone to transfer data to/from your OneDrive.

> curl -O https://downloads.rclone.org/rclone-current-linux-amd64.zip

Unpack rclone

> unzip rclone-current-linux-amd64.zip

Create an rclone remote connection to your UCalgary OneDrive for Business. Note: you will need to perform a 'headless' configuration.

> [tthomas@arc-dtn ~]$ cd rclone-*-linux-amd64
>
> [tthomas@arc-dtn rclone-v1.55.1-linux-amd64]$ ./rclone config

➢ n) New remote

```
e) Edit existing remote
n) New remote
d) Delete remote
r) Rename remote
c) Copy remote
s) Set configuration password
q) Quit config
e/n/d/r/c/s/q> n
```

➢ name> OneDriveDTN

```
name> OneDriveDTN
Type of storage to configure.
Enter a string value. Press Enter for the default ("").
Choose a number from below, or type in your own value
```

➢ Storage> onedrive

Use the defaults for OAuth Client Id, OAuth Client Secret,

```
Storage> onedrive
** See help for onedrive backend at: https://rclone.org/onedrive/ **

OAuth Client Id
Leave blank normally.
Enter a string value. Press Enter for the default ("").
client_id>
OAuth Client Secret
Leave blank normally.
Enter a string value. Press Enter for the default ("").
client_secret>
Choose national cloud region for OneDrive.
Enter a string value. Press Enter for the default ("global").
Choose a number from below, or type in your own value
```

> ➢ region> global

Edit advanced config? (y/n)

> ➢ n

Remote config

Use auto config?

> ➢ N

You will see something like the following:

```
Choose national cloud region for OneDrive.
Enter a string value. Press Enter for the default ("global").
Choose a number from below, or type in your own value
 1 / Microsoft Cloud Global
   \ "global"
 2 / Microsoft Cloud for US Government
   \ "us"
 3 / Microsoft Cloud Germany
   \ "de"
 4 / Azure and Office 365 operated by 21Vianet in China
   \ "cn"
region> global
Edit advanced config? (y/n)
y) Yes
n) No (default)
y/n> n
Remote config
Use auto config?
 * Say Y if not sure
 * Say N if you are working on a remote or headless machine
y) Yes (default)
n) No
y/n> n
For this to work, you will need rclone available on a machine that has
a web browser available.

For more help and alternate methods see: https://rclone.org/remote_setup/

Execute the following on the machine with the web browser (same rclone
version recommended):

       rclone authorize "onedrive"

Then paste the result below:
```

On your own computer that you installed rclone go to the command line execute 'rclone authorize "onedrive"' as requested on arc-dtn.
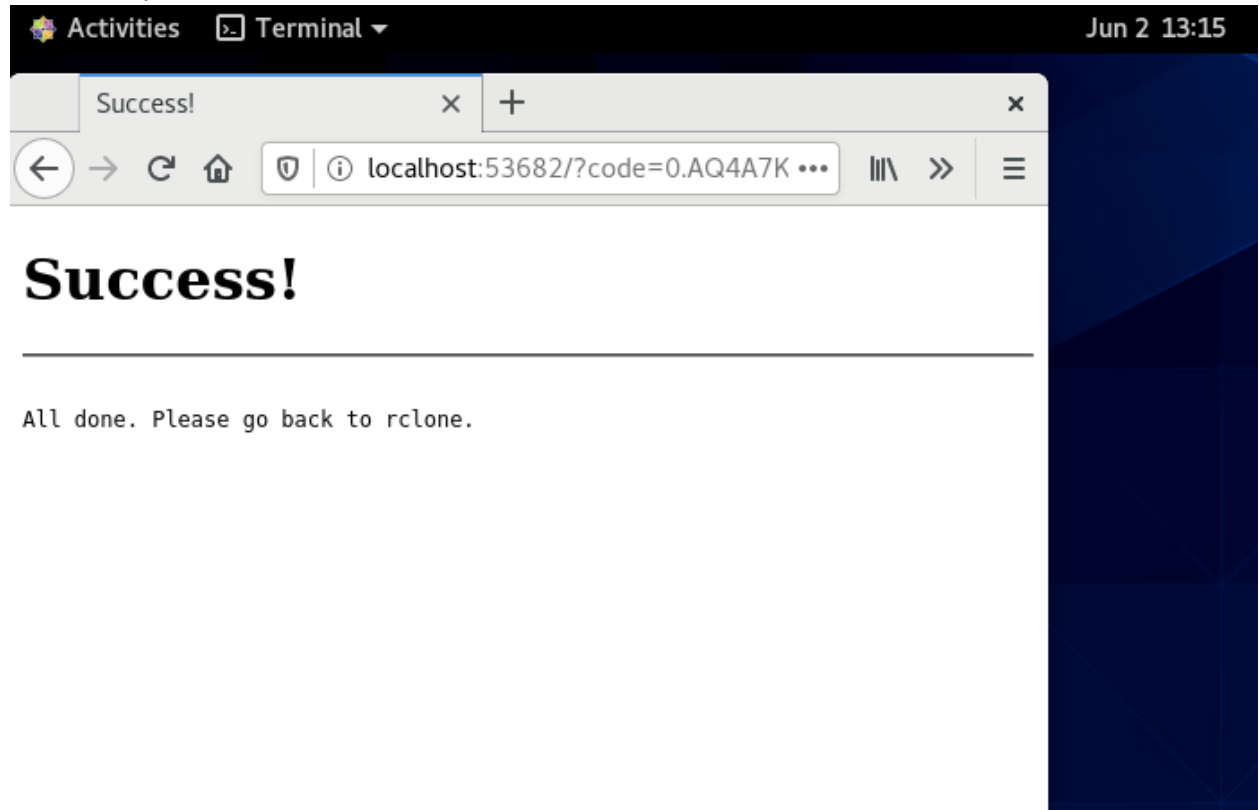
During the above terminal session on your own computer, your default browser should have initiated a login to Microsoft. You will be required to login using your UCalgary username and password, and you will use the MFA that was required to sign up for OneDrive.

Your browser session may look something like this:
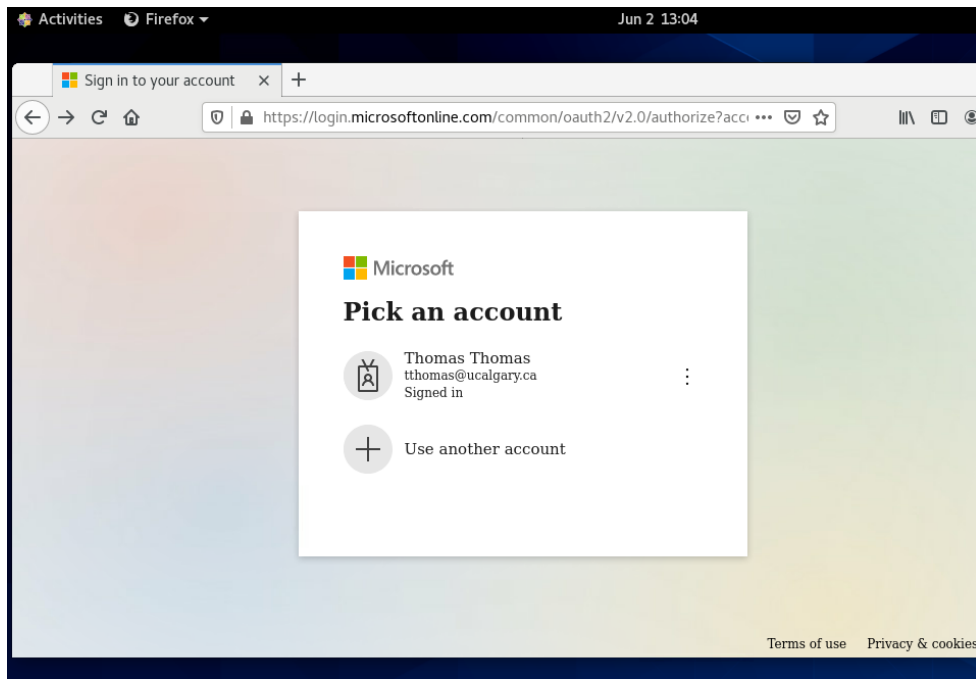
Followed by:

The browser should have inserted the oauth2 token information, copy everything between ---> and <---

Paste the following into your remote machine --->

{"access_token":"REDACTED OAUTH2 TOKEN INFORMATION","expiry":"2021-06-02T13:58:32.716714279-06:00"}

<---End paste

Return to your arc-dtn session and paste the above token into the waiting prompt

result>{"access_token":"REDACTED OAUTH2 TOKEN INFORMATION","expiry":"2021-06-02T13:58:32.716714279-06:00"}

Finalize your OneDrive remote configuration as follows:

➢ Your choice> onedrive

```
Choose a number from below, or type in an existing value
 1 / OneDrive Personal or Business
   \ "onedrive"
 2 / Root Sharepoint site
   \ "sharepoint"
 3 / Sharepoint site name or URL (e.g. mysite or https://contoso.sharepoint.com/
sites/mysite)
   \ "url"
 4 / Search for a Sharepoint site
   \ "search"
 5 / Type in driveID (advanced)
   \ "driveid"
 6 / Type in SiteID (advanced)
   \ "siteid"
 7 / Sharepoint server-relative path (advanced, e.g. /teams/hr)
   \ "path"
Your choice> onedrive
Found 1 drives, please select the one you want to use:
```

0: OneDrive (business) id=REDACTED-ONEDRIVE-ID

```
Chose drive to use:> 0
Found drive 'root' of type 'business', URL: https://uofc-my.sharepoint.com/perso
nal/tthomas_ucalgary_ca/Documents
Is that okay?
y) Yes (default)
n) No
y/n> y
--------------------
[OneDriveDTN]
type = onedrive
region = global
```

{your token}

Drive-id = REDACTED-ONEDRIVE-ID

```
drive_type = business
--------------------
y) Yes this is OK (default)
e) Edit this remote
d) Delete this remote
y/e/d> y
```

You should see your configured OneDrive remote:

```
Current remotes:

Name                    Type
====                    ====
OneDriveDTN             onedrive
```

Quit the config session

You can test your remote now.

"rclone mkdir OneDriveDTN:foldername" will create a new folder 'foldername' in OneDrive.

"rclone lsd OneDriveDTN:" will list the top level folders in OneDrive.

```
[tthomas@arc-dtn rclone-v1.55.1-linux-amd64]$ ./rclone mkdir OneDriveDTN:ARC-tth
omashome
[tthomas@arc-dtn rclone-v1.55.1-linux-amd64]$ ./rclone lsd OneDriveDTN:
          -1 2021-06-01 08:38:07        64 ARC-tthomas
          -1 2021-06-02 14:07:19         0 ARC-tthomashome
          -1 2017-03-14 08:37:18         4 Attachments
          -1 2018-05-31 09:08:06         0 Documents
          -1 2017-03-06 14:53:48         7 Email attachments
          -1 2019-04-12 09:01:45         2 Gaussview-Windows
```

"rclone copy --dry-run ~ OneDriveDTN:ARC-tthomashome" will show you what would be copied from your home directory on ARC to a OneDrive folder called ARC-tthomashome.

```
[tthomas@arc-dtn rclone-v1.55.1-linux-amd64]$ ./rclone copy --dry-run ~ OneDriveDTN:ARC-tthomashome
2021/06/02 14:12:20 NOTICE: .bash_profile: Skipped copy as --dry-run is set (size 193)
2021/06/02 14:12:20 NOTICE: .emacs: Skipped copy as --dry-run is set (size 334)
2021/06/02 14:12:20 NOTICE: .bash_history: Skipped copy as --dry-run is set (size 15.040k)
2021/06/02 14:12:20 NOTICE: .esd_auth: Skipped copy as --dry-run is set (size 16)
2021/06/02 14:12:20 NOTICE: .bashrc: Skipped copy as --dry-run is set (size 231)
2021/06/02 14:12:20 NOTICE: .lesshst: Skipped copy as --dry-run is set (size 28)
2021/06/02 14:12:20 NOTICE: ARC.txt: Skipped copy as --dry-run is set (size 84.110k)
2021/06/02 14:12:20 NOTICE: .bash_logout: Skipped copy as --dry-run is set (size 18)
2021/06/02 14:12:20 NOTICE: .viminfo: Skipped copy as --dry-run is set (size 4.564k)
2021/06/02 14:12:20 NOTICE: .touaccept: Skipped copy as --dry-run is set (size 63)
```

"rclone copy --progress ~ OneDriveDTN:ARC-tthomashome" will copy your home to OneDrive, and will show you a progress indicator while it is underway.

```
[tthomas@arc-dtn rclone-v1.55.1-linux-amd64]$ ./rclone copy --progress ~ OneDriveDTN:ARC-tthomashome
Transferred:       498.586M / 3.122 GBytes, 16%, 8.370 MBytes/s, ETA 5m22s
Transferred:            90 / 92, 98%
Elapsed time:       1m0.8s
Transferring:
 * GeneralSystemDiagnosti…1_2020-13_53_33.tar.gz: 14% /1.469G, 8.391M/s, 2m33s
 * GeneralSystemDiagnosti…1_2020-13_53_33.tar.gz:  5% /1.469G, 7.273M/s, 3m14s
```

It will also show you a summary of the completed transfer information when completed.

```
[tthomas@arc-dtn rclone-v1.55.1-linux-amd64]$ ./rclone copy --progress ~ OneDriveDTN:ARC-tthomashome
Transferred:        3.122G / 3.122 GBytes, 100%, 15.764 MBytes/s, ETA 0s
Transferred:            92 / 92, 100%
Elapsed time:       3m24.0s
[tthomas@arc-dtn rclone-v1.55.1-linux-amd64]$
```

The rclone copy command works in a similar way to rsync. When you execute it again, only new files or changes will be replicated to your remote.

```
[tthomas@arc-dtn rclone-v1.55.1-linux-amd64]$ ./rclone copy --progress ~ OneDriveDTN:ARC-tthomashome
Transferred:          55.855k / 55.855 kBytes, 100%, 39.240 kBytes/s, ETA 0s
Checks:                  92 / 92, 100%
Transferred:              2 / 2, 100%
Elapsed time:           3.6s
```

For more information about rclone commands please go to:

https://rclone.org/commands/