

# Grouper Training Environment

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Welcome to Virtual Grouper training.

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The [Grouper Training Environment \(GTE\)](#) is a set of lesson plans, training exercises, and supporting Docker modules. Students are able to bring up a full training environment by running a simple command. The GTE provides all the necessary components and configuration to go from learning basic Grouper operations, to exploring the access governance concepts presented in the [Grouper Deployment Guide \(GDG\)](#). The focus of the GTE is Grouper installation, configuration, design, and operation. Little to no technical experience is required to complete the Grouper training.

The training environment will be made available to students via Amazon Web Services (AWS). The student will only need a connection to the Internet and a suitable SSH client (e.g. OpenSSH on UNIX/Linux/Mac systems or PuTTY on Windows). IP addresses and credentials will be provided during the class.

## Session information

- We will be taking short breaks throughout the day
- To keep things flowing well, please refrain from using the Zoom chat window. Instead, use the dedicated Slack channel for your discussions!
- VMs will be opened up several days before the class. They will remain open for two weeks after the class so that you can practice the lab exercises.
- Ask ALL of your questions. There are no dumb questions.

## Pre-work

1. [Connect to your AWS instance from your computer](#)
2. Install "Kahoot!" (learning and trivia app) on your phone or preferably a device not used by zoom
3. Install the Zoom app if you do not already have it
  - a. It is nice if you have a camera available that you can turn on from time to time so we can all put names to faces
4. Install the Slack app if you do not already have it and make sure you are in the grouper-school-spring2022 channel
5. [Review these commands that you will need \(located in the GTE\)](#)
6. If you do not know linux, [here is a 5 minute lesson](#)
7. Unix text editor, you need to be able to edit a file (there are only a few exercises that require this) with nano, vi, or emacs. If you know how to use one of these, then you are good. If not:
  - a. "nano" is easiest, [here is a 2 minute lesson](#)
  - b. If you prefer "vi", [here is an 8 minute lesson](#)
8. Read the [Grouper Deployment Guide](#)

## Computer setup the morning of training

1. If you have a phone or device not used for zoom, have that available with Kahoot! running.
  - a. You do not need to sign in to Kahoot but when using it please enter your real first and last name
2. If you have multiple monitors available, that would be useful but not required
  - a. Might be nice to not use a separate computer for Zoom and exercises, so you can share your screen if needed
3. Open the Slack app to the class channel
4. Open the Zoom app and connect to the Main zoom meeting (pinned from slack channel)
  - a. Please mute yourself and either keep your camera on or be prepared to turn it on while speaking so we can put names to faces
5. Open your terminal or SSH client (from pre-work <above> and slack pin) and connect to your GTE instance
  - a. Run this command

```
./gte 101.1.1
```

- b. Leave that terminal/ssh window open. Be prepared to reconnect if your SSH tunnel disconnects (e.g. when your browser stops working)
6. Close all your browsers and tabs

7. Open Chrome (or firefox if you don't have Chrome)
  - a. Tab 1: GTE Jump page: <https://localhost:8443/>
  - b. Tab 2: Grouper admin account: <https://localhost:8443/grouper/> (banderson/password)
  - c. Tab 3: [Text to copy/paste](#)
  - d. Tab 4: [GTE commands](#)
  - e. Tab 5: SQL manager: <https://localhost:8443/phpmyadmin/> (root/<no password>)
  - f. Tab 6: LDAP manager: <https://localhost:8443/phpldapadmin/> (cn=root,dc=internet2,dc=edu/password)
8. We need another Grouper non-admin session. Either open an incognito Chrome window (if other tabs are not incognito), or open a different browser (e.g. Firefox instead of Chrome)
  - a. Tab 1: Grouper non-admin account: <https://localhost:8443/grouper/> (jsmith/password)
9. Open a text editor e.g. notepad (windows) or notes (mac)

## Important links

[GTE commands](#) - Simple commands to run GTE courses and interact with the environment

[Text to copy/paste](#) - Text from slides to copy and paste easily

[Grouper Deployment Guide](#) - Grouper concepts, standards, and best practices

[Kahoot](#) - for periodic quizzes

## Schedule

### Tuesday (Day 1)

- 12:00 - 12:45 - Intro
- 12:45 - 1:15 - 201.1.1 Basis and reference groups part 1
- 1:15 - 1:30 - Break
- 1:30 - 2:00 - 201.1.2 Basis and reference groups part 2
- 2:00 - 2:45 - 201.2 Access policy groups
- 2:45 - 3:00 - Break
- 3:15 - 3:45 - 201.4 Policy groups and static application permissions
- 3:45 - 4:00 - Discussion
- 4:00 - 4:15 - Break
- 4:15 - 4:30 - 211.0 priv. Intro
- 4:30 - 4:45 - 211.1 folder privs
- 4:45 - 5:00 - 211.2 group privs

### Wednesday (Day 2)

- 12:00 - 1:30 - TBD
- 1:30 - 2:10: 211.3 attribute privs
- 2:10 - 2:25: 211.4 security groups
- 2:25 - 2:35: 211.5 system accounts
- 2:45 - 2:45: 211.6 inherited privs
- 2:45 - 3:00: break
- 3:00 - 3:30: 311.0 container intro
- 3:30 - 3:40: 311.1 docs
- 3:45 - 4:15: 311.2 quickstart
- 4:15 - 4:30: break
- 4:30 - 4:50: 311.3 Maturity 0
- 4:50 - 5:00: 311.5 Maturity 2+

### Thursday (Day 3)

- 12:00 - 12:40: Containers and GTE
- 12:40 - 1:15: 301.1: Components
- 1:15 - 1:30: break
- 1:30 - 2:15: 301.2: Diagnostics
- 2:15 - 2:45: 301.3: Configuration management
- 2:45 - 3:00: break
- 3:00 - 4:15: 301.4: Grouper shell
- 4:15 - 4:30: break
- 4:30 - 5:00: 301.5: Notifications

### Friday (Day 4)


- 12:00 - 12:20: 301.6 Subject sources
- 12:20 - 12:40: 301.7 Ldap loader
- 12:40 - 1:15: 301.8 GSH templates
- 1:15 - 1:30: break
- 1:30 - 2:45: 401.1 VPN use case
- 2:45 - 3:00: break
- 3:00 - 4:15: 401.2 VPN use case




- 4:15 - 4:30: break
- 4:30 - 5:00: Discussion and final instructions

## GTE app links (once connected and a lesson is started)

Name	Link	Credentials	Description
<a href="#">Jump page</a>	<a href="https://localhost:8443/">https://localhost:8443/</a>		Links applications
<a href="#">Grouper</a>	<a href="https://localhost:8443/grouper/">https://localhost:8443/grouper/</a>	Admin: banderson/password Civilian: jsmith/password	Grouper UI application
<a href="#">Database manager</a>	<a href="https://localhost:8443/phpmyadmin/">https://localhost:8443/phpmyadmin/</a>	root / <no password>	Phpmyadmin Mysql database manager
<a href="#">LDAP manager</a>	<a href="https://localhost:8443/phpldapadmin/">https://localhost:8443/phpldapadmin/</a>	username: cn=root,dc=internet2,dc=edu password: password	Phpldapadmin LDAP administration
<a href="#">Messaging manager</a>	<a href="https://localhost:8443/rabbitmq/">https://localhost:8443/rabbitmq/</a>	username: guest password: guest	Rabbitmq messaging administration
<a href="#">Shibboleth attributes</a>	<a href="https://localhost:8443/app">https://localhost:8443/app</a>		Simple screen to show login state

## Other info linked from slack "bookmarks"

 grouper-school-may2022 ▾

 Pre-workshop Survey  Zoom  Canvas  SSH IPs  Local Grouper  Copy / paste  Training wiki  Training CBT errata +

## Corrections on 101 material

The slides are generally up to date, but the movies are out of date. Thanks for your patience. Note, you can change the playback speed (e.g. 1.5x or 2x) to process these quicker 😊

One general note, the names of buttons, and the options in menus have changed (ahem... improved). Expect a little bit of a scavenger hunt there...

### Note:

- The GTE used to have a SQL browser embedded. This is not the case any more. Read the "Database browser" section of this page to configure DBeaver or another Postgres browser. Lesson 101.9.2 shows how to set up DBeaver connections.
- If you are not using the command from the password file to connect to ssh (e.g. if you use putty or secure crt) then you should port forward local port 8432 to remote localhost 5432, and local port 8389 to remote localhost 389

## Database browser

The postgres database in the GTE has no browser in the GTE (since the container went multiarch in 2024/03). If you have a postgres admin tool you can use that, or if you want a suggestion, install DBeaver community edition (free).

1. Make sure you dont have anything listening on 8432 on your computer (or map other ports). You can assume nothing is and its probably a good assumption.
2. The connection string in the password file maps ports 8432 (postgres). If you are not using the command from the password file to connect to ssh (e.g. if you use putty or secure crt) then you should port forward local port 8432 to remote localhost 5432
3. Connect to mysql from DBeaver or another postgres browser to the three databases

Host	Port	Database	User	Pass
localhost	8432	grouper	grouper	pass
localhost	8432	sis	sis_ower	pass
localhost	8432	hr	hr_owner	pass

enter a part or object name here

postgres grouper\_training hr - localhost:8432

- Databases
  - hr
    - Schemas
      - public
        - Tables
          - hr\_depts 24K
          - hr\_jobs 176K
          - hr\_orgs 24K
          - hr\_positions 160K
          - Views
          - Materialized Views
          - Indexes
          - Functions
          - Sequences
          - Data types
          - Aggregate functions
          - Event Triggers
          - Extensions
          - Storage

Properties | Data | ER Diagram

hr\_positions | Enter a SQL expression to filter results (use Ctrl+Space)

	position_id	dept_id	role
1	10000	10000	staff
2	10001	10000	staff
3	10002	10000	staff
4	10003	10000	staff
5	10004	10000	staff
6	10005	10000	staff
7	10006	10000	staff
8	10007	10100	staff
9	10008	10100	staff
10	10009	10100	staff
11	10010	10100	staff
12	10011	10100	staff
13	10012	10100	staff
14	10013	10200	staff
15	10014	10200	staff
16	10015	10200	staff
17	10016	10200	staff
18	10017	10200	staff
19	10018	10200	staff

## Improved LDAP browser

The ldap browser in the GTE is web based browser and might not be the easiest to use or might not be what you are familiar with. If you have an LDAP browser you can use that, or if you want a suggestion, install Apache Directory Studio (free). Note Apache Directory Studio can read and write LDAP data.

1. Make sure you dont have anything listening on 8389 on your computer (or map other ports). You can assume nothing is and its probably a good assumption.
2. The connection string in the password file maps ports 8389 (ldap). If you are not using the command from the password file to connect to ssh (e. g. if you use putty or secure crt) then you should port forward local port 8389 to remote localhost 389
3. When starting a GTE module, add ldap

FROM

```
gte <container name>
```

TO

```
gte --ldap <container name>
```

4. Connect to ldap from Apache directory studio or another ldap browser

```
localhost
8389
cn=root,dc=internet2,dc=edu
password
```

The screenshot shows the LDAP Browser interface. On the left, a directory tree is expanded to show the entry `uid=aadams` under `ou=people`. On the right, the details for this entry are displayed in a table.

Attribute Description	Value
<b>objectClass</b>	<b>eduPerson (auxiliary)</b>
<b>objectClass</b>	<b>inetOrgPerson (structural)</b>
<b>objectClass</b>	<b>organizationalPerson (structural)</b>
<b>objectClass</b>	<b>person (structural)</b>
<b>objectClass</b>	<b>top (abstract)</b>
<b>cn</b>	<b>Ashley Adams</b>
<b>sn</b>	<b>Adams</b>
<b>employeeNumber</b>	800002114
<b>givenName</b>	Ashley
<b>mail</b>	Ashley.Adams@mock.edu.invalid
<b>uid</b>	aadams
<b>userPassword</b>	Plain text password

## Help

If you have any questions about the workshop or its technical content, please send a note to Jean at [jeanc@internet2.edu](mailto:jeanc@internet2.edu).

You can also use the dedicated Slack channel for an even faster response.

## Run locally

1. First install docker on mac or docker desktop on windows (or linux)
2. Then spin up the GTE:

```
C:\Users\mchzyer-local> docker run -d -p 8443:443 --name 101.1.1 tier/gte:101.1.1-202403
a282e12af384105b810fb2d1fd67ad450a3ef1fa0ea039c6083348a979cef3d5
```

Note, it has been reported that if ldap or other services do not start that this needs to be run in the container:

```
ulimit -n 1024
```