

Internet2 Techex 2018

Groupers in Action - 101

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Agenda

- **Introduction to Grouper**
- **101.1: Subjects**
- **101.2:**
 - a. **Folders**
 - b. **Groups**
 - c. **Attributes**
- **101.3: Finding Grouper objects**
- **101.4: Managing memberships**
- **101.5: Composite groups**

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Introduction to Grouper

Grouper in Action - 101

Policy and Governance

PRESIDENT
PROVOST



REGISTRAR



HUMAN
RESOURCES



FACULTY
AFFAIRS



CIO



...

Establish identity

Determine policy

Source Systems

HR

faculty, staff

SA

student,
postdoc

Finance

PI, approver

Courses

instructor,
enrolled

...

Manage Identity

Persons

Accounts

Organizations

Groups

Privileges

Authenticate
Authorize
Provide
Federate

Reflect
& Join

Systems and Services

Business systems

Network services

Library

...

Federated partners

Enrich identity

SCHOOLS
DEPARTMENTS

PROJECTS

PROGRAMS

TEAMS

USERS

...

Manage Groups

Apply policy

Manage Privileges

Grouper is...

Grouper is an **enterprise access management system** designed for the highly distributed management environment and heterogeneous information technology environment common to Universities.

- Coordinated Collaboration
- Single Point of Control
- Distributed Management

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Subjects

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Subjects

- Definition - A subject is a thing that can be assigned a Group membership, privilege, or permission
- Each institution defines their subjects, generally these are **people**, and **service principals** that authenticate system communication
- Grouper has built in subjects for “sys admin user”, “every entity”, and all groups

Subjects in UI

- Note: in the Grouper UI, subjects are referred to as “entities”

Subject attributes

- ID: Should be an opaque unchanging unique label
- Identifier: an attribute that uniquely looks up a subject, this can change over time and doesn't need to be opaque
- Name: String name for subject (generally "First Last")

Subject attributes (continued)

- **Description:** Long form text about subject. Should help a UI user differentiate between two subjects with same name
- **Member ID:** UUID for the subject, grouper assigned
- **Source ID:** Identifies which “source” a subject originates from

Subject attributes (continued)

Chris Hyzer

Unique ID: 10021368
email: mchyzer@upenn.edu
Name: Chris Hyzer
Description: Chris Hyzer (mchyzer, 10021368) (active) Staff - Isc-applications & Information Services - Application Architect (also: Alumni)

name_last_public:	Hyzer
preferred_first_name:	Chris
first_name:	Michael
name_first_public:	Chris
name_public:	Chris Hyzer
email_public:	mchyzer@upenn.edu
pennname:	mchyzer
email:	mchyzer@upenn.edu
description_lower:	chris hyzer (mchyzer, 10021368) (active) staff - isc-applications & information services - application architect (also: alumni),christopher,mchyzer@isc.upenn.edu,mchyzer@upenn.edu,michael
last_name:	Hyzer
eppn:	mchyzer@upenn.edu
Member ID:	c5c8ef55-76be-4b0d-9910-9efbf465cff3
Source ID:	pennperson
Source name:	Penn person

Subject source types

- Built-in
- SQL
 - Generally you identify a table or view with subjects as each row, columns are attrs
- LDAP
 - Filters find subjects and contain attributes

Subject identifiers

- ID: Look up a subject by its unchanging (generally opaque) ID. e.g. institutionID
 - Across all sources, the primary key for a subject can be its Grouper UUID, or the tuple (sourceId, subjectID)
 - Subjects have one and only one
- Identifier
 - Subjects can have multiple identifiers that uniquely identify the subject in the source
 - E.g. netId, eppn, (email address?)

Subject lookup, search

- Lookup returns 0 or 1 subjects
- Search returns 0 or many subjects
- You can lookup a subject by sourceID and subjectID
- Lookup by sourceID and subjectIdentifier
- Search by ID or identifier across all sources
- Search by free-form text

Subject storage in Grouper

- Grouper stores some subject information in a table
- Primary key is UUID
- Unique key is sourceId and subjectId
- Stores an identifier, name, description, search fields, sort fields

Unresolvable subjects

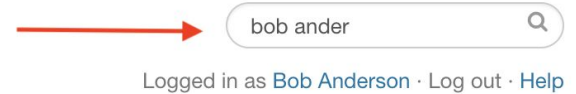
- A subject that was assigned things in Grouper, and no longer can be found
- Someone left the institution
- Or their subjectId changed (shouldnt happen :))
- USDU - Unresolvable Subject Deletion Utility - find unresolvable subjects and removes them from Grouper

Subject API

- Configure a new source by implementing a Java interface (few or no people do this)
- Interface with subjects via Grouper WS
- Lookup or search for subjects

Hands on: Subjects in UI

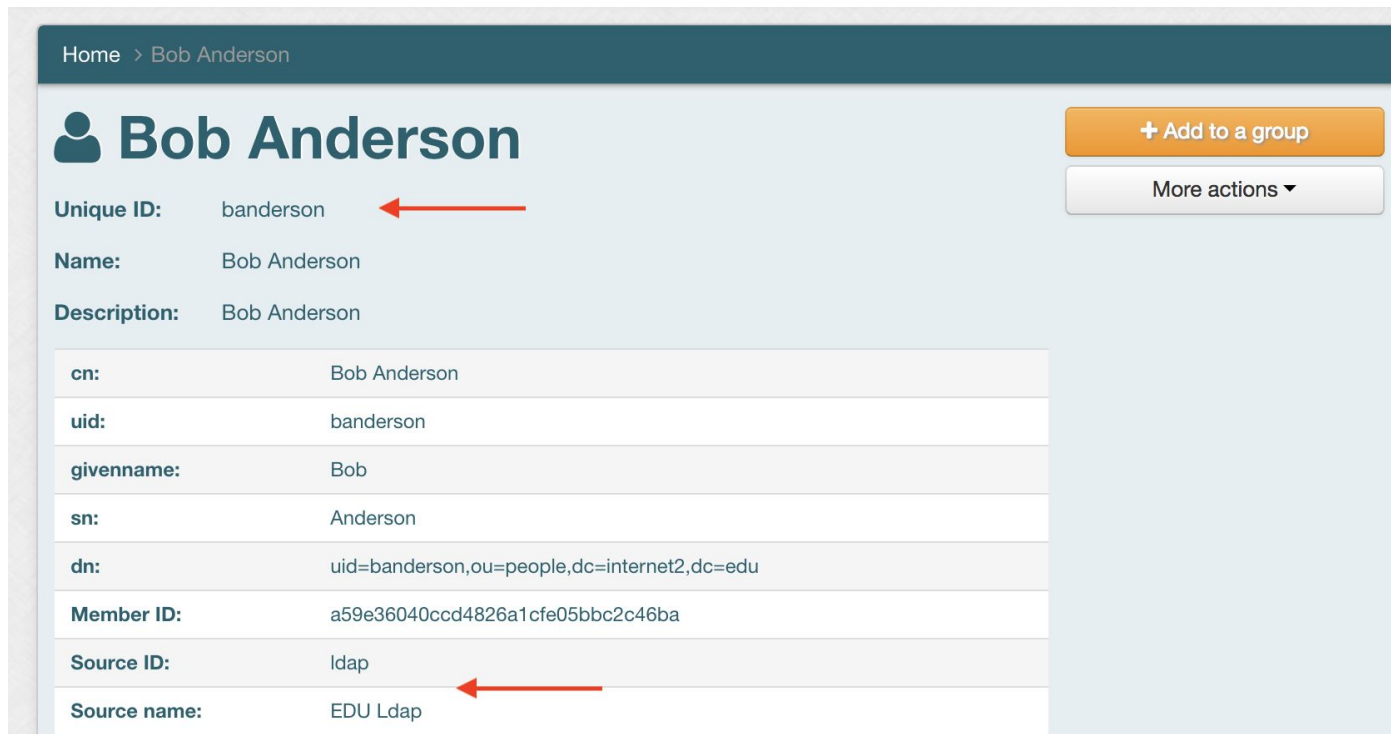
- Search for “Bob Ander” in upper right



A screenshot of the Grouper web application interface. The page has a dark teal header with "Home" on the left and "Grouper" in the center. Below the header, the text "Institute of Higher Education" is displayed. A paragraph of introductory text follows. The main content area is titled "Recent activity" and features a table with two columns: "Recent activity" and "Activity Date". Below the table, there are three panels: "My favorites" (containing "sysadmingroup" and "etc"), "Groups I manage" (containing "banner_user" and "app : banner"), and "My services" (containing "Central IT production Apps"). On the left side of the interface, there is a sidebar with a "Create new group" button, a "Quick links" section, and a "Browse folders" section with a tree view showing "Root", "app", "basis", and "bundle".

Hands on: Look at LDAP Subject

- Click on the result: Bob Anderson
- Click: More
- Note the source ID and unique ID



Home > Bob Anderson

Bob Anderson [+ Add to a group](#)

[More actions ▾](#)

Unique ID: banderson ←

Name: Bob Anderson

Description: Bob Anderson

cn:	Bob Anderson
uid:	banderson
givenname:	Bob
sn:	Anderson
dn:	uid=banderson,ou=people,dc=internet2,dc=edu
Member ID:	a59e36040ccd4826a1cfe05bbc2c46ba
Source ID:	ldap
Source name:	EDU Ldap ←

Hands on: Subject diagnostics

- Click Misc -> Subject API diagnostics
- Select EDU Ldap source
- For subject ID enter: banderson
- For search string: o

Hands on: Subject diagnostics

Home > Miscellaneous > Subject API diagnostics

Subject API diagnostics

Source ID:

EDU Ldap (person)

The Source ID is configured in the subject.properties file. Some sources are internal for Grouper and one or more are custom for your institution. The fewer the better.

Subject ID:

banderson

Enter a Subject ID to search for. This should be an unchanging opaque identifier. This defaults to the subject.properties source param 'subjectIdToFindOnCheckConfig' or to a hardcoded default value if not configured, which is used in the [status servlet](#).

Subject Identifier:

someSubjectIdentifier

Enter a Subject Identifier to search for. This is any identifier that uniquely identifies this subject in this source. e.g. netId, eppn, etc. It is nice if identifiers are unique across sources, which defaults to the subject.properties source param 'subjectIdentifierToFindOnCheckConfig' or to a hardcoded default value if not configured. This is used in the [status servlet](#).

Search String:

o

Enter a Search String to search for. This usually searches based on name, id, identifier, description, etc. This defaults to the subject.properties source param 'stringToFindOnCheckConfig' or to a hardcoded default value if not configured, which is used in the [status servlet](#).

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Folders

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Folder

- Definition: Folder (aka stem) is a namespace which contains groups, folders, and attributes
- Each child object is in on hierarchical parent folder
- Folders themselves can be assigned custom attributes
- Folder extensions are separated by commas

Folder fields

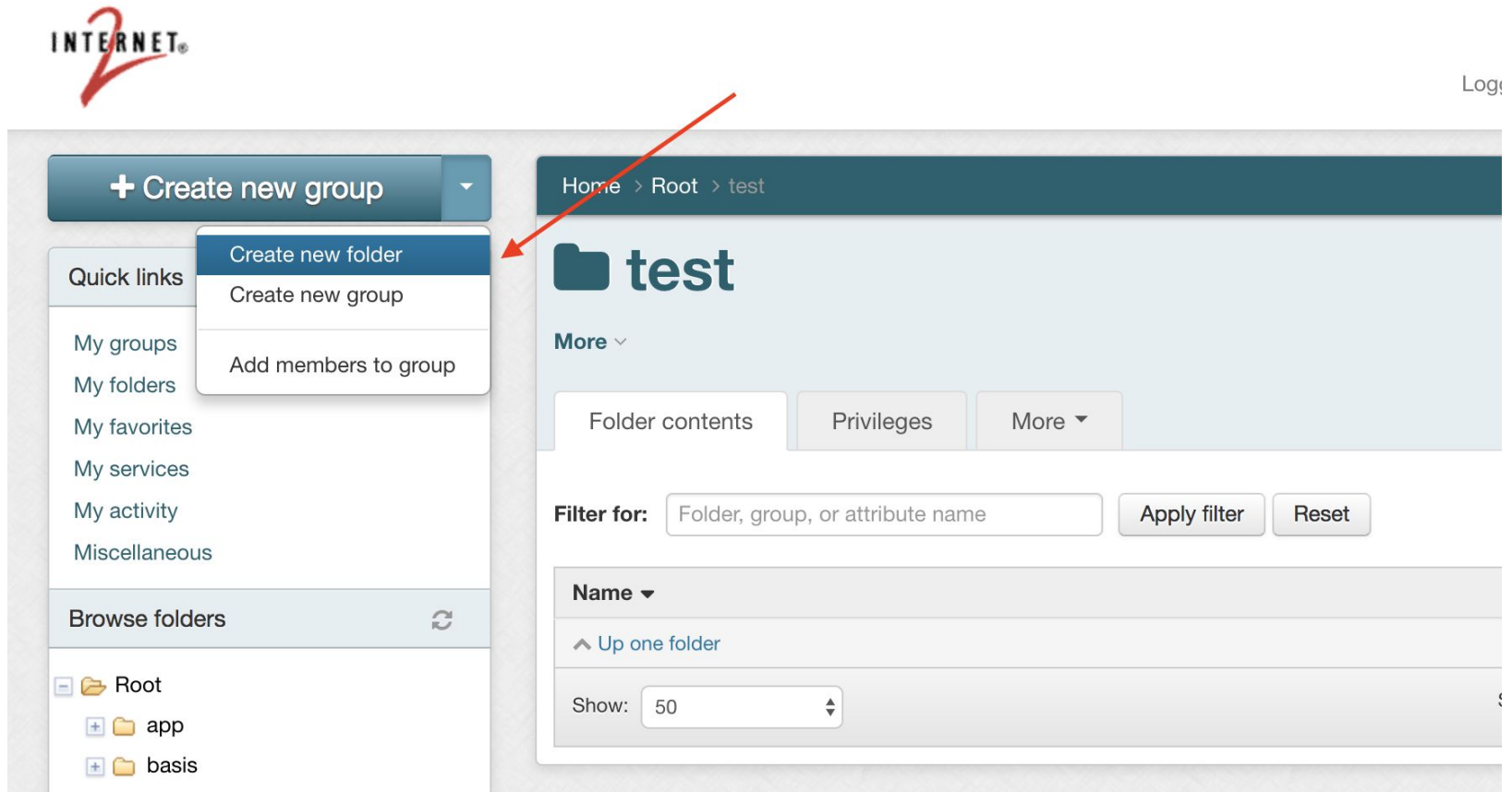
- UUID: All Grouper objects have a UUID
- Extension: “ID” on UI, label that is the name
 - Shouldn't change
 - Referred to by applications on lookups
- Display extension: “name” on UI, label is the name seen in UI
 - Can change
- Description: Free form documentation

Folder fields (continued)

- Name: (ID Path in UI): extension of all parent folders and this folder separated by colons
 - E.g. app:banner:etc
- Display name: (Path in UI): display extension of all parent folder and this folder separated by colons
 - E.g. app:Banner:Administrative folder

Hands on: Creating a folder

- Navigate to the “test” folder
- Click “Create new folder”



The screenshot shows a web interface for a file management system. In the top left corner, there is a logo for 'INTERNET 2'. The main navigation bar includes a '+ Create new group' button with a dropdown arrow. A dropdown menu is open, showing three options: 'Create new folder' (highlighted with a blue background), 'Create new group', and 'Add members to group'. A red arrow points from the 'Create new folder' option to the 'test' folder in the main content area. The main content area shows a breadcrumb trail 'Home > Root > test' and a large folder icon labeled 'test'. Below this, there are tabs for 'Folder contents', 'Privileges', and 'More'. A filter section is visible with a text input field containing 'Folder, group, or attribute name', and buttons for 'Apply filter' and 'Reset'. At the bottom, there is a 'Name' dropdown menu and a 'Show: 50' dropdown menu.

Hands on: Creating a folder (continued)

- Fill in details, and save

Home > New folder

New folder

Create in this folder:
Enter a folder name or [search for a folder where you are allowed to create new folders](#).
Enter 'Root' for the top level folder

Folder name:
Name is the label that identifies this folder, and might change.

Folder ID: Edit the ID
ID is the unique identifier for this folder. It should be short and simple, and might have character restrictions. The ID should rarely change, if ever.

Description:
Description contains notes about the folder, which could include: what the folder represents, why it was created, etc.

Hands on: Editing a folder

- In the folder you created, edit it

Home > Root > test > My Folder

My Folder

this is my folder

More ▾

Folder contents Privileges More ▾

Filter for:

Name ▾

[^ Up one folder](#)

Show: ▾

Showing 1-0 of 0 · [First](#) | [Prev](#) | [Next](#) | [Last](#)

The screenshot shows a file management interface. At the top, a breadcrumb trail reads 'Home > Root > test > My Folder'. Below this, the folder name 'My Folder' is displayed in a large font, accompanied by a folder icon. To the right of the folder name, a red arrow points to an orange 'Edit folder' button. Below the folder name, there is a description 'this is my folder' and a 'More' dropdown menu. Underneath, there are three tabs: 'Folder contents', 'Privileges', and 'More'. A filter section follows, with a 'Filter for:' label, a text input field containing 'Folder, group, or attribute name', and 'Apply filter' and 'Reset' buttons. At the bottom, there is a 'Name' dropdown menu, a link to 'Up one folder', a 'Show:' dropdown menu set to '50', and pagination information: 'Showing 1-0 of 0 · First | Prev | Next | Last'.

Hands on: Editing a folder (continued)

- Change some fields, Save

Home > Root > test > My Folder

My Folder

Edit folder

Folder name:
Name is the label that identifies this folder, and might change.

Folder ID:
ID is the unique identifier for this folder. It should be short and simple, and might have character restrictions. The ID should rarely change, if ever.

Description:
Description contains notes about the folder, which could include: what the folder represents, why it was created, etc.

Hands on: Moving a folder

- Click More actions -> Move folder

The screenshot shows a web interface for managing a folder named "My Bestest Folder". The breadcrumb path is "Home > Root > test > My Bestest Folder". The folder name is displayed in a large font, and there is a description "this is my folder. see?". An orange "Edit folder" button is visible in the top right. Below the folder name, there is a "More" dropdown menu. A "More actions" button is also present, which has opened a dropdown menu. The menu items are: "Add to my favorites", "Create new folder", "Create new group", "Create new attribute definition", "Create new attribute name", "Attribute assignments", "Copy folder", "Delete folder", "Edit folder", and "Move folder". The "Move folder" option is highlighted in a dark blue bar. Below the menu, there are tabs for "Folder contents", "Privileges", and "More". A "Filter for:" section contains a text input field with the placeholder "Folder, group, or attribute name", an "Apply filter" button, and a "Reset" button. At the bottom, there is a "Name" dropdown, a link to "Up one folder", and a "Show:" dropdown set to "50".

Home > Root > test > My Bestest Folder

My Bestest Folder

this is my folder. see?

More ▾

Folder contents Privileges More ▾

Filter for:

Name ▾

[^ Up one folder](#)

Show: ▾

- Add to my favorites
- Create new folder
- Create new group
- Create new attribute definition
- Create new attribute name
- Attribute assignments
- Copy folder
- Delete folder
- Edit folder
- Move folder**

Hands on: Moving a folder (continued)

- Move to “app”, click Move

Home > Root > test > My Bestest Folder

My Bestest Folder

Move folder

Move to this folder:

Enter a folder name or [search for a folder where you are allowed to create new subfolders](#).

Set alternate names for groups?

If you select this option, the alternate ID path of the groups being moved will be set to the groups' old ID path.

Move

Cancel

Hands on: Copying a folder

- Click More actions -> Copy folder

Home > Root > app > My Bestest Folder

My Bestest Folder

this is my folder. see?

More ▾

Folder contents Privileges More ▾

Filter for:

Name ▾

▲ Up one folder

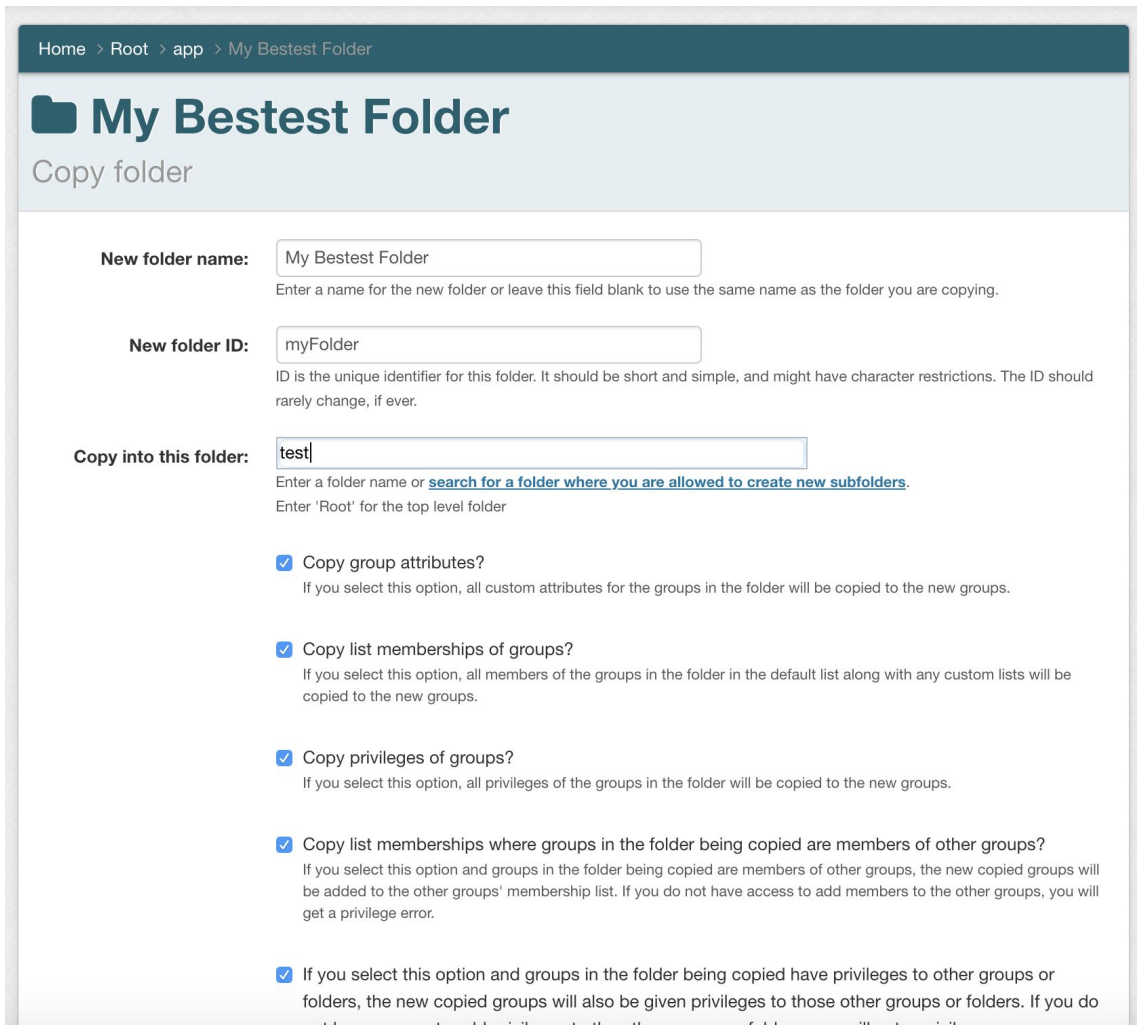
Show: Show

More actions ▾

- Add to my favorites
- Create new folder
- Create new group
- Create new attribute definition
- Create new attribute name
- Attribute assignments
- Copy folder**
- Delete folder
- Edit folder
- Move folder

Hands on: Copying a folder (continued)

- Move to test, click Copy



Home > Root > app > My Bestest Folder

My Bestest Folder

Copy folder

New folder name:
Enter a name for the new folder or leave this field blank to use the same name as the folder you are copying.

New folder ID:
ID is the unique identifier for this folder. It should be short and simple, and might have character restrictions. The ID should rarely change, if ever.

Copy into this folder:
Enter a folder name or [search for a folder where you are allowed to create new subfolders](#).
Enter 'Root' for the top level folder

Copy group attributes?
If you select this option, all custom attributes for the groups in the folder will be copied to the new groups.

Copy list memberships of groups?
If you select this option, all members of the groups in the folder in the default list along with any custom lists will be copied to the new groups.

Copy privileges of groups?
If you select this option, all privileges of the groups in the folder will be copied to the new groups.

Copy list memberships where groups in the folder being copied are members of other groups?
If you select this option and groups in the folder being copied are members of other groups, the new copied groups will be added to the other groups' membership list. If you do not have access to add members to the other groups, you will get a privilege error.

If you select this option and groups in the folder being copied have privileges to other groups or folders, the new copied groups will also be given privileges to those other groups or folders. If you do not have access to add members to the other groups, you will get a privilege error.

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Groups

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Group

- Definition: Group is an object which contains members
- A group is located in a folder
- Groups can have attributes assigned to them

Group fields

- UUID: All Grouper objects have a UUID
- Extension: “ID” on UI, label that is the name
 - Shouldn't change
 - Referred to by applications on lookups
- Display extension: “name” on UI, label is the name seen in UI
 - Can change
- Description: Free form documentation

Group fields (continued)

- Name: (ID Path in UI): extension of all parent folders and this group separated by colons
 - E.g. app:banner:etc:banner_admin
- Display name: (Path in UI): display extension of all parent folder and this folder separated by colons
 - E.g. app:Banner:Administrative folder:Banner Administrators

Hands on: Creating a group

- Navigate to the “test” folder
- Click “Create new group”



u
Logged in as

A screenshot of a web application interface. At the top left, there is a dark teal button with a white plus sign and the text "+ Create new group". Below this is a sidebar with a "Quick links" section containing a list of items: "My groups", "My folders", "My favorites", "My services", "My activity", and "Miscellaneous". The main content area shows a breadcrumb trail "Home > Root > test" above a folder icon and the text "test". Below this is a "More" dropdown menu with three options: "Folder contents", "Privileges", and "More". At the bottom, there is a "Filter for:" label followed by a text input field containing "Folder, group, or attribute name", and two buttons: "Apply filter" and "Reset". A "Name" dropdown menu is partially visible at the very bottom.

+ Create new group

Quick links

- My groups
- My folders
- My favorites
- My services
- My activity
- Miscellaneous

Home > Root > test

test

More

Folder contents Privileges More

Filter for: Folder, group, or attribute name Apply filter Reset

Name

Hands on: Creating a group (continued)

- Fill in details, and save

Home > New group

New group

Create in this folder:
Enter a folder name or [search for a folder where you are allowed to create new groups](#).

Group name:
Name is the label that identifies this group, and might change.

Group ID: Edit the ID
ID is the unique identifier for this group. It should be short and simple, and might have character restrictions. The ID should rarely change, if ever.

Description:
Description contains notes about the group, which could include: what the group represents, why it was created, etc.


[Show advanced properties](#) ▾

Hands on: Editing a group

- In the group you created, edit it

The screenshot shows a web interface for managing a group named 'myGroup'. The breadcrumb trail at the top reads 'Home > Root > test > myGroup'. The group name 'myGroup' is displayed with a group icon. Below the name, there is a description 'This is my group' and a 'More' dropdown menu. A navigation bar contains three tabs: 'Members', 'Privileges', and 'More'. The 'Members' tab is active. Below the navigation bar, there is a text prompt: 'The following table lists all entities which are members of this group.' followed by a red arrow pointing to the right. Below this prompt, there is a 'Filter for:' section with a dropdown menu set to 'All members' and a text input field containing 'Member name'. At the bottom left, there is a button labeled 'Remove selected members'. On the right side, there is an orange button '+ Add members' and a grey button 'More actions'. A dropdown menu is open from the 'More actions' button, listing several options: 'Add to my favorites', 'Join group', 'Copy group', 'Delete group', 'Edit group' (which is highlighted in blue), 'Edit composite', 'Move group', 'Export members', and 'Import members'.

Home > Root > test > myGroup

 myGroup

+ Add members

More actions ▾

This is my group

More ▾

Members Privileges More ▾

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

Filter for: All members ▾ Member name

Remove selected members

Add to my favorites
Join group
Copy group
Delete group
Edit group
Edit composite
Move group
Export members
Import members

Hands on: Editing a group (continued)

- Change some fields, Save

Home > Root > test > myGroup

myGroup

Edit group

Group name:
Name is the label that identifies this group, and might change.

Group ID:
ID is the unique identifier for this group. It should be short and simple, and might have character restrictions. The ID should rarely change, if ever.

Description:
Description contains notes about the group, which could include: what the group represents, why it was created, etc.

Show advanced properties ▾

Hands on: Moving a group

Home > Root > test > myGroup



This is my group. See?

More ▾

Members

Privileges

More ▾

+ Add members

More actions ▾

Add to my favorites

Join group

Copy group

Delete group

Edit group

Edit composite

Move group

Export members

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

Filter for:

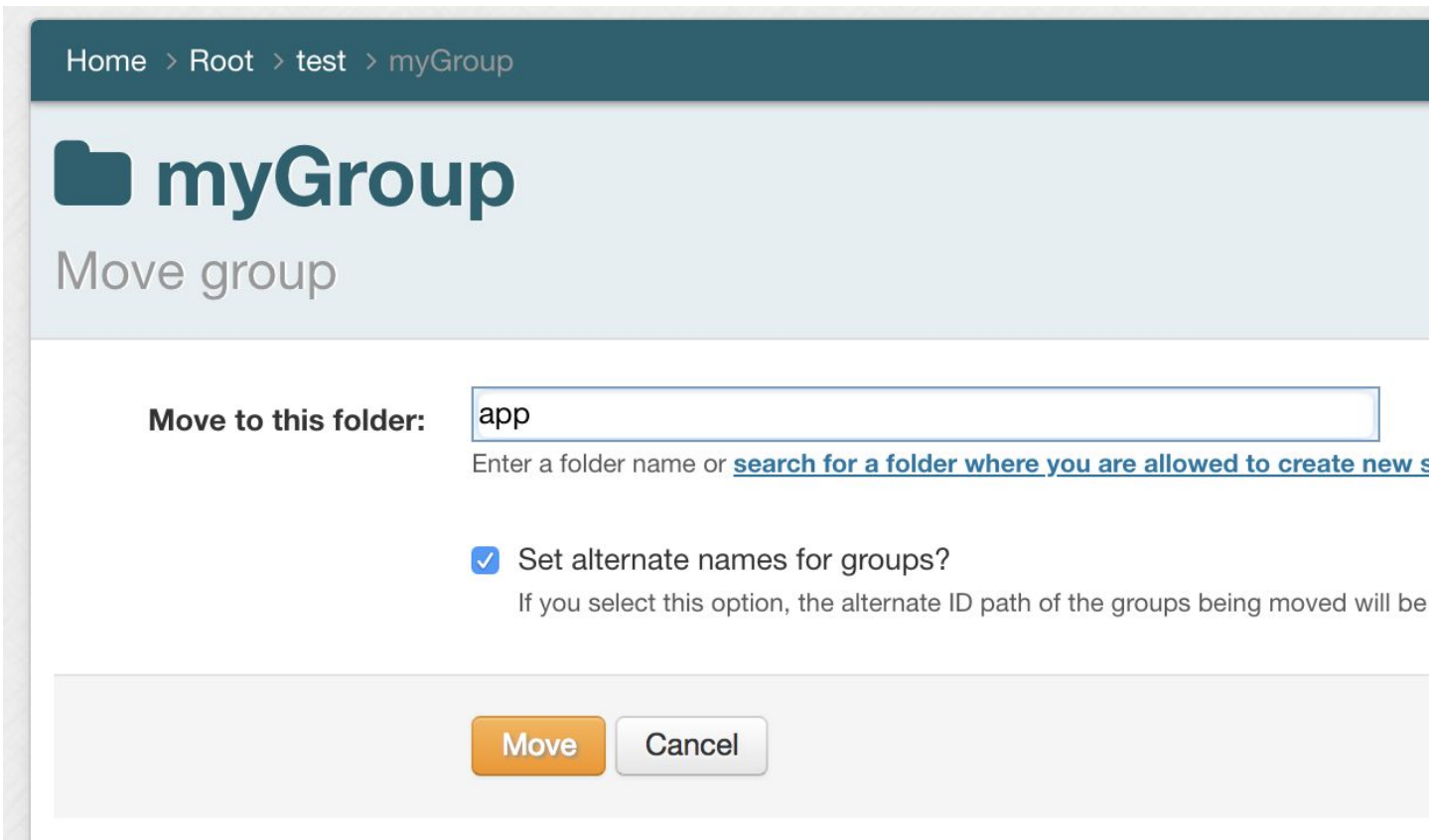
All members

Member name

Remove selected members

Hands on: Moving a group (continued)

- Move to “app”, click Move



Home > Root > test > myGroup

myGroup

Move group

Move to this folder:

Enter a folder name or [search for a folder where you are allowed to create new s](#)

Set alternate names for groups?
If you select this option, the alternate ID path of the groups being moved will be

Hands on: Copying a group

- Click More actions -> Copy group

Home > Root > app > myGroup

myGroup

This is my group. See?

More ▾

Members Privileges More ▾

+ Add members

More actions ▾

- Add to my favorites
- Join group
- Copy group**
- Delete group
- Edit group
- Edit composite
- Move group
- Export members
- Import members
- Remove all members
- Attestation
- Deprovisioning
- View audit log

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

Filter for: All members ▾ Member name

Remove selected members

Entity name ▾ Membership

Show: 50 ▾ Showing

Hands on: Copying a group (continued)

- Move to test, click Copy

myGroup

Copy group

New group name:
Name is the label that identifies this group, and might change.

New group ID:
ID is the unique identifier for this group. It should be short and simple, and must be all lowercase with no spaces or special characters. The ID must be unique within this folder, and should rarely change.

Copy into this folder:
Enter a folder name or [search for a folder where you are allowed to create new groups.](#)

Copy attributes?
If you select this option, all custom attributes will be copied to the new group. If you do not have read access to all attributes in the group, you will get a privilege error.

Copy list memberships of the group?
If you select this option, all members of the group in the default list along with any custom lists will be copied to the new group. If you do not have read access to any of the custom lists, you will get a privilege error.

Copy privileges of the group?
If you select this option, all privileges of the group will be copied to the new group. If you do not have read access to any of the privileges, you will get a privilege error.

Copy list memberships where the group is a member of other groups?
If you select this option and the group is a member of other groups, the new copied group will be added to the other groups' membership list. If you do not have access to add members to the other groups, you will get a privilege error.

Copy privileges where the group has privileges to other groups or folders?
If you select this option and the group has privileges to other groups or folders, the new copied group will also be given privileges to those other groups or folders. If you do not have access to add privileges to the other groups or folders, you will get a privilege error.

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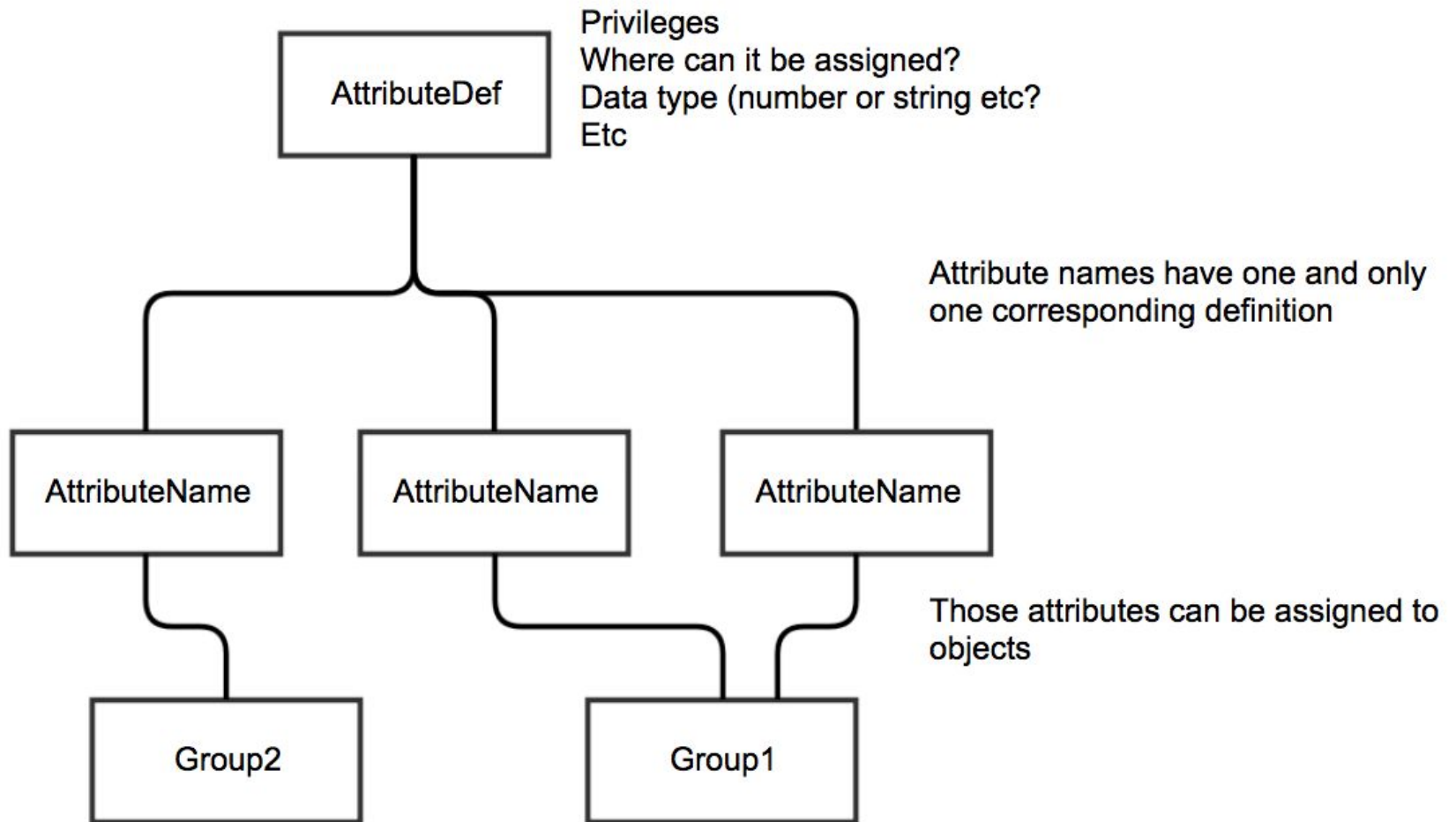
Attributes

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Attribute

- Definition: Attribute is metadata attached to another Grouper object
- An attribute consists of a definition, and a name
- An attribute definition object and name object are located in a folder
- Attributes can have values
- The definition has all the configuration
- The name is a name and is what is assigned

Attribute diagram



Attribute definition fields

- UUID: All Grouper objects have a UUID
- Extension: “ID” on UI, label that is the name
 - Shouldn't change
 - Referred to by applications on lookups
- Description: Free form documentation
- Name: (ID Path in UI): extension of all parent folders and this attribute definition separated by colons
- E.g. app:banner:attr:banner_expire_date

Attribute definition fields (continued)

- Type: e.g. attribute or permission
- Assign to:
 - Group
 - Folder
 - Member
 - Membership
 - Immediate membership
 - Attribute definition
 - An assignment of one of the above (one-level deep)

Attribute definition fields (continued)

- Multi-assignable: can this attribute be assigned to the same owner more than once
- Value type: (generally none or String)
 - No value
 - String
 - Integer
 - Decimal
 - Timestamp
 - Member UUID

Attribute definition fields (continued)

- Multi-valued: can this attribute assignment have multiple values

Attribute name fields

- **UUID:** All Grouper objects have a UUID
- **Extension:** “ID” on UI, label that is the name
 - Shouldn't change
 - Referred to by applications on lookups
- **Display extension:** “name” on UI, label is the name seen in UI
 - Can change
- **Description:** Free form documentation

Attribute name fields (continued)

- Name: (ID Path in UI): extension of all parent folders and this group separated by colons
 - E.g. app:banner:etc:banner_admin
- Display name: (Path in UI): display extension of all parent folder and this folder separated by colons
 - E.g. app:Banner:Administrative folder:Banner Administrators
- Corresponding attribute definition

Hands on: Creating an attribute

- Navigate to the “test” folder
- Click “Create new attribute definition”

The screenshot shows a web interface for a folder named "test". The breadcrumb path is "Home > Root > test". The folder name "test" is displayed with a folder icon. There are buttons for "Edit folder" and "More actions". Below these 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 with a "Name" header is visible, containing entries like "Up one folder", "My Bestest Folder", and "myGroup". A dropdown menu is open from the "More actions" button, with "Create new attribute definition" highlighted. A red arrow points from the table area to this menu item.

Home > Root > test

test

Edit folder

More actions ▾

More ▾

Folder contents Privileges More ▾

Filter for: Apply filter Reset

Name ▾

^ Up one folder

My Bestest Folder

myGroup

Show: ▾

Sho

- Add to my favorites
- Create new folder
- Create new group
- Create new attribute definition**
- Create new attribute name
- Attribute assignments
- Copy folder
- Delete folder
- Edit folder
- Move folder

Hands on: Creating an attribute (continued)

Create in this folder:

Enter a folder name or [search for a folder where you are allowed to create new attribute definitions.](#)

Attribute definition ID:

ID is the unique identifier for this attribute definition. It should be short and simple, and might have character restrictions. The ID should rarely change, if ever.

Description:

Description contains notes about the attribute definition, which could include: what the attribute definition represents, why it was created, etc.

Type:

Attribute definition type describes the attribute definition. Generally it will be attribute or permission. Type is used for templates, limit describes a permission, and service identifies which application the object refers to.

Assign to:

- | | |
|--|---|
| <input type="checkbox"/> Attribute definition | <input type="checkbox"/> Attribute definition attribute assignment |
| <input checked="" type="checkbox"/> Folder | <input type="checkbox"/> Folder attribute assignment |
| <input type="checkbox"/> Group / Role / Local entity | <input type="checkbox"/> Group / Role / Local entity attribute assignment |
| <input type="checkbox"/> Member | <input type="checkbox"/> Member attribute assignment |
| <input type="checkbox"/> Membership | <input type="checkbox"/> Membership attribute assignment |
| <input type="checkbox"/> Membership - immediate only | <input type="checkbox"/> Membership - immediate only - attribute assignment |

Designate which types of objects that this definition can be assigned to. There are six base object types, or you can assign attributes to the assignment of attributes to those base object types. Membership can be assigned to an immediate or an effective membership, and will still exist as an orphan if the membership is unassigned until the membership is reassigned. Immediate membership attribute assignments are only assignable to immediate memberships and are automatically deleted once the membership is unassigned.

Multi-assignable:

If this attribute can be assigned to the same owner object more than once. For instance, a Group can have more than one Rule attached to it, so the Rule attribute is multi-assignable

Value type:

If this attribute assignment holds one or more values, this is the type. If there are no allowed values, select No value.

Hands on: Creating an attribute name

- Go to the “myAttrDef” attribute def
- Click “Create new attribute name”

Home > Root > test > myAttrDef

Attribute definition

myAttrDef

my attribute definition

More ▾

Attribute names Privileges More ▾

Edit attribute

More actions ▾

- Add to my favorites
- Delete attribute
- Edit attribute
- Create new attribute name**
- Attribute assignments
- Deprovisioning

The following table lists all attribute names associated with this attribute definition

Filter for:

Hands on: Creating an attr name (continued)

New attribute name

Attribute definition:

The attribute definition holds the settings and security for attribute. Each attribute definition can have multiple attribute names. Every attribute name is associated with one and only one attribute definition.

Folder:

Enter a folder name or [search for a folder where you are allowed to create new attribute def names.](#)

Name of attribute name:

 *

Name is the label that identifies this attribute name, and might change.

ID of attribute name:

 Edit the ID *

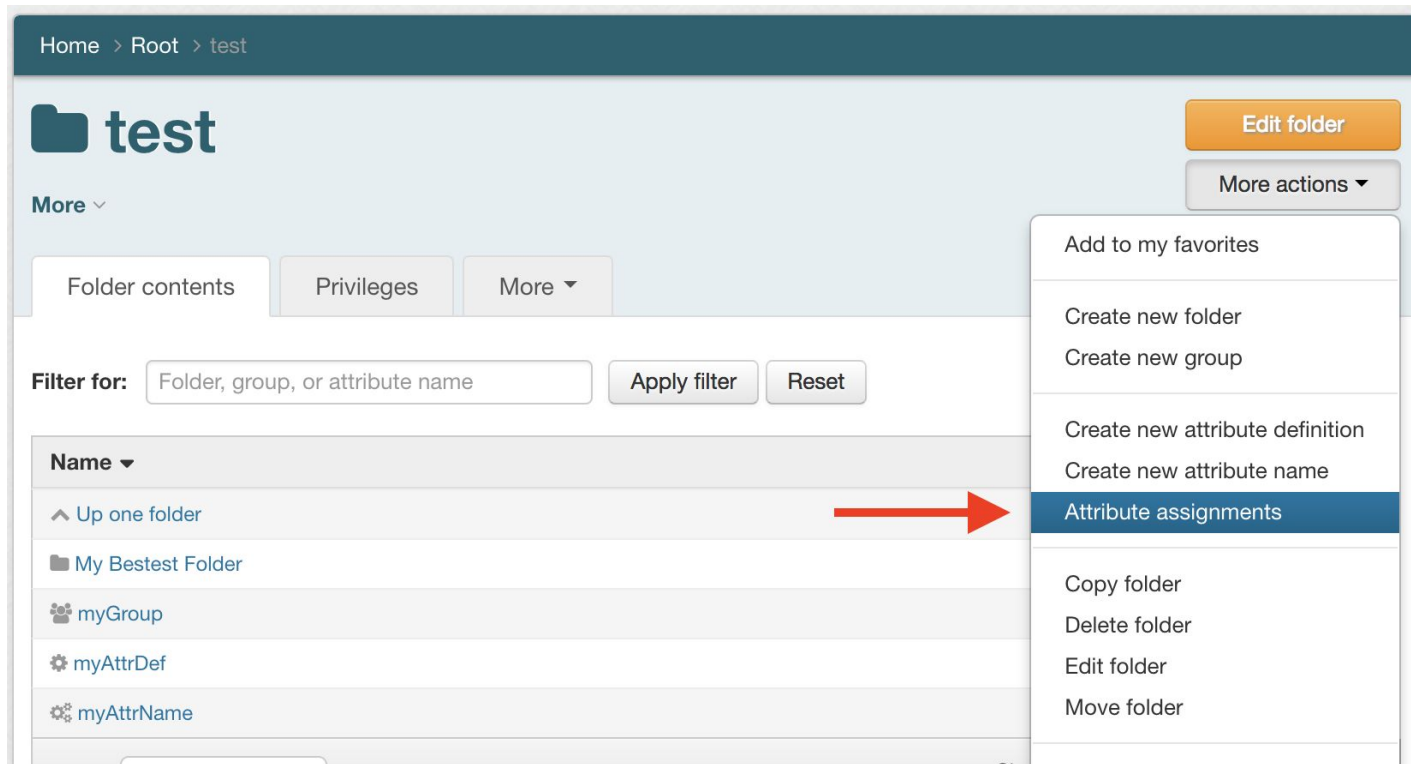
ID is the unique identifier you set for this attribute name. The ID must be unique within this folder, and should rarely change. It can be used by other systems to refer to this attribute name. The ID field cannot contain spaces or special characters.

Description:

Description contains notes about the attribute name, which could include: what the attribute name represents, why it was created, etc.

Hands on: Assigning an attribute

- Go to the “test” folder
- Click on More actions -> Attribute assignments



The screenshot shows a web interface for a folder named "test". The breadcrumb path is "Home > Root > test". The folder name "test" is displayed with a folder icon. There are buttons for "Edit folder" (orange) and "More actions" (grey). 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", an "Apply filter" button, and a "Reset" button. A list of items is shown with a "Name" dropdown. The items are: "Up one folder" (with a red arrow pointing to the "More actions" menu), "My Bestest Folder", "myGroup", "myAttrDef", and "myAttrName". The "More actions" menu is open, showing options: "Add to my favorites", "Create new folder", "Create new group", "Create new attribute definition", "Create new attribute name", "Attribute assignments" (highlighted in blue), "Copy folder", "Delete folder", "Edit folder", and "Move folder".

Hands on: Assign attribute (continued)

- Click Assign attribute

Home > Root > test


test

More actions ▾



Edit folder

More ▾

Folder contents Privileges

Attribute Assignments  **+ Assign attribute**

The following table lists all attributes assigned to this folder

Assignment type	Attribute name	Enabled?	Assignment values	Attribute definition	Choose action
Direct assignment	 provision_to	enabled	pspng_groupOfUniqueNames ▾	 provision_to_def	Actions ▾

Hands on: Assign attribute (continued)

- Find myAttrName, click Save

The screenshot shows a web interface for a folder named 'test'. At the top left, there is a folder icon and the name 'test'. To the right of the folder name are two buttons: 'Edit folder' (orange) and 'More actions' (white with a dropdown arrow). Below the folder name is a 'More' dropdown menu. Underneath are two tabs: 'Folder contents' and 'Privileges'. The main content area is titled 'Attribute Assignments' and includes a '+ Assign attribute' button (orange). Below this, a text line states: 'The following table lists all attributes assigned to this folder'. A form is displayed with the label 'Attribute name:' and a text input field containing 'my'. Below the input field is a gear icon followed by 'test:myAttrName'. To the right of the gear icon, there is a note: 's. Generally multiple attribute names are related to one attribute definition.'. At the bottom of the form is a 'Save' button (orange).

Hands on: Assign value

- Find myAttrName assignment
- Click Actions -> Add value

The screenshot shows a folder named 'test' with a folder icon. Below the folder name are buttons for 'Edit folder' and 'More actions'. There are also tabs for 'Folder contents' and 'Privileges'. The main section is titled 'Attribute Assignments' and includes a '+ Assign attribute' button. A text block states: 'The following table lists all attributes assigned to this folder'. Below this is a table with the following data:

Assignment type	Attribute name	Enabled?	Assignment values	Attribute definition	Choose action
Direct assignment	⚙️ provision_to	enabled	pspng_groupOfUniqueNames ▾	⚙️ provision_to_def	Actions ▾
Direct assignment	⚙️ myAttrName	enabled		⚙️ myAttrDef	Actions ▾

The 'Actions' dropdown for the 'myAttrName' row is open, showing the following options:

- Add value
- Add metadata assignment
- Edit assignment details
- Delete the attribute assignment

Hands on: Assign value (continued)

- Use “Some value”


Home > Root > test


test Edit folder

More More actions ▾

Folder contents Privileges

Owner folder test

Attribute name  myAttrName

Attribute definition  myAttrDef

Attribute assignment UUID 87a2fb61bbe749b3a3d4ae08e400087e

Value to add

Submit Cancel

Hands on: Assign value (continued)

- See “Some value”

Home > Root > test

test

More ▾

Folder contents Privileges

Edit folder


More actions ▾

Attribute Assignments

+ Assign attribute

The following table lists all attributes assigned to this folder

Assignment type	Attribute name	Enabled?	Assignment values	Attribute definition	Choose action
Direct assignment	⚙️ provision_to	enabled	pspng_groupOfUniqueNames ▾	⚙️ provision_to_def	Actions ▾
Direct assignment	⚙️ myAttrName	enabled	Some value ▾	⚙️ myAttrDef	Actions ▾



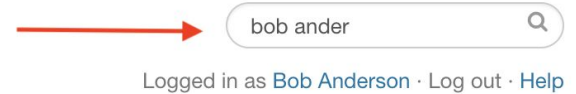
Internet2 Techex 2018

*Finding
Grouper
Objects*

Grouper in Action - 101

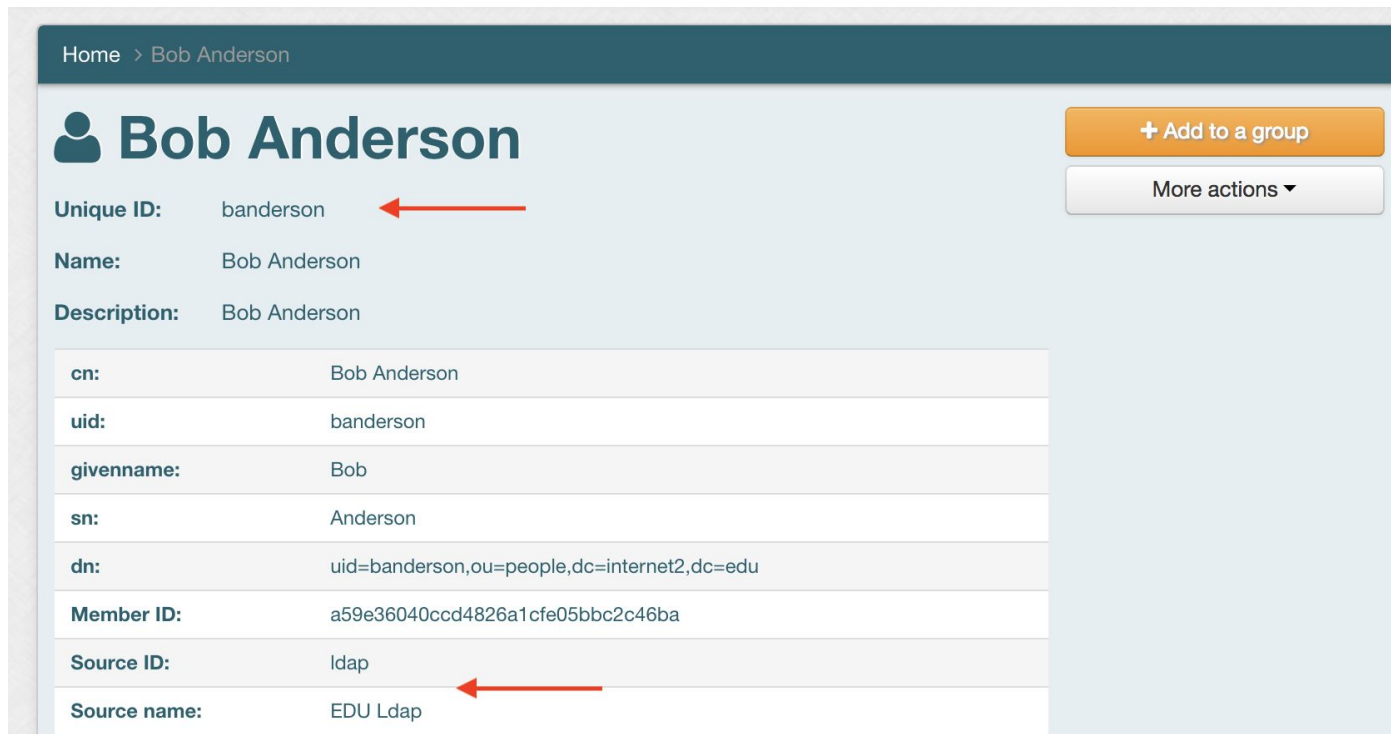
Hands on: Subjects in UI

- Search for “Bob Ander” in upper right

A screenshot of the Grouper web application interface. The page has a dark teal header with "Home" on the left and "Grouper" in large font on the right, followed by "Institute of Higher Education". Below the header is a light blue section with a paragraph of text: "This website allows you to manage groups associated with your organization and the members of those groups. For a list of answers to frequently asked questions, refer to the **support documentation**." The main content area is titled "Recent activity" and has two columns: "Recent activity" and "Activity Date". There are three cards below: "My favorites" with a gear icon, "Groups I manage" with a gear icon, and "My services" with a gear icon. The "My favorites" card lists "sysadmingroup" and "etc". The "Groups I manage" card lists "banner_user" with "app : banner" below it. The "My services" card lists "Central IT production Apps". On the left side of the interface, there is a sidebar with a dark teal button "+ Create new group" and a "Quick links" section with items like "My groups", "My folders", "My favorites", "My services", "My activity", and "Miscellaneous". Below that is a "Browse folders" section with a refresh icon and a list of folders: "Root", "app", "basis", and "bundle".


Hands on: Look at LDAP Subject

- Click on the result: Bob Anderson
- Click: More
- Note the source ID and unique ID



The screenshot shows a user profile for Bob Anderson. The profile includes a header with a breadcrumb 'Home > Bob Anderson', a user icon, the name 'Bob Anderson', and two buttons: '+ Add to a group' and 'More actions'. Below the header, there are three fields: 'Unique ID: banderson' (with a red arrow pointing to it), 'Name: Bob Anderson', and 'Description: Bob Anderson'. A table below these fields lists LDAP attributes: 'cn: Bob Anderson', 'uid: banderson', 'givenname: Bob', 'sn: Anderson', 'dn: uid=banderson,ou=people,dc=internet2,dc=edu', 'Member ID: a59e36040ccd4826a1cfe05bbc2c46ba', 'Source ID: ldap' (with a red arrow pointing to it), and 'Source name: EDU Ldap'.

Home > Bob Anderson

 **Bob Anderson** [+ Add to a group](#) [More actions ▾](#)

Unique ID: banderson ←

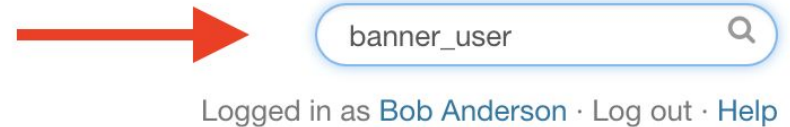
Name: Bob Anderson

Description: Bob Anderson

cn:	Bob Anderson
uid:	banderson
givenname:	Bob
sn:	Anderson
dn:	uid=banderson,ou=people,dc=internet2,dc=edu
Member ID:	a59e36040ccd4826a1cfe05bbc2c46ba
Source ID:	ldap ←
Source name:	EDU Ldap

Hands on: Find a group

- Search for “banner_user” in upper right



Home

Grouper

Institute of Higher Education

This website allows you to manage groups associated with your organization and the members of those groups. For a list of answers to frequently asked questions, refer to the **support documentation**.

Hands on: Find a group (continued)


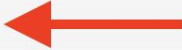


- Click on “banner_user”

Home > Search results

Search results

Search for:

Filter for:

Folder	Name
app : banner	 banner_user 
app : banner	 banner_user_allow
app : banner	 banner_user_deny

Show:

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

Hands on: Make a favorite

- Find a group, folder, and subject
- Click: More actions -> Add to my favs

The screenshot shows a user profile for Bob Anderson. The breadcrumb navigation is 'Home > Bob Anderson'. The profile name 'Bob Anderson' is displayed with a person icon. Below the name, there are fields for 'Unique ID: banderson', 'Name: Bob Anderson', and 'Description: Bob Anderson'. A 'More' dropdown menu is open, showing options: '+ Add to a group', 'More actions', 'Add to my favorites', 'Permissions', 'Attribute assignments', 'View membership audit log', 'View action audit log', and 'View privilege audit log'. Below the profile information, there are four tabs: 'Memberships', 'Group privileges', 'Folder privileges', and 'Attribute privileges'. The 'Memberships' tab is selected. Below the tabs, there is a text block: 'The following table lists all groups in which Bob Anderson is a member.'

Home > Bob Anderson

Bob Anderson

Unique ID: banderson

Name: Bob Anderson

Description: Bob Anderson

More ▾

- Memberships
- Group privileges
- Folder privileges
- Attribute privileges

The following table lists all groups in which Bob Anderson is a member.

+ Add to a group

More actions ▾

- Add to my favorites
- Permissions
- Attribute assignments
- View membership audit log
- View action audit log
- View privilege audit log

Hands on: See favorites

- Click on “home”
- See favorites

The screenshot displays the Grouper web interface. At the top, a dark teal header contains the word "Home" with a red arrow pointing to it. Below the header, the page title "Grouper" is shown in a large font, followed by the subtitle "Institute of Higher Education". A brief description of the site's purpose is provided. The main content area is divided into several sections: "Recent activity" with a table of actions and dates, "My favorites" with a list of groups and users, "Groups I manage" with a list of banner-related groups, and "My services" with a link to view all services. Red arrows highlight the "Home" link and the "My favorites" section header.

Home

Grouper

Institute of Higher Education

This website allows you to manage groups associated with your organization and the members of those groups. For a list of answers to frequently asked questions, refer to the [support documentation](#).

Recent activity

Recent activity	Activity Date
Added attribute Grouper user data recent subjects to an attribute assignment.	2018/10/14 22:03 PM
Added attribute Grouper user data favorite subjects to an attribute assignment.	2018/10/14 22:03 PM
Added attribute value to attribute myAttrName .	2018/10/14 16:08 PM
Added attribute myAttrName to folder test .	2018/10/14 16:00 PM
Edited attribute name myAttrName .	2018/10/14 15:53 PM
Added attribute name myAttrName .	2018/10/14 15:53 PM

My favorites

- [sysadmingroup](#)
etc
- [computerscience](#)
org
- [Bob Anderson](#)

[View all favorites](#)

Groups I manage

- [banner_user](#)
app : banner
- [banner_user_allow](#)
app : banner
- [banner_user_deny](#)
app : banner
- [banner_admin](#)
app : banner : etc

My services

- [Central IT production Apps](#)

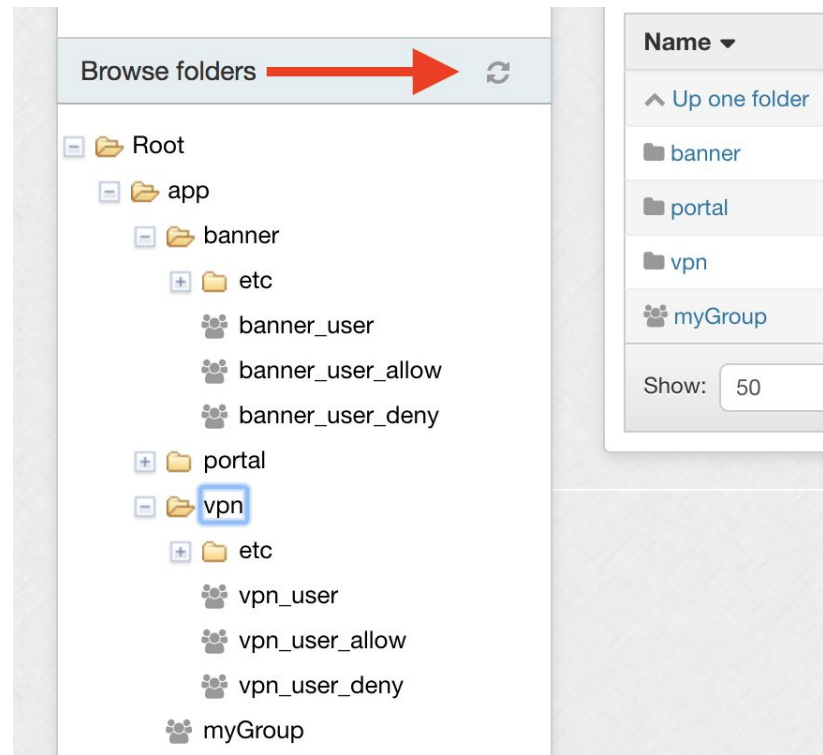
[View all services](#)

Left menu

- Shows folders, groups, attribute definitions, attribute names
- Shows the first X (few dozen), then stops
- Does not auto refresh when objects are created or deleted
- You can manually refresh

Hands on: Browse left menu

- Expand and contract and click on left menu
- Click the reload button

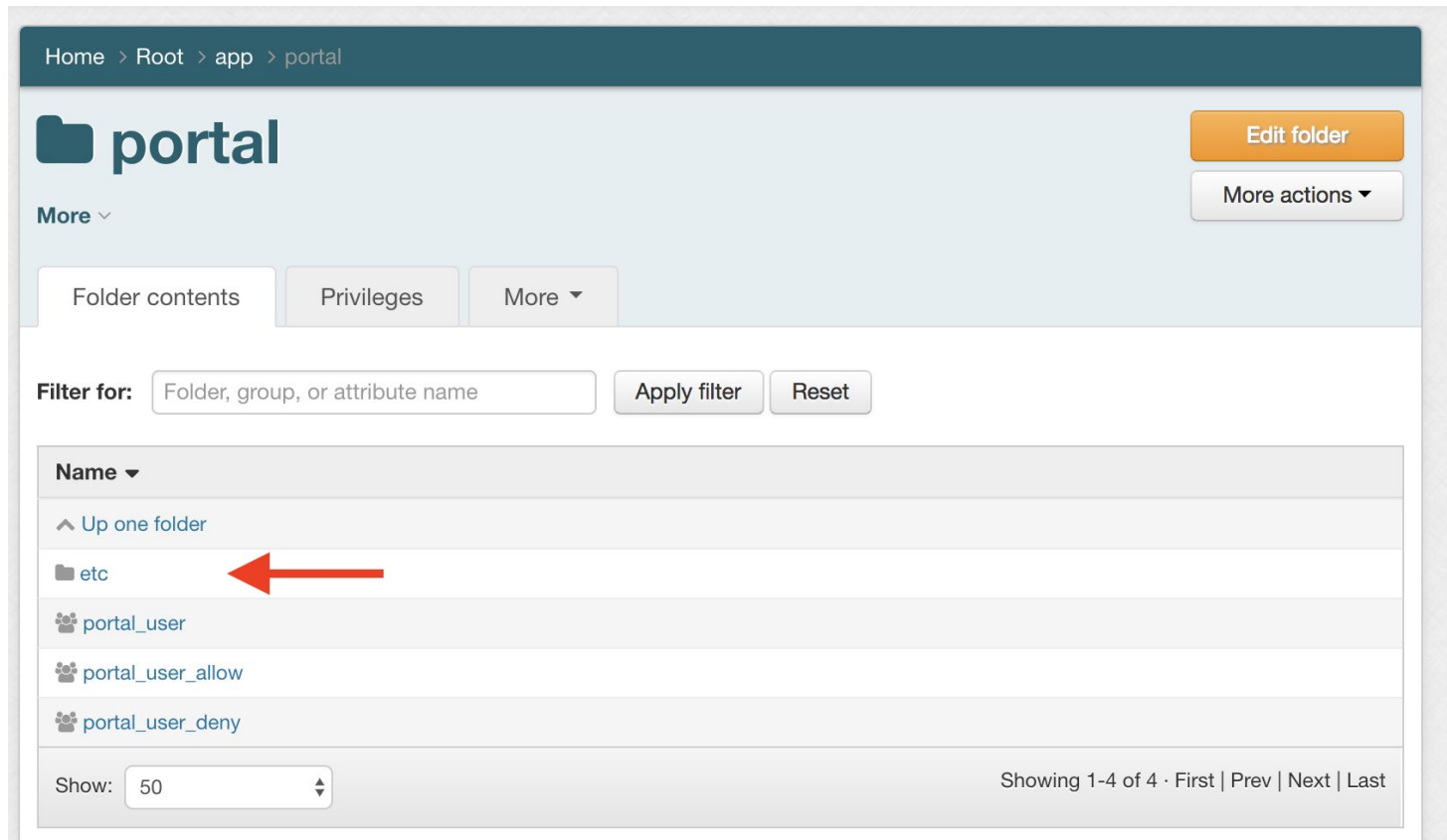


Main menu

- Shows folders, groups, attribute definitions, attribute names
- Shows the entire list paged
- Each click will show a fresh accurate list
- You can manually reload the browser

Hands on: Browse main menu

- Click on a folder
- Click on other folders in the main menu



The screenshot displays a file management interface for a folder named 'portal'. The breadcrumb path is 'Home > Root > app > portal'. The folder name 'portal' is prominently displayed with a folder icon. To the right, there are buttons for 'Edit folder' (orange) and 'More actions' (white with a dropdown arrow). Below the folder name, there are tabs for 'Folder contents', 'Privileges', and 'More'. A search filter is present with the text 'Filter for: Folder, group, or attribute name' and buttons for 'Apply filter' and 'Reset'. The main content area shows a list of items under the heading 'Name'. The items are: 'Up one folder' (with an upward arrow), 'etc' (with a folder icon and a red arrow pointing to it), 'portal_user' (with a user icon), 'portal_user_allow' (with a user icon), and 'portal_user_deny' (with a user icon). At the bottom, there is a 'Show: 50' dropdown and a pagination bar indicating 'Showing 1-4 of 4' with links for 'First', 'Prev', 'Next', and 'Last'.

Groups I manage

- This widget shows groups that the current user can change memberships or admin

Hands on: Groups I manage

- Click on “home”, see “Groups I manage”

The screenshot displays a user interface with three main panels, each with a settings gear icon in the top right corner.

- My favorites**:
 - sysadmingroup
etc
 - computerscience
org
 - Bob Anderson
 - [View all favorites](#)
- Groups I manage**:
 - banner_user
app : banner
 - banner_user_allow
app : banner
 - banner_user_deny
app : banner
 - banner_admin
app : banner : etc
 - myGroup
app
 - portal_admin
app : portal : etc
 - portal_user
app : portal
 - portal_user_allow
app : portal
- My services**:
 - Central IT production Apps
 - [View all services](#)


My services


- Shows services
- Folders must be marked as a service
- The current user is a member of a group (and can READ memberships in that group) in the service


Hands on: My services

- Click on “home”, see “My services”

My favorites


-  [sysadmingroup](#)
etc


-  [computerscience](#)
org


-  [Bob Anderson](#)


[View all favorites](#)


Groups I manage


-  [banner_user](#)
app : banner


-  [banner_user_allow](#)
app : banner


-  [banner_user_deny](#)
app : banner

-  [banner_admin](#)
app : banner : etc


-  [myGroup](#)
app

-  [portal_admin](#)
app : portal : etc

-  [portal_user](#)
app : portal

-  [portal_user_allow](#)
app : portal

My services


-  [Central IT production Apps](#)


[View all services](#)


Hands on: My services

- Click on “home”, see “My services”

My favorites


-  [sysadmingroup](#)
etc


-  [computerscience](#)
org


-  [Bob Anderson](#)


[View all favorites](#)


Groups I manage


-  [banner_user](#)
app : banner


-  [banner_user_allow](#)
app : banner


-  [banner_user_deny](#)
app : banner

-  [banner_admin](#)
app : banner : etc


-  [myGroup](#)
app

-  [portal_admin](#)
app : portal : etc

-  [portal_user](#)
app : portal

-  [portal_user_allow](#)
app : portal

My services

-  [Central IT production Apps](#)

[View all services](#)

My folders

- Shows folders that the current user can create objects in or admin

Hands on: My folders

- Click on “home”, click “gear”, click “My folders”

The image shows a user interface with three main panels, each with a gear icon in the top right corner:

- My folders**: A list of folders including Root, app, banner, etc, portal, and etc. A dropdown menu is open over this panel, titled "SELECT A WIDGET TO DISPLAY". The menu items are: My favorites, Groups I manage, My services, **My folders** (highlighted), My memberships, and Recently used.
- Groups I manage**: A list of groups including banner_user, banner_user_allow, banner_user_deny, banner_admin, myGroup, and portal_admin.
- My services**: A list of services including Central IT production Apps, with a link to [View all services](#).

My memberships

- Shows memberships of the current user (that they can READ)

Hands on: My memberships

- Click on “home”, click “gear”, click “My memberships”

The image shows a user interface with three main panels, each with a gear icon in the top right corner:

- My memberships**: Contains a list of memberships with a dropdown menu open. The dropdown menu has the title "SELECT A WIDGET TO DISPLAY" and the following options: "My favorites", "Groups I manage", "My services", "My folders", "My memberships" (highlighted in blue), and "Recently used". Below the list is a link "View all my memberships".
- Groups I manage**: Contains a list of groups:
 - banner_user (app : banner)
 - banner_user_allow (app : banner)
 - banner_user_deny (app : banner)
 - banner_admin (app : banner : etc)
 - myGroup (app)
- My services**: Contains a link "Central IT production Apps" and a link "View all services".

Recently used

- Click on “home”, click “gear”, click “Recently used”

The image shows a user interface with three main panels, each with a gear icon in the top right corner:

- Recently used:** Contains a list of items: myGroup test, myGroup app, My Bestes test, Bob Ander, and myAttrDef. A dropdown menu is open over this panel with the title "SELECT A WIDGET TO DISPLAY". The menu items are: My favorites, Groups I manage, My services, My folders, My memberships, and Recently used (highlighted in blue).
- Groups I manage:** Contains a list of items: banner_user (app : banner), banner_user_allow (app : banner), banner_user_deny (app : banner), banner_admin (app : banner : etc), and myGroup app.
- My services:** Contains one item: Central IT production Apps, with a link below it: View all services.

Hands on: My memberships

- Click on “home”, click “gear”, click “My memberships”

The image shows a user interface with three main panels, each with a gear icon in the top right corner:

- My memberships**: Contains a list of memberships with a dropdown menu open. The dropdown menu has the title "SELECT A WIDGET TO DISPLAY" and the following options: "My favorites", "Groups I manage", "My services", "My folders", "My memberships" (highlighted in blue), and "Recently used". Below the list is a link "View all my memberships".
- Groups I manage**: Contains a list of groups:
 - banner_user (app : banner)
 - banner_user_allow (app : banner)
 - banner_user_deny (app : banner)
 - banner_admin (app : banner : etc)
 - myGroup (app)
- My services**: Contains a link "Central IT production Apps" and a link "View all services".