Installing GCS (Globus Connect Server) on MRI “Converge”

Install Globus Connect Server v5 software

https://docs.globus.org/globus-connect-server/v5/#gcsv5-install

```
$ curl -LOs https://downloads.globus.org/globus-connect-
server/stable/installers/repo/deb/globus-repo_latest_all.deb

$ sudo dpkg -i globus-repo_latest_all.deb

$ sudo apt-key add /usr/share/globus-repo/RPM-GPG-KEY-Globus

$ sudo apt-key list

$ cat /usr/share/globus-repo/RPM-GPG-KEY-Globus

$ sudo apt update

$ sudo apt install globus-connect-server54
```

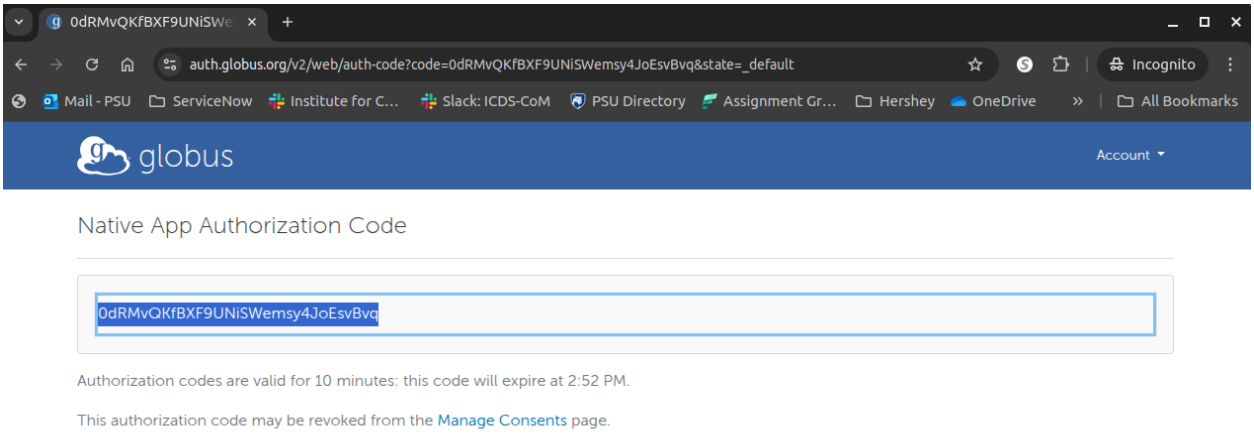
Create the Endpoint

```
root@converge:~# globus-connect-server endpoint setup "Penn State MRI Endpoint" --
organization "Penn State University" --owner lab396@psu.edu --contact-email
lab396@psu.edu

Globus Connect Server uses the Let's Encrypt service to manage
certificates for the web services it installs on your data transfer
nodes. These certificates are issued for DNS domain names operated by
the Globus Project.

Please read the Terms of Service at:
https://letsencrypt.org/repository/
Do you agree to these Terms of Service? [y/N]: y
  [##----------------------]   10%  00:00:29  Perform any necessary Auth flows.
Please authenticate with Globus to register the new endpoint to get credentials and
set the advertised owner of the endpoint:
--------------------------------------------------------------------------------
--------------------------------------
https://auth.globus.org/v2/oauth2/authorize?client_id=8cbb3f1a-8e38-432a-8d68-
dc69250b16f3&redirect_uri=https%3A%2F%2Fauth.globus.org%2Fv2%2Fweb%2Fauth-
code&scope=urn%3Aglobus%3Aauth%3Ascope%3Aauth.globus.org%3Amanage_projects+urn%3Aglob
us%3Aauth%3Ascope%3Atransfer.api.globus.org%3Aset_gcs_attributes&state=_default&respo
nse_type=code&access_type=online&prompt=login&session_required_identities=8acb8219-
fd3c-4ab9-a5c2-
```

```
bf9354dbe464&session_message=Register+the+new+endpoint+to+get+credentials+and+set+the
+advertised+owner+of+the+endpoint
--------------------------------------------------------------------------------
--------------------------------------
```




```
Enter the resulting Authorization Code here []: 0dRMvQKfBXF9UNiSWemsy4JoEsvBvq
  [######################----]   85%  00:00:38  Get Certificate
  [#########################]  100%
Created endpoint 4bec44f9-5ab9-4fb1-ab20-a11beff1e946
Endpoint domain_name 351623.8540.data.globus.org
No subscription is set on this endpoint, so only basic features are enabled.

To enable subscription features on this endpoint, you must associate your
subscription with this endpoint. If you are not a member of a subscription
group, the Globus subscription manager for your organization can associate a
subscription to this endpoint for you.

If you plan on using the Google Drive or Google Cloud Storage
connectors, use
     https://351623.8540.data.globus.org/api/v1/authcallback_google
as the Authorized redirect URI for this endpoint
root@converge:~#
```

NOTE:

```
Keep the generated ‘deployment-key.json’located:
$ root@converge:~# pwd
/root
```

Set up services on the Data Transfer Node*

*Creation of the GCS Data Transfer Node (DTN) - run as root

```
# sudo globus-connect-server node setup --ip-address 192.5.158.29
```

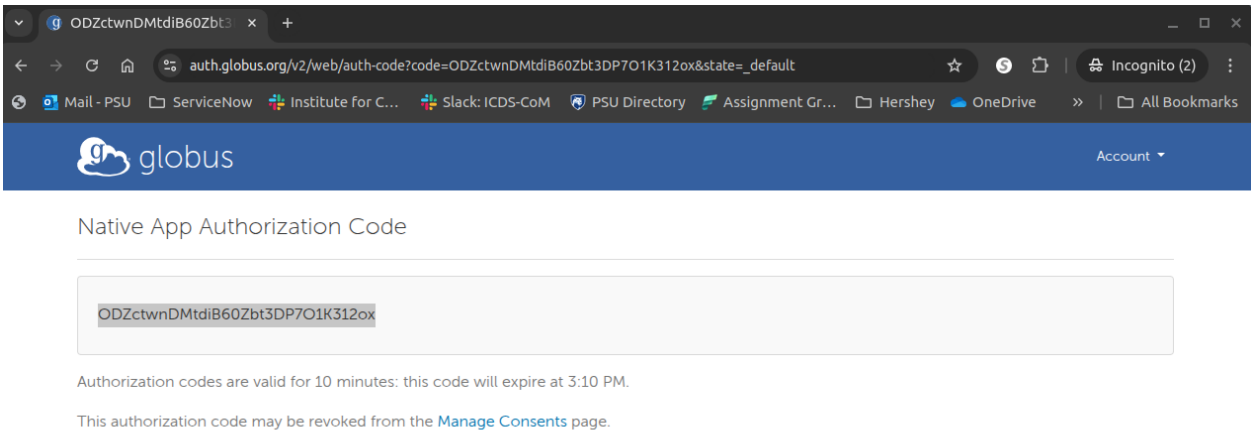
OUTPUT:

```
Configuring endpoint
  [####################################]  100%
Starting services
  [----------------------------------]    0%  Enable apache modulesEnabling module
headers.
To activate the new configuration, you need to run:
  systemctl restart apache2
Enabling module proxy.
To activate the new configuration, you need to run:
  systemctl restart apache2
Considering dependency proxy for proxy_http:
Module proxy already enabled
Enabling module proxy_http.
To activate the new configuration, you need to run:
  systemctl restart apache2
Enabling module rewrite.
To activate the new configuration, you need to run:
  systemctl restart apache2
Considering dependency setenvif for ssl:
Module setenvif already enabled
Considering dependency mime for ssl:
Module mime already enabled
Considering dependency socache_shmcb for ssl:
Enabling module socache_shmcb.
Enabling module ssl.
See /usr/share/doc/apache2/README.Debian.gz on how to configure SSL and create self-
signed certificates.
To activate the new configuration, you need to run:
  systemctl restart apache2
  [######------------------------------]   18%  Enable Apache sites  Enabling site
tls-mod-globus.
To activate the new configuration, you need to run:
  systemctl reload apache2
  [####################################]  100%
root@converge:~# systemctl restart apache2
root@converge:~# sudo globus-connect-server node setup --ip-address 192.5.158.29
Configuring endpoint
  [####################################]  100%
Starting services
  [----------------------------------]    0%  Enable apache modulesModule headers
already enabled
Module proxy already enabled
Considering dependency proxy for proxy_http:
Module proxy already enabled
Module proxy_http already enabled
Module rewrite already enabled
Considering dependency setenvif for ssl:
Module setenvif already enabled
Considering dependency mime for ssl:
Module mime already enabled
Considering dependency socache_shmcb for ssl:
Module socache_shmcb already enabled
```

```
Module ssl already enabled
  [####################################]  100%
root@converge:~#
```

Log into the endpoint

```
# globus-connect-server login localhost
\
Please authenticate with Globus here:
----------------------------------
https://auth.globus.org/v2/oauth2/authorize?client_id=8cbb3f1a-8e38-432a-8d68-
dc69250b16f3&redirect_uri=https%3A%2F%2Fauth.globus.org%2Fv2%2Fweb%2Fauth-
code&scope=openid+profile+email+urn%3Aglobus%3Aauth%3Ascope%3Aauth.globus.org%3Av
iew_identity_set+urn%3Aglobus%3Aauth%3Ascope%3Aauth.globus.org%3Amanage_projects+
urn%3Aglobus%3Aauth%3Ascope%3A4bec44f9-5ab9-4fb1-ab20-
a11beff1e946%3Amanage_collections&state=_default&response_type=code&access_type=o
ffline&prompt=login
----------------------------------
```




```
Enter the resulting Authorization Code here: ODZctwnDMtdiB60Zbt3DP7O1K312ox
You have successfully logged into GCS endpoint 4bec44f9-5ab9-4fb1-ab20-a11beff1e946
at 351623.8540.data.globus.org!
root@converge:~#
```

View endpoint configuration

```
# globus-connect-server endpoint show
Display Name:    Penn State MRI Endpoint
ID:              4bec44f9-5ab9-4fb1-ab20-a11beff1e946
Subscription ID: 5fc86e84-509f-11e4-8aa3-123139141556
```

```
Public:          True
GCS Manager URL: https://351623.8540.data.globus.org
Network Use:     normal
Organization:    Penn State University
Contact E-mail:  lab396@psu.edu


# globus-connect-server whoami
Username       | Name          | ID                                   | Email
-------------- | ------------- | ------------------------------------ | -------------
-
lab396@psu.edu | Lindsay Wells | 8acb8219-fd3c-4ab9-a5c2-bf9354dbe464 |
lab396@psu.edu
root@converge:~# globus-connect-server endpoint show
Display Name:    Penn State MRI Endpoint
ID:              4bec44f9-5ab9-4fb1-ab20-a11beff1e946
Subscription ID: None
Public:          True
GCS Manager URL: https://351623.8540.data.globus.org
Network Use:     normal
Organization:    Penn State University
Contact E-mail:  lab396@psu.edu
```

Set the endpoint as managed

Email the subscription manager to set the endpoint as managed (for PSU, this is Doug Dodson).

Assign roles

```
$ globus-connect-server endpoint role create activity_manager manager@example.org
Role ID: e9edfc32-d3b6-45e3-b970-3c68af56859d
```

Next Steps: Create a Gateway and Mapped Collection

At this time, the endpoint is not hooked up to a filesystem yet. A collection encompasses an endpoint and a storage gateway and policies for what can be shared, and it is technically what you search for in app.globus.org, although when speaking casually about Globus, the words endpoint and collection can be used interchangeably.

```
$ globus-connect-server storage-gateway create posix "MRI Converge Gateway" --domain
psu.edu --authentication-timeout-mins 20160 --identity-mapping
file:/root/ID_Mapper.json --restrict-paths file:/root/path-restrict.json --user-deny
root
```

OUTPUT AFTER EXECUTING:

```
root@converge:~# globus-connect-server storage-gateway create posix "MRI Converge
Gateway" --domain psu.edu --authentication-timeout-mins 20160 --identity-mapping
file:/root/ID_Mapper.json --restrict-paths file:/root/path-restrict.json --user-deny
root
Storage Gateway ID: adbcfd74-d99f-4cb2-b53c-cf046861ddb5
```

Executing the above prints out a gateway id like: "Storage Gateway ID: 309c3d63-4cda-487a-8b8a-c4a465bd876f". Make note of this.

NOTE: `adbcfd74-d99f-4cb2-b53c-cf046861ddb5`

The two files referenced are ID_Mapper.json and path-restrict.json.
ID_Mapper.json:

```
{
 "DATA_TYPE": "expression_identity_mapping#1.0.0",
 "mappings": [
  {
   "source": "{username}",
   "match": "(.*)@psu\\.edu",
   "output": "{0}"
  }
 ]
}
```

path-restrict.json defines which paths a user can browse:

```
{
    "DATA_TYPE": "path_restrictions#1.0.0",
    "read_write": [
            "/storage/long"
    ],
    "none": ["/"]
}
```

Create the Collection:

```
# globus-connect-server collection create adbcfd74-d99f-4cb2-b53c-cf046861ddb5 /
PennState_MRI_Converge --organization "Penn State University" --contact-email
email@psu.edu --allow-guest-collections --sharing-restrict-paths
file:sharing_restrictions.json
Collection ID: 2a544615-1db3-47cf-8901-00336832e98b
root@converge:~#
```

The file referred to was sharing_restrictions.json:

```
{
```

```
    "DATA_TYPE": "path_restrictions#1.0.0",
    "read": [
            "/storage/long"
    ],
    "none": ["/"]
}
```

ISSUE TRACKER:

Globus config work 20250103 – Troubleshooting Firewall?/Routing? Issue(s)

```
$ systemctl --type=service
  ifup@CONVERGE1.service              loaded active exited  ifup for CONVERGE1
● ifup@GLOBUS.service                 loaded failed failed  ifup for GLOBUS
  ifup@N030G_CETA.service             loaded active exited  ifup for N030G_CETA
  ifup@N030G_SWITCH.service           loaded active exited  ifup for N030G_SWITCH
  ifup@N030J_CETA.service             loaded active exited  ifup for N030J_CETA
  ifup@N030J_SWITCH.service           loaded active exited  ifup for N030J_SWITCH
$ root@converge:~# ifconfig

GLOBUS: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 9000
inet 192.5.158.29  netmask 255.255.255.0  broadcast 192.5.158.255
inet6 fe80::42a6:b7ff:fe93:8788  prefixlen 64  scopeid 0x20<link>
ether 40:a6:b7:93:87:88  txqueuelen 1000  (Ethernet)
RX packets 28067520  bytes 1687075744 (1.5 GiB)
RX errors 0  dropped 0  overruns 0  frame 0
TX packets 20637  bytes 1470822 (1.4 MiB)
TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

RITM0348345 – Requesting Firewall Ports for Configuration – COMPLETE

TROUBLESHOOTING FIREWALL ISSUES:

```
iptables --list-rules
sudo iptables -A INPUT -p tcp --dport 50000:51000 -j ACCEPT
iptables-save
sudo iptables -A INPUT -p tcp --dport 443 -j ACCEPT
iptables-save
```