Group BoF
Birds of a Feather

PRESENTER NAME:
Chris Hyzer, Grouper Chair, University of Pennsylvania
Shilen Patel, Duke
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!
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

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

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: Job name

### Jobs

<table>
<thead>
<tr>
<th>Job name</th>
<th>State</th>
<th>Last run status</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANGE_LOG_changeLogTempToChangeLog</td>
<td>ENABLED</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>CHANGE_LOG_consumer_grouperRules</td>
<td>ENABLED</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>CHANGE_LOG_consumer_syncGroups</td>
<td>ENABLED</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>LDAP_GROUPS_FROM_ATTRIBUTES__attributesStem:myLdapGroupFromAttributes</td>
<td>ENABLED</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>LDAP_GROUP_LIST__testAllGroups/ldap group list_6f6b99456a78d0c5aeb82027bdf0a3f</td>
<td>ENABLED</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>LDAP_SIMPLE__testAll/ldap simple_8ee32a7a0f4b4b72b7f58858453f95d526</td>
<td>ENABLED</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>MAINTENANCE__builtInMessagingDaemon</td>
<td>ENABLED</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>MAINTENANCE__enabledDisabled</td>
<td>ENABLED</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>MAINTENANCE__grouperReport</td>
<td>ENABLED</td>
<td>ERROR</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>MAINTENANCE__rules</td>
<td>ENABLED</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>MAINTENANCE_cleanLogs</td>
<td>ENABLED</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
<tr>
<td>MESSAGE_LISTENER_messagingListener</td>
<td>RUNNING</td>
<td>SUCCESS</td>
<td>Job actions ▼</td>
</tr>
</tbody>
</table>

Next refresh: Maximum refreshes reached
8 logs found for job name: SQL_GROUP_LIST__test:loader:testSqlGroupList2__65a27396b0ec44759c17523d39687fc3

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

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

- Filter for: All members
- Member name
- Group filter: Members who are not employees, Members who are IT people
- Enabled / disabled:
  - Members who are not employees
  - Members who are IT people
- Point in time audit: No, show current memberships only
  - Apply filter
  - Reset

<table>
<thead>
<tr>
<th>Entity name</th>
<th>Membership</th>
<th>Choose action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barry Benson</td>
<td>Direct</td>
<td>Actions</td>
</tr>
<tr>
<td>Barry Blair</td>
<td>Direct</td>
<td>Actions</td>
</tr>
<tr>
<td>Fiona Bush</td>
<td>Direct</td>
<td>Actions</td>
</tr>
</tbody>
</table>

Showing 1-3 of 3 - First | Prev | Next | Last
Advanced Membership UI - Enabled/Disabled Dates

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

Filter for:  
- Has direct membership

Group filter:  
- Enabled / disabled status
- Members with disabled dates
- Members with enabled dates

Point in time audit:  
- Apply filter
- Reset

<table>
<thead>
<tr>
<th>Entity name</th>
<th>Status</th>
<th>Enabled date</th>
<th>Disabled date</th>
<th>Membership</th>
<th>Choose action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barry Benson</td>
<td>Enabled</td>
<td></td>
<td></td>
<td>Direct</td>
<td>Actions ▼</td>
</tr>
<tr>
<td>Barry Blair</td>
<td>Enabled</td>
<td></td>
<td></td>
<td>Direct</td>
<td>Actions ▼</td>
</tr>
<tr>
<td>Barry Brooks</td>
<td>Disabled</td>
<td>2025/01/01</td>
<td></td>
<td>Direct</td>
<td>Actions ▼</td>
</tr>
<tr>
<td>Fiona Bush</td>
<td>Enabled</td>
<td></td>
<td></td>
<td>Direct</td>
<td>Actions ▼</td>
</tr>
</tbody>
</table>

Show: 50

Showing 1-4 of 4 - First | Prev | Next | Last
Advanced Membership UI - Point in Time Audit Queries

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

<table>
<thead>
<tr>
<th>Entity name</th>
<th>Start date</th>
<th>End date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barry Benson</td>
<td>2019/02/07 15:05 PM</td>
<td></td>
</tr>
<tr>
<td>Barry Blair</td>
<td>2019/02/07 15:06 PM</td>
<td></td>
</tr>
<tr>
<td>Barry Brooks</td>
<td>2019/02/07 15:08 PM</td>
<td>2019/02/07 15:08 PM</td>
</tr>
<tr>
<td>Barry Brooks</td>
<td>2019/02/07 15:22 PM</td>
<td></td>
</tr>
<tr>
<td>Fiona Bush</td>
<td>2019/02/07 14:59 PM</td>
<td></td>
</tr>
</tbody>
</table>

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
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](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](https://spaces.at.internet2.edu/display/Grouper/Visualization+UI)
Visualization
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)
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
### Folder type settings

#### Type: basis

<table>
<thead>
<tr>
<th>Has configuration</th>
<th>Yes, there is configuration on this object or ancestor folder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.</td>
</tr>
</tbody>
</table>

#### Type: ref

<table>
<thead>
<tr>
<th>Has configuration</th>
<th>No, there is not configuration on this object or ancestor folder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.</td>
</tr>
</tbody>
</table>

#### Type: policy

<table>
<thead>
<tr>
<th>Has configuration</th>
<th>No, there is not configuration on this object or ancestor folder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.</td>
</tr>
</tbody>
</table>

#### Type: etc

<table>
<thead>
<tr>
<th>Has configuration</th>
<th>No, there is not configuration on this object or ancestor folder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.</td>
</tr>
</tbody>
</table>

#### Type: bundle

<table>
<thead>
<tr>
<th>Has configuration</th>
<th>No, there is not configuration on this object or ancestor folder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.</td>
</tr>
</tbody>
</table>

#### Type: org

<table>
<thead>
<tr>
<th>Has configuration</th>
<th>No, there is not configuration on this object or ancestor folder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If there is configuration for this type directly assigned to the object or assigned to an ancestor folder.</td>
</tr>
<tr>
<td>Type: test</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>---</td>
</tr>
<tr>
<td>Has configuration</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type: service</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Has configuration</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type: app</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Has configuration</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type: readOnly</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Has configuration</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type: grouperSecurity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Has configuration</td>
<td>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.</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Template type</th>
<th>Application</th>
</tr>
</thead>
</table>

Pick the template type you want to run

<table>
<thead>
<tr>
<th>Create in this folder, do not create a subfolder</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key</th>
<th>application</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Friendly Name</th>
<th>application</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Application Template</th>
</tr>
</thead>
</table>

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: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?
- Assign "internet2:stem a:application:security:applicationReaders" to have inherited UPDATE privilege on Groups on the "internet2:stem a:application:service" folder?
- Assign "internet2:stem a:application:security:applicationReaders" to be a member of "internet2:stem a:application:security:applicationReaders"?
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

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,…
Grouper/TIER Training Environment

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

A set of Grouper images that are used during TIER training.

Course Syllabus

Images

Full Demo

--name grouper-demo-tier

Browse to https://localhost/gnt

Exercises

--name grouper-tier/grouper_training

Browse to https://localhost/grouper
Discussion

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