

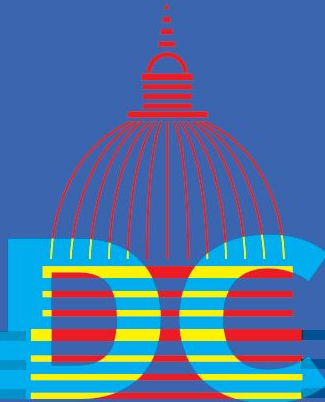


## Group BoF

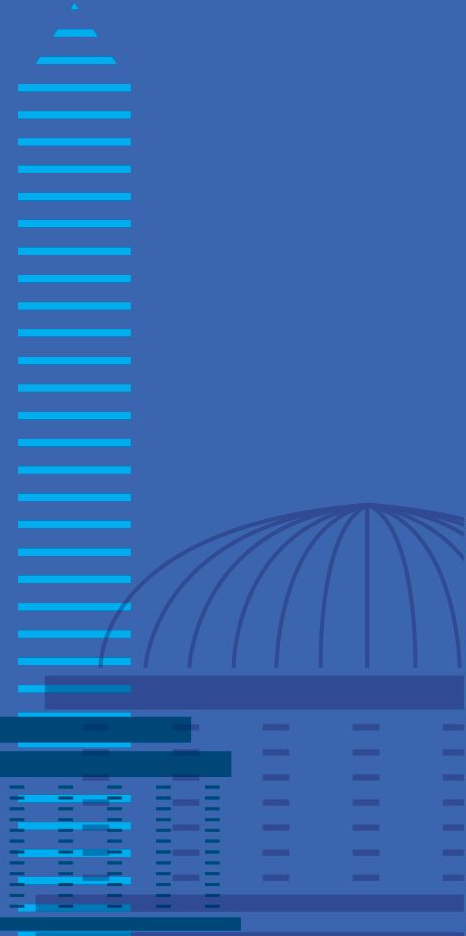
Birds of a Feather

### PRESENTER NAME:

Chris Hyzer, Grouper Chair, University of Pennsylvania  
Shilen Patel, Duke



WASHINGTON DC MARCH 5-8



# AGENDA

- Welcome
- Agenda Bash
- Core Team
- What is Grouper
- Roadmap and Scheduling
- Community Contributions
- Progress since TechEx
- Discussion

## Grouper Team (alphabetical) - people who worked on Grouper in last 6mo

- **Bert Bee-Lindgren** (Georgia Tech) - PSPNG provisioning
- **Carey Matt Black** (Ohio State) – general support
- **Emily Eisbruch** (Internet2) - work group support
- **Chris Hyzer** (Penn) - Grouper lead, API, WS, and UI
- **Shilen Patel** (Duke) – API, loader, UI
- **Chad Redman** (UNC) – Build and dependency management, UI
- **Vivek Sachdeva** (independent) – API, WS, UI
- **Bill Thompson** (Lafayette College) – Grouper Deployment Guide and Grouper Training Environment

## What is Grouper?

- Central authorization
- Groups
- Permissions
- Provisioning
- Auditing
- Delegation and distributed management



## Grouper and TIER\*

TIER delivers a packaged suite of components (Shibboleth Identity Provider, **Grouper**, COmanage, midPoint) with a set of APIs to provide consistency and flexibility.

TIER provides the Grouper project:

- Requirements for development
- Funding
- Architectural guidance
- Standards to harmonize with other TIER products
- Contributions in areas such as: packaging, security, administrative help, etc

\* Note that in 2019 TIER is being renamed to **InCommon Trusted Access Platform**

# Grouper Roadmap

<https://spaces.internet2.edu/display/Grouper/Grouper+Product+Roadmap>

- Develop Grouper 2.5
- Support 2.4
- Continue to do low risk improvement patches in 2.4
- Spend a couple months solely on bug fixes and testing
- 2.5 release in 2019 Q3

## Grouper Roadmap - 2.4 patches (tentative)

<https://spaces.internet2.edu/display/Grouper/Grouper+Product+Roadmap>

- Tag GDG objects (ref, basis, policy, etc) (DONE)
- Performance improvements (DONE)
- Visualization (DONE)
- [Provisioning managed from UI](#) (MOSTLY DONE)
- Allow configuration to be stored in database (MOSTLY DONE)
- Membership reports (SOME DONE)
- Simple workflow approvals
- Subject source configuration in UI

## Grouper Roadmap – 2.5 (tentative)

<https://spaces.internet2.edu/display/Grouper/Grouper+Product+Roadmap>

- Group delete dates
- Membership notes
- “Internal” groups
- Better paging in WS
- Continue dependency updates



## Grouper Community Contributions recently updated on the Grouper wiki

**Carnegie Mellon University (Updated Nov. 2017)**- Integrating Grouper with Google Apps and using the Grouper Active-MQ Provisioner (GAP) framework.

**Cardiff University** - Grouper deployment at Cardiff University includes an ESB Interface. (note: last updated in 2011)

**Colorado State University - (Added February 2018)** - Provisioning from Grouper to LDAP.

**Columbia University - (Added June 2016)** - Using Grouper to support email and institutional reference groups and using Grouper with Google Groups for authorization.

**University of Illinois Urbana-Champaign - (Added Feb 2018)** Deploying Grouper in Amazon Web Services

**University of Maryland Baltimore County - (Added April 2017)** - groups provisioned to LDAP for access management

**University of Maryland College Park - (Added Fall 2017)** - info coming soon

**University of Memphis - (Brief note added Nov. 2014)** Running Grouper API in production.

**University of Michigan - (Added Feb 2018)** Using containerized Grouper

**University of Minnesota - (2013)** Using Grouper to manage access to BPEL workflows, VPN groups and more.

**University of Montreal - (2013)** Using Grouper for automatic and delegated group and membership management

**University of Nebraska (Updated Feb 2018)** Using Grouper to manage student, employee and residence hall data.

**Yale - (Added February 2018)** - Banner integration, Canvas integration and more

# Grouper Community Contributions

Share your Grouper experience on the Grouper wiki

- Update it from time to time
- <https://spaces.internet2.edu/display/Grouper/Community+Contributions>
- See or email Emily Eisbruch (emily@internet2.edu) for help setting up your Grouper contributions page

Thanks to all those who have recently updated their Grouper Contrib page!

# Bert Bee-Lindgren

Georgia Tech

A stylized blue dome graphic, likely representing the Georgia Institute of Technology's Old North Building. It features a series of vertical lines forming the dome's structure, topped with a small spire. Below the dome are several horizontal bars of varying lengths, suggesting a base or foundation.

Progress since TechEx

# PSPNG Update

## Improvements since TechEx:

- Grouper 2.3 & 2.4:
  - Escaping different strings
    - Entitlements with regex characters in prefix (GRP-1911)
    - DN characters (commas) in Group DNs (GRP-1533)
  - Security: Remove password from debug log (GRP-1908)
- Grouper 2.4:
  - Big improvements to Full Sync not clogging up changelog processing (GRP-1959)
  - Performance improvements: Smarter, longer caching and redundancy removal (GRP-1931)
  - Better handling of deleted groups (GRP-1992)

## Next Steps:

- UI: Configuration, Group Selection, Status Feedback (sync dates, results)
- Group selection: UI & Stopping excessive full-syncs on 'small' changes

# Chris Hyzer

Penn

A stylized blue dome graphic, resembling the Pennsylvania State Capitol building, is centered on the right side of the slide. It features a series of vertical lines forming the dome's structure, topped with a small spire. Below the dome are several horizontal bars of varying lengths, suggesting a base or foundation.

Progress since TechEx

## Subject caching

- In 2.4 patch
- Subjects now more aggressively cached in Grouper
- Helps in cases of:
  - Many loader jobs
  - Slow or unreliable subject sources
  - Heavily WS activity
  - Etc
  - Helps in cases of:
- Reduces subject lookups which can affect Grouper performance
- Stores a copy of the cache on the file system to survive restarts
- Logs stats

## Improved folder delete

- In 2.4 patch
- Delete a folder and all subjects
- In one folder or all subfolders
- Can delete only objects of a certain type (empty folders, groups, attributes)
- Gives counts to convey the magnitude of the operation
- Follows Grouper privilege security (can only delete objects you have ADMIN on)

# Grouper configuration in the database

- Partially in 2.4 patch

## Now

- Grouper configuration is in config overlays
- All config overlays are able to be controlled by the database
- You can have an overlay type of “database”
- There is a table which can be controlled with GSH to override configuration

## Future

- The future UI configuration screens will show the configuration, documentation
- Configuration metadata informs the future UI of layout, validations, UI controls, etc
- The configuration will by default have a “database” option so its available



## Duo connector improvements

- Soon will be in 2.3 and 2.4 patch
- Will incorporate new Duo paging requirements (2.3 and 2.4)
- Integrated with new Grouper provisioning UI (2.4 only)
- UI will display provisioned objects, display provisioning logs, configure the provisioning, control ad hoc provisioning

## Other jiras in 2.4 patches

- GRP-2038: Add searching by attributes in MemberFinder
- GRP-2032: Error when loader config deleted when viewing loaded group
- GRP-2022: Move voot jar/code into WS
- GRP-2021: Config overrides can happen in wrong order
- GRP-2000: Null pointer when viewing group as non root
- GRP-1989: Upgrading with GSH or jars in patches can cause problems
- GRP-1965: Allow bulk remove of members by uploading list
- GRP-1964: Installer should support 1.0 versions of jars on upgrade

# Shilen Patel

Duke

A stylized blue dome graphic, resembling the dome of the United States Capitol building, is positioned on the right side of the slide. It features a series of vertical lines forming the dome's structure, a horizontal band near the base, and a small, multi-tiered spire at the top.

Progress since TechEx 2018

## Daemon UI

- Shows all daemon jobs in UI
- Ability to manage jobs
- For changelog jobs, show how many are pending in queue
- View log history
- Loader jobs are now scheduled by default

# All daemon jobs

Filter for:  Show extended results?

Next refresh: Maximum refreshes reached

| Job name  | State                          | Last run status | Actions                                      |
|---|--------------------------------|-----------------|--|
| <a href="#">CHANGE_LOG_changeLogTempToChangeLog</a>   | ENABLED                        | SUCCESS         | <input type="button" value="Job actions ▼"/> |
| <a href="#">CHANGE_LOG_consumer_grouperRules</a>  | ENABLED                        | SUCCESS         | <input type="button" value="Job actions ▼"/> |
| <a href="#">CHANGE_LOG_consumer_syncGroups</a>  | ENABLED                        | SUCCESS         | <input type="button" value="Job actions ▼"/> |
| <a href="#">LDAP_GROUPS_FROM_ATTRIBUTES__attributesStem:myLdapGroupFromAttributes__6d355f531f0441b9b522ca2da9263470</a> | ENABLED                        | SUCCESS         | <input type="button" value="Job actions ▼"/> |
| <a href="#">LDAP_GROUP_LIST__testall:groups:ldap group list__8b9b945fee7940c3aeb82027dffce3f</a>                        | ENABLED                        | SUCCESS         | <input type="button" value="Job actions ▼"/> |
| <a href="#">LDAP_SIMPLE__testall:ldap simple__8ee32a7a0ffb4b72bfc558545f25d526</a>                                      | ENABLED                        | SUCCESS         | <input type="button" value="Job actions ▼"/> |
| <a href="#">MAINTENANCE__builtinMessagingDaemon</a>   | ENABLED                        | SUCCESS         | <input type="button" value="Job actions ▼"/> |
| <a href="#">MAINTENANCE__enabledDisabled</a>  | ENABLED                        | SUCCESS         | <input type="button" value="Job actions ▼"/> |
| <a href="#">MAINTENANCE__grouperReport</a>  | ENABLED                        | ERROR           | <input type="button" value="Job actions ▼"/> |
| <a href="#">MAINTENANCE__rules</a>  | ENABLED                        | SUCCESS         | <input type="button" value="Job actions ▼"/> |
| <a href="#">MAINTENANCE_cleanLogs</a>   | ENABLED                        | SUCCESS         | <input type="button" value="Job actions ▼"/> |
| <a href="#">MESSAGE_LISTENER_messagingListener</a>  | RUNNING<br>1 minutes 2 seconds | SUCCESS         | <input type="button" value="Job actions ▼"/> |

8 logs found for job name: SQL\_GROUP\_LIST\_\_test:loader:testSqlGroupList2\_\_65a27396b0ec44759c17523d39687fc3

| Status  | Loaded group | Job type | Start time            | End time              | Millis | Millis get data | Millis load data | Total count | Add count | Update count |
|---------|--------------|----------|-----------------------|-----------------------|--------|-----------------|------------------|-------------|-----------|--------------|
| Success | multiple     | overall  | 2019-03-05 06:00:04.0 | 2019-03-05 06:00:16.0 | 11325  | 4784            | 6541             | 336         | 0         | 0            |
| Success | multiple     | overall  | 2019-03-04 06:00:05.0 | 2019-03-04 06:00:17.0 | 11980  | 8188            | 3792             | 336         | 0         | 0            |
| Success | multiple     | overall  | 2019-03-03 06:00:09.0 | 2019-03-03 06:00:17.0 | 8608   | 3745            | 4863             | 336         | 0         | 0            |
| Success | multiple     | overall  | 2019-03-02 06:00:05.0 | 2019-03-02 06:00:07.0 | 2837   | 13              | 2824             | 336         | 0         | 0            |
| Success | multiple     | overall  | 2019-03-01 06:00:08.0 | 2019-03-01 06:00:17.0 | 8994   | 1128            | 7866             | 336         | 0         | 0            |
| Success | multiple     | overall  | 2019-02-28 06:00:09.0 | 2019-02-28 06:00:16.0 | 6785   | 3159            | 3626             | 336         | 0         | 0            |
| Success | multiple     | overall  | 2019-02-27 06:00:07.0 | 2019-02-27 06:00:12.0 | 4316   | 481             | 3835             | 336         | 0         | 0            |
| Success | multiple     | overall  | 2019-02-26 06:00:10.0 | 2019-02-26 06:00:13.0 | 2785   | 79              | 2706             | 336         | 0         | 0            |

# Advanced Membership UI - Custom composites

Members Privileges More ▾




The following table lists all entities which are members of this group.

Filter for:

Group filter:  Members who are not employees  
 Members who are IT people

Enabled / disabled:

Point in time audit:

| <input type="checkbox"/> Entity name ▾  | Membership | Choose action                            |
|---|------------|--|
| <input type="checkbox"/>  Barry Benson | Direct     | <input type="button" value="Actions ▾"/> |
| <input type="checkbox"/>  Barry Blair  | Direct     | <input type="button" value="Actions ▾"/> |
| <input type="checkbox"/>  Fiona Bush   | Direct     | <input type="button" value="Actions ▾"/> |

Show:

Showing 1-3 of 3 · [First](#) | [Prev](#) | [Next](#) | [Last](#)

# Advanced Membership UI - Enabled/Disabled Dates

Members Privileges More ▾

The following table lists all entities which are members of this group.

Filter for:

Group filter:

Enabled / disabled:  Enabled / disabled status  
 Members with disabled dates  
 Members with enabled dates

Point in time audit:

| <input type="checkbox"/> | Entity name ▾ | Status   | Enabled date | Disabled date | Membership | Choose action                            |
|--------------------------|---------------|----------|--------------|---------------|------------|--|
| <input type="checkbox"/> | Barry Benson  | Enabled  |              |               | Direct     | <input type="button" value="Actions ▾"/> |
| <input type="checkbox"/> | Barry Blair   | Enabled  |              |               | Direct     | <input type="button" value="Actions ▾"/> |
| <input type="checkbox"/> | Barry Brooks  | Disabled | 2025/01/01   |               | Direct     | <input type="button" value="Actions ▾"/> |
| <input type="checkbox"/> | Fiona Bush    | Enabled  |              |               | Direct     | <input type="button" value="Actions ▾"/> |

Show:

Showing 1-4 of 4 · [First](#) | [Prev](#) | [Next](#) | [Last](#)



# Advanced Membership UI - Point in Time Audit Queries

Members Privileges More ▾

The following table lists all entities which are members of this group.

**Filter for:** All members ▾  
Member name






**Group filter:**  ▾

**Enabled / disabled:**  ▾

**Point in time audit:** Yes, show audit memberships ▾

**Search from date:**

**Search to date:**

| Entity name ▾  | Start date          | End date            |
|--|---------------------|---------------------|
|  Barry Benson | 2019/02/07 15:05 PM |                     |
|  Barry Blair  | 2019/02/07 15:05 PM |                     |
|  Barry Brooks | 2019/02/07 15:08 PM | 2019/02/07 15:08 PM |
|  Barry Brooks | 2019/02/07 15:22 PM |                     |
|  Fiona Bush   | 2019/02/07 14:59 PM |                     |

Show:  ▾

Showing 1-4 of 4 · [First](#) | [Prev](#) | [Next](#) | [Last](#)

# TIER Instrumentation

- Daemon job runs daily if you have a recent 2.4 patch
- Provides TIER collector with:
  - Grouper version
  - Patch level
  - Whether or not this is a TIER release
- Usage of new releases informs the community about the stability of the release

## Other Minor Jiras

- GRP-1941 - LDAP loader - parsing complex attribute values
- GRP-2040 - Performance improvement for GrouperDaemonDeleteMultipleCorruption
- GRP-2043 - Subject filtering bug with Member.getSubject()

## Next - All Group Memberships under a Folder

- Page that shows all memberships for groups under a folder
- Include some of the new advanced membership options
- For example, quickly see all non-employees in all groups

# Chad Redman

UNC - Chapel Hill

A stylized blue dome graphic, likely representing the UNC Chapel Hill building, is positioned on the right side of the slide. It features a series of vertical lines forming the dome's structure and a small spire on top. The text "Progress since TechEx" is overlaid on the dome.

Progress since TechEx

# Visualization

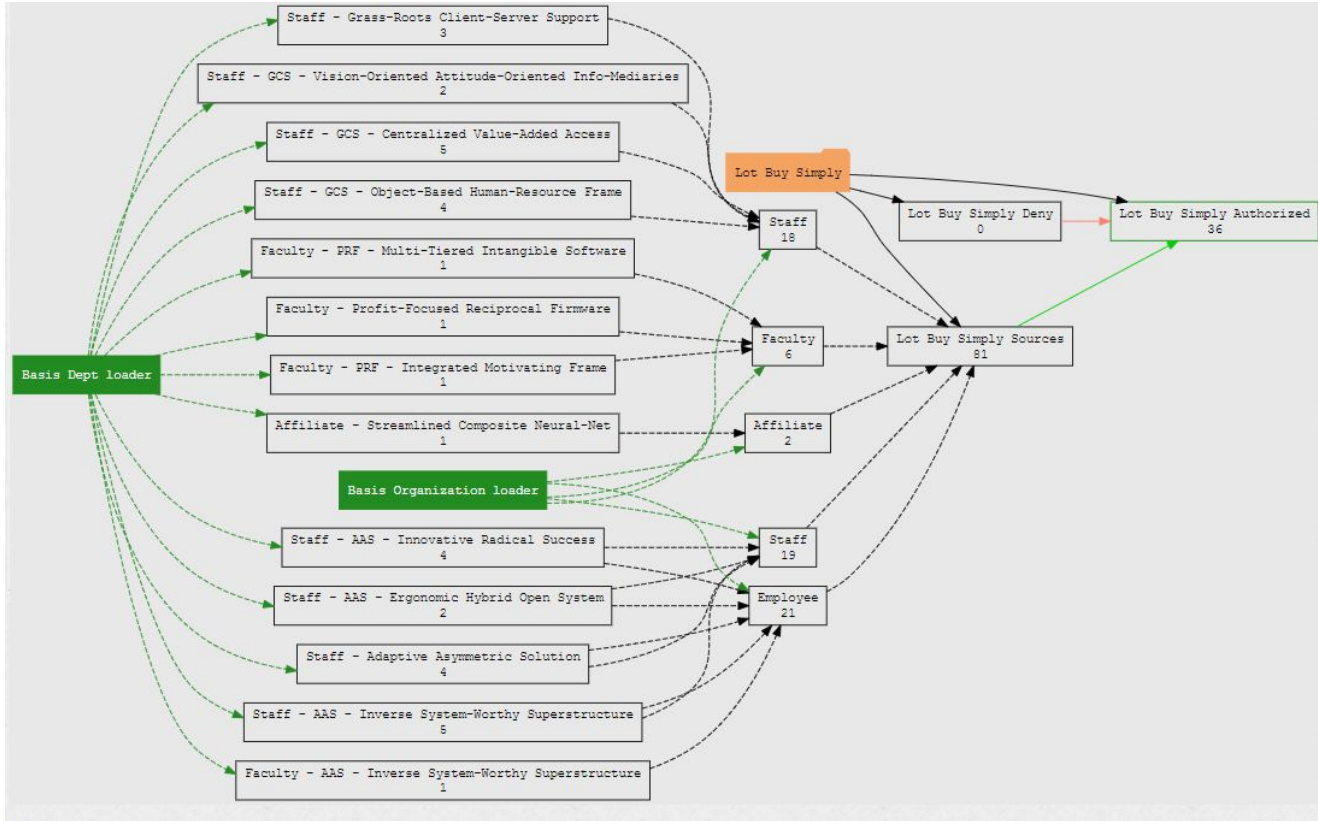
Based on the work of Michael Gettes, use the GraphViz/D3 Javascript engine to draw an SVG image of the current group/folder/subject, and relations to other objects

- API component
  - Create directed acyclic graph (DAG) based on selection criteria
  - Read grouper.properties for object styles
  - <https://spaces.at.internet2.edu/display/Grouper/Grouper+Visualization+API>
- UI component
  - Converts relations into visual nodes and edges
  - Options to control number and types of objects displayed
  - Can export GraphViz .dot output, or SVG code for offline use
  - Also has a text mode, which shows a report of the objects
  - <https://spaces.at.internet2.edu/display/Grouper/Visualization+UI>

# Visualization

The screenshot shows a web interface for a folder named "Lot Buy Simply". The breadcrumb path is "Home > Root > Applications > ITS > Lot Buy Simply". The folder name "Lot Buy Simply" is displayed in large blue text. To the right of the folder name is an orange "Edit folder" button and a "More actions" dropdown menu. The "More actions" menu is open, showing a list of options: "Add to my favorites", "Create new folder", "Create new group", "Create new attribute definition", "Create new attribute name", "Attribute assignments", "Copy folder", "Delete", "Edit folder", "Move folder", "Attestation", "Deprovisioning", "View audit log", "New template", "Type", and "Visualization". The "Visualization" option is highlighted with a yellow border and an orange arrow points to it from the bottom left. Below the folder name, there are tabs for "Folder contents", "Privileges", and "More". A filter section includes a text input "Filter for: Folder, group, or attribute name", "Apply filter", and "Reset" buttons. A table lists folder contents with a "Name" column and a "Show: 50" dropdown.

# Visualization





# Visualization

**Group:** Faculty - Profit-Focused Reciprocal Firmware

**Path:** [basis:dept:110200:faculty](#)

**Description:** test faculty auto-loaded

**Member count:** 1

**Direct membership in these groups:**

- group: [Faculty](#)

**Direct group members:** none

**Loaded by job:** [Basis Dept loader](#)

**Group:** Staff - AAS - Innovative Radical Success

**Path:** [basis:dept:110101:staff](#)

**Description:** test staff auto-loaded

**Member count:** 4

**Direct membership in these groups:**

- group: [Employee](#)
- group: [Staff](#)

**Direct group members:** none

**Loaded by job:** [Basis Dept loader](#)

**Group:** Staff - GCS - Centralized Value-Added Access

**Path:** [basis:dept:120203:staff](#)

**Description:** test staff auto-loaded

**Member count:** 5

**Direct membership in these groups:**

- group: [Staff](#)

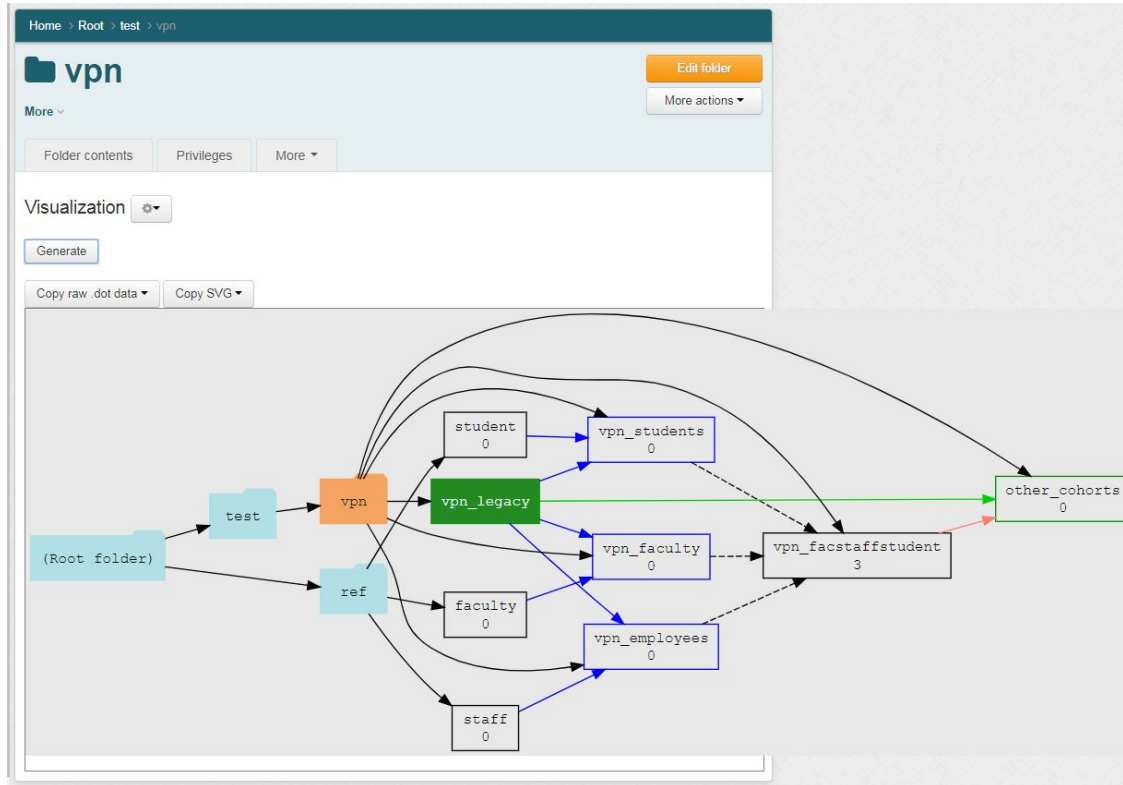
**Direct group members:** none

**Loaded by job:** [Basis Dept loader](#)

**Group:** Staff - Adaptive Asymmetric Solution

# Visualization

Sample from Grouper Training Environment (ex401.4.end)



# Vivek Sachdeva

Independent

A stylized blue dome graphic composed of vertical lines, topped with a tiered spire. Below the dome are several horizontal bars of varying lengths, suggesting a stack of data or a bar chart.

Progress since TechEx

# Types on Groups and Folders

- Assign pre-defined types/tags to groups and folders
- Consistent use of types as defined in Tier Grouper Deployment Guide
- Built on top of existing attribute framework
- Children groups and folders can inherit the types

**Type: basis**

|                             |   |
|-----------------------------|---|
| <b>Has configuration</b>    | Yes, there is configuration on this object or ancestor folder<br>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder. |
| <b>Direct configuration</b> | Yes, has direct type configuration<br>If this group/folder has type configuration directly assigned   |

**Type: ref**

|                          |  |
|--------------------------|--|
| <b>Has configuration</b> | No, there is not configuration on this object or ancestor folder<br>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder. |
|--------------------------|--|

**Type: policy**

|                          |  |
|--------------------------|--|
| <b>Has configuration</b> | No, there is not configuration on this object or ancestor folder<br>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder. |
|--------------------------|--|

**Type: etc**

|                          |  |
|--------------------------|--|
| <b>Has configuration</b> | No, there is not configuration on this object or ancestor folder<br>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder. |
|--------------------------|--|

**Type: bundle**

|                          |  |
|--------------------------|--|
| <b>Has configuration</b> | No, there is not configuration on this object or ancestor folder<br>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder. |
|--------------------------|--|

**Type: org**

|                          |  |
|--------------------------|--|
| <b>Has configuration</b> | No, there is not configuration on this object or ancestor folder<br>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder. |
|--------------------------|--|

## Type: test

### Has configuration

No, there is not configuration on this object or ancestor folder  
If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.

## Type: service

### Has configuration

No, there is not configuration on this object or ancestor folder  
If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.

## Type: app

### Has configuration

No, there is not configuration on this object or ancestor folder  
If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.

## Type: readOnly

### Has configuration

No, there is not configuration on this object or ancestor folder  
If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.

## Type: grouperSecurity

### Has configuration

No, there is not configuration on this object or ancestor folder  
If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.

## Grouper New Template Wizard

- Create a whole hierarchy of groups and folders with a few inputs
- Improves consistency
- Two templates available out of the box
  - Application
  - Grouper Deployment Guide Structure
- Can be extended by implementing an abstract class

Folder contents

Privileges

More ▾

Template type

Application

Pick the template type you want to run

Create in this folder, do not create a subfolder

Key

application



Alphanumeric key for template being run. Might be used for object names.

Friendly Name

application

Edit friendly name

This will typically be the same as the key though could be more friendly. Might be used for object display names.

Description

Application Template



Describe the purpose that the template is being run. Might be used on object descriptions.

Next

Cancel



Check the checkboxes below to create folders, groups, and assign privileges. If the folder or group already exists or privilege is already assigned, then that individual action is skipped.

- Create folder: "internet2:stem a:application"?
- Create folder: "internet2:stem a:application:service"?
- Create folder: "internet2:stem a:application:service:policy"?
- Create folder: "internet2:stem a:application:service:ref"?
- Create folder: "internet2:stem a:application:service:attribute"?
- Create folder: "internet2:stem a:application:security"?
- Create group "internet2:stem a:application:security:applicationAdmins"?
- Assign "internet2:stem a:application:security:applicationAdmins" to have inherited ADMIN privilege on Groups on the "internet2:stem a:application" folder?
- Assign "internet2:stem a:application:security:applicationAdmins" to have inherited ADMIN privilege on Folders on the "internet2:stem a:application" folder?
- Assign "internet2:stem a:application:security:applicationAdmins" to have inherited ADMIN privilege on Attributes on the "internet2:stem a:application" folder?
- Create group "internet2:stem a:application:security:applicationReaders"?
- Assign "internet2:stem a:application:security:applicationReaders" to have inherited READ privilege on Groups on the "internet2:stem a:application" folder?
- Create group "internet2:stem a:application:security:applicationUpdaters"?
- Assign "internet2:stem a:application:security:applicationUpdaters" to have inherited UPDATE privilege on Groups on the "internet2:stem a:application:service" folder?
- Assign "internet2:stem a:application:security:applicationUpdaters" to be a member of "internet2:stem a:application:security:applicationReaders"?

Submit

Cancel

# Grouper RabbitMQ Enhancements

- Dynamic routing key
- Allows all 4 types of exchanges
  - Fanout
  - Direct
  - Topic
  - Headers

## Provisioning in the UI

- Soon to be released in a patch in 2.4
- Change the provision\_to, do\_not\_provision\_to attributes to a more feature rich and consistent design
- Show in UI which groups/folders and provisioned to where
- Configure the provisioning in the UI
- Show provisioning logs in UI
- Run ad hoc provisioning in UI
- (TODO) integrate with Duo connector (first connector)
- (TODO) integrate with PSPNG and other connectors

# Unresolvable Subject Deletion Utility improvements

- Soon to be released in a patch in 2.4
- Keep metadata on unresolvable subjects
- Only remove assignments on subjects which are unresolvable for a certain amount of days (e.g. 30?)

# Bill Thompson

LaFayette

A stylized blue icon of a dome, likely representing the Louisiana State Capitol. It features a series of vertical lines forming the dome's structure, a horizontal band at the base, and a small, multi-tiered spire on top.

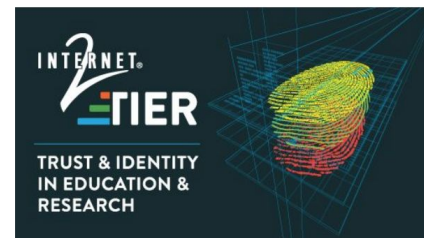
Progress since TechEx

# Grouper Deployment Guide (GDG)

- GDG V1 released @ Summit 2017
  - <http://doi.org/10.26869/TI.25.1>
- Grouper seminars
  - Tech Exchange 2017 and Summit 2018
- TIER Access Governance with Grouper and Friends
  - Tech Exchange 2018
- GDG V2 Goals
  - Updated for Grouper 2.4, and TIER packaging and architecture
  - Expand some sections – account policy, provisioning
  - New sections – grouper security model, reference group examples,...

## TIER Grouper Deployment Guide

Version 1.0 2017-04-21



**Repository ID:** TI.25.1

**Authors:** James Babb

Tom Dopirak

Bill Thompson, Editor

TIER API and Entity Registry WG

Grouper Development Team

**Sponsor:** Internet2

**Superseded documents:** (none)

**Proposed future review date:** April 2018

**Subject tags:** Grouper, access management, authorization, access control, access control model, access control policy

# Grouper/TIER Training Environment

- [Grouper/TIER Training Environment \(GTE\)](#)
  - lesson plans
  - training exercises
  - [supporting Docker modules](#)

## grouper\_training

A set of Grouper images that are used during I2/TIER training

### Images

#### Full Demo

```
docker run -d -p 80:80 -p 389:389 --name grouper-demo tier/grouper
```

Browse to <https://localhost/grouper>

#### Exercises

```
docker run -d -p 80:80 -p 389:389 -p 443:443 -p 3306:3306 -p 4443:4443 \ --name grouper_tier/grouper_training_ex###:latest
```

Browse to <https://localhost/grouper>

## Course Syllabus

- GTE 101 - Grouper Basics
- GTE 201 - TIER Access Governance
- GTE 211 - Grouper Security Model
- GTE 301 - Grouper Administration
- GTE 401 - Access Governance Practicum

### Grouper Basics (Grouper 101)

#### Grouper Subject API

##### Exercise - Basic Subject API

##### Exercise

##### Exercise

##### Exercise

##### Exercise

##### Exercise

#### Grouper O

##### Exercise

##### Exercise

##### Exercise

##### Exercise

#### Finding Gr

##### Exercise - Find out

##### Exercise - Find gr

##### Exercise - Find fo

##### Exercise - Find ob

##### Exercise - Find ob

##### Exercise - Find ob

##### Exercise - Find ob

### GTE 201.1 Basis and Reference Groups

#### Learning Objectives

#### Lab Components

#### Overview

### 301.4 Grouper Shell

#### Learning Objectives

- Gain a basic understanding of the Grouper Shell, where it lives, and how to use it.
- Learn how to use the Grouper Shell to do both basic administration and more complicated tasks.

### 401.1 VPN Access Control

#### TIER Component

- Grouper
- Grouper

#### Overview

#### Learning Objectives

#### Lab Components

#### Overview

#### Exercise 401.1.1

#### Exercise 401.1.2

#### Exercise 401.1.3

#### Exercise 401.1.4

#### Exercise 401.1.5

#### Exercise 401.1.6

The Grouper Shell is built off of BeanShell. Both are complicated scripts.

with Grouper. It can be used to run a version of Grouper's configuration for some pretty things.

# Discussion

A stylized blue icon of a dome, resembling the U.S. Capitol building, with a spire on top. The dome is composed of vertical lines, and the base consists of several horizontal lines.

Is there any time left?



# Staying Informed/Get Involved with Grouper

- Join the Grouper-Users email list
  - To subscribe:  
Email `pubsympa@internet2.edu` with the subject (case insensitive):  
`subscribe grouper-users`