User auditing

This documentation was used during the planning phase. See also, newer documentation on the User Audit Log

User auditing is auditing what users (or processes) do to the registry at a high level. e.g. Sue added a group on a certain day. It might not record that since that group was created, some privileges were created, the "base" type was associated with that group, etc.

We should have two tables. An audit table, and an audit meta data table. The audit table has user info, timestamp, audit_type, audit_action, etc, and 10 misc cols for various things. The metadata table describes what those 10 cols mean (e.g. for a group insert, col1 means group_uuid, col2 means group_name, etc) for a certain type and action (this table only has a few dozen rows). Then in the API we code in where the auditing occurs in variuos places. A loader job will delete audit information that is too old (not implemented yet). In the UI or WS we can query this information (probably by audit type and action), and a table of data with headers can be returned (headers are from metadata).

We also need a context_id on all tables, and in the user audit table, and PIT tables. In Java we will have an inverse of control which sets a threadlocal context id if it is not there. If there is a query without a context id, then it should throw an exception (since something is not coded completely). The code where the context is set, is probably where the user auditing should occur. Maybe only if the context id is new (not nested from somewhere else).

There is a view "grouper_audit_entry_v" which is the best DB resource for browsing audits, since it puts the category, action, and misc labels next to the audit entry record...

Audit type table holds (not all fields described here):

- id: foreign key to audit entry
- auditCategory: to organize the audits, e.g. "group"
- actionName: type of action in a category, e.g. "add_group"
- labelString01-08: labels of the audit entry string fields 01-08, e.g. group_id, group_name, member_id, etc
- labelInt01-05: labels of audit entry int fields 01-05, e.g. number_of_inserts, etc

Audit entry table holds (not all fields described here):

- id: unique id of audit entry
- contextId: ties together all the actions inside the one high level action
- auditTypeId: foreign key to the audit type table
- loggedInMemberId: member id logged in to e.g. UI or WS
- actAsMemberId: if the member is acting as someone else, this is that id
- createdOn: timestamp when entry was created
- description: description in sentence form of the action
- envLabel: from grouper.properties, e.g. PROD
- grouperEngine: e.g. UI, WS, GSH, loader, etc
- grouperVersion: e.g. v1.4.0
- serverHost: e.g. myServerName
- userIpAddress: IP address of user e.g. in WS or UI 1.2.3.4
- string01-08: misc string fields, each must have label in auditType
- int01-08: misc int fields, each must have label in auditType

GSH queries

All results in short form:

```
gsh 1% new UserAuditQuery().executeReport()
Results 1 - 10 of 35    ordered by: lastUpdatedDb desc
2009-04-15 07:42:03.179 membership   - addMembership        (   261ms,  18 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1) (actAs: jdbc - test.subject.1 -
description.test.subject.1)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.7, field: members
  Server:             grouperWS, host: AIT100229, user: mchyzer
2009-04-15 07:41:56.554 membership   - deleteMembership     (   376ms,  11 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.7, field: members
  Server:             grouperWS, host: AIT100229, user: mchyzer
2009-04-15 07:26:10.495 membership   - addMembership        (   532ms,  20 queries)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.7, field: members
  Server:             null, host: AIT100229, user: mchyzer
2009-04-15 07:10:55.061 membership   - addMembership        (   302ms,  13 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.5, field: members
  Server:             grouperUI, host: AIT100229, user: mchyzer
2009-04-15 06:40:52.351 membership   - addMembership        (   281ms,  13 queries)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.6, field: members
  Server:             null, host: AIT100229, user: mchyzer
2009-04-15 06:26:45.965 groupType    - addGroupType        (    33ms,   2 queries)
  Description:        Added group type: requireActiveStudent
  Server:             grouperShell, host: AIT100229, user: mchyzer
2009-04-15 06:26:45.902 groupField   - addGroupField       (   346ms,   3 queries)
  Description:        Added group field: requireActiveEmployee, id: 1dc48fed-b1ca-4099-a16c-f04375d6e145, type:
attribute, groupType: requireInGroups
  Server:             grouperShell, host: AIT100229, user: mchyzer
2009-04-15 06:24:52.760 membership   - addMembership        (    67ms,  18 queries)
  Description:        Added membership: group: aStem:activeEmployee, subject: jdbc.test.subject.1, field:
members
  Server:             grouperShell, host: AIT100229, user: mchyzer
2009-04-15 06:22:02.883 membership   - addMembership        (  3856ms,  18 queries)
  Description:        Added membership: group: aStem:activeEmployee, subject: jdbc.test.subject.0, field:
members
  Server:             grouperShell, host: AIT100229, user: mchyzer
2009-04-15 06:21:08.070 groupField   - addGroupField       (   290ms,   2 queries)
  Description:        Added group field: requireAlsoInGroups, id: 5f4bb1f3-117a-4008-bbbf-91c2697b58b8, type:
attribute, groupType: requireInGroups
  Server:             grouperShell, host: AIT100229, user: mchyzer
```

All results in long form:

```
gsh 5% new UserAuditQuery().executeReportExtended();
Results 1 - 10 of 35    ordered by: lastUpdatedDb desc
2009-04-15 07:42:03.179 membership   - addMembership        (   261ms,  18 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1) (actAs: jdbc - test.subject.1 -
description.te
st.subject.1)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.7, field: members
  Server:             grouperWS, host: AIT100229, user: mchyzer
  Id:                 1b9de977-d3d7-4832-b107-64fe89bac52a
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
  MemberId:           7d0c3b88-733e-4bc7-8a44-84751503ebd1
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            197d1379-ac1a-4c0f-a5d0-80254d128212
  OwnerName:          aStem:activeStudent
2009-04-15 07:41:56.554 membership   - deleteMembership     (   376ms,  11 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.7, field: members
  Server:             grouperWS, host: AIT100229, user: mchyzer
  Id:                 5eda0781-4d36-4f63-857d-22e099cde428
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
```

```
  MemberId:           7d0c3b88-733e-4bc7-8a44-84751503ebd1
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            197d1379-ac1a-4c0f-a5d0-80254d128212
  OwnerName:          aStem:activeStudent
2009-04-15 07:26:10.495 membership   - addMembership        (   532ms,  20 queries)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.7, field: members
  Server:             null, host: AIT100229, user: mchyzer
  Id:                 5eda0781-4d36-4f63-857d-22e099cde428
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
  MemberId:           7d0c3b88-733e-4bc7-8a44-84751503ebd1
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            197d1379-ac1a-4c0f-a5d0-80254d128212
  OwnerName:          aStem:activeStudent
2009-04-15 07:10:55.061 membership   - addMembership        (   302ms,  13 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.5, field: members
  Server:             grouperUI, host: AIT100229, user: mchyzer
  Id:                 fc5019d7-95e3-4a58-8695-dba7216307b3
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
  MemberId:           7caa1de6-41fd-4a25-8115-7cc0c896ac5c
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            197d1379-ac1a-4c0f-a5d0-80254d128212
  OwnerName:          aStem:activeStudent
2009-04-15 06:40:52.351 membership   - addMembership        (   281ms,  13 queries)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.6, field: members
  Server:             null, host: AIT100229, user: mchyzer
  Id:                 fd44d176-abc8-44a6-8fef-f22f397bf4a4
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
  MemberId:           4296d1c8-a311-4e30-b429-887135132464
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            197d1379-ac1a-4c0f-a5d0-80254d128212
  OwnerName:          aStem:activeStudent
2009-04-15 06:26:45.965 groupType    - addGroupType        (    33ms,   2 queries)
  Description:        Added group type: requireActiveStudent
  Server:             grouperShell, host: AIT100229, user: mchyzer
  Id:                 5acacc8b-c15b-4aab-b7a3-961d90d7c290
  Name:               requireActiveStudent
2009-04-15 06:26:45.902 groupField   - addGroupField       (   346ms,   3 queries)
  Description:        Added group field: requireActiveEmployee, id: 1dc48fed-b1ca-4099-a16c-f04375d6e145, type:
attribut
e, groupType: requireInGroups
  Server:             grouperShell, host: AIT100229, user: mchyzer
  Id:                 1dc48fed-b1ca-4099-a16c-f04375d6e145
  Name:               requireActiveEmployee
  GroupTypeId:        a0d01b9b-1b1b-4791-863f-2fe42200f4b9
  GroupTypeName:      requireInGroups
  Type:               attribute
2009-04-15 06:24:52.760 membership   - addMembership        (    67ms,  18 queries)
  Description:        Added membership: group: aStem:activeEmployee, subject: jdbc.test.subject.1, field:
members
  Server:             grouperShell, host: AIT100229, user: mchyzer
  Id:                 ffea4d28-1335-4d0c-ad37-987fbe0e9ca5
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
  MemberId:           e5c1a993-ecf9-4d12-b561-a80b09738cd8
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            c99afbc4-9138-4d42-8ff9-dd77d2369262
  OwnerName:          aStem:activeEmployee
2009-04-15 06:22:02.883 membership   - addMembership        (  3856ms,  18 queries)
  Description:        Added membership: group: aStem:activeEmployee, subject: jdbc.test.subject.0, field:
members
  Server:             grouperShell, host: AIT100229, user: mchyzer
  Id:                 1b16f549-7408-4035-bd8b-2fd5c7dd7af4
```

```
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
  MemberId:           154ca2b1-6306-48ac-be74-a10966ecb427
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            c99afbc4-9138-4d42-8ff9-dd77d2369262
  OwnerName:          aStem:activeEmployee
2009-04-15 06:21:08.070 groupField   - addGroupField        (   290ms,   2 queries)
  Description:        Added group field: requireAlsoInGroups, id: 5f4bb1f3-117a-4008-bbbf-91c2697b58b8, type:
attribute,
 groupType: requireInGroups
  Server:             grouperShell, host: AIT100229, user: mchyzer
  Id:                 5f4bb1f3-117a-4008-bbbf-91c2697b58b8
  Name:               requireAlsoInGroups
  GroupTypeId:        a0d01b9b-1b1b-4791-863f-2fe42200f4b9
  GroupTypeName:      requireInGroups
  Type:               attribute
```

Records by user mchyzer

```
gsh 10% grouperSession = GrouperSession.startRootSession(false);
edu.internet2.middleware.grouper.GrouperSession: 35a9ab9f-c630-4671-8a33-
18fd2f29477d,'GrouperSystem','application'
gsh 11% subject = SubjectFinder.findByIdOrIdentifier("mchyzer", true);
subject: id='10021368' type='person' source='pennperson' name='Chris Hyzer'
gsh 12% member = MemberFinder.findBySubject(grouperSession,subject, true);
member: id='10021368' type='person' source='pennperson' uuid='ad020c13-15d3-4386-9517-821b727155ea'
gsh 13% new UserAuditQuery().loggedInMember(member).executeReport()
Results 1 - 3 of 3    ordered by: lastUpdatedDb desc
2009-04-15 07:42:03.179 membership   - addMembership        (   261ms,  18 queries)

Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
(actAs: jdbc - test.subject.1 - description.test.subject.1)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.7, field: members
  Server:             grouperWS, host: AIT100229, user: mchyzer
2009-04-15 07:41:56.554 membership   - deleteMembership     (   376ms,  11 queries)
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  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.7, field: members
  Server:             grouperWS, host: AIT100229, user: mchyzer
2009-04-15 07:10:55.061 membership   - addMembership        (   302ms,  13 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added membership: group: aStem:activeStudent, subject: jdbc.test.subject.5, field: members
  Server:             grouperUI, host: AIT100229, user: mchyzer
```

Developers

How developers add user auditing to their code:

- There should be a HibernateSession callback wrapper around **all queries**.
    - Note: this relates all contextIds to this audit record, it makes the operation transactional, and it allows the auditing system to time the operation, and count how many queries it requires (helpful for performance debugging)
- Pass in to the callback that you will audit

```
HibernateSession.callbackHibernateSession(
        GrouperTransactionType.READ_WRITE_OR_USE_EXISTING, AuditControl.WILL_AUDIT,
        new HibernateHandler() {
```

- Use an existing, or create a new AuditTypeBuiltin (this will auto create a row in grouper_audit_type). Make sure to put all column headings in there for the string and/or int cols
- Make a unit test like AuditTest

Todo

- add audit on an export that an export was done
- add page auditing, as opposed to smaller contexts
- add delete rules in grouper.properties

- add audit rules in grouper.properties (e.g. be able to turn off auditing)
- grouper.properties require context id in saves
- add login to audits
- page audits? (delete in a week)?
- web service hit audits? (delete in a week)? keep input and output from servlet?
- (?) which cols for indexes?
- unit test in same transaction (not needed right?)
- (?) should we move grouper loader log to audit log? (might be able to make a view which is similar)
- Oh yeah, I need to update uuid's in memberChangeSubject calls potentially when merging subjects
- if object didnt change, should we save it? should we audit it?
- can we get rid of event log?
- turn off auditing during xmlimport, so it is the same?
- change api of audit entry to take name of field to set (e.g. for string or int)
- pass through the WS client name, and passthrough user IP address

Demo

Here is a demo of user auditing (movie)

First, clear out database:

```
gsh -registry -reset
```

Add a stem, and a type, and a group, and associate

```
gsh 0% typeAdd("testType");
type: 'testType'
gsh 1% addRootStem("newStem", "new stem");
stem: name='newStem' displayName='new stem' uuid='82b8cd54-9a69-4754-b6da-649dc87670b6'
gsh 2% addGroup("newStem", "aGroup", "a group");
group: name='newStem:aGroup' displayName='new stem:a group' uuid='913f36a9-c842-4fa1-911e-062a256028b2'
gsh 3% groupAddType("newStem:aGroup", "testType");
true
gsh 4%
```

Assign a privilege with web services

```
C:\temp\client>java -jar grouperClient.jar --operation=assignGrouperPrivilegesLiteWs --groupName=newStem:aGroup
--subjectIdentifier=mchyzer --privilegeName=admin --allowed=true
Success: T: code: SUCCESS_ALLOWED: group: newStem:aGroup: subject: 10021368: access: admin
```

Query the audits

```
gsh 10% new UserAuditQuery().loggedInMember(member).executeReport()
Results 1 - 4 of 4    ordered by: lastUpdatedDb desc
2009-04-26 21:37:29.522 privilege    - addPrivilege         (   597ms,  14 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added privilege: group: newStem:aGroup, subject: pennperson.10021368, privilege: admin
  Server:             grouperWS, host: AIT100229, user: mchyzer
2009-04-26 21:28:49.284 membership   - addMembership        (    78ms,  14 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added membership: group: newStem:aGroup, subject: pennperson.10021368, field: members
  Server:             grouperUI, host: AIT100229, user: mchyzer
2009-04-26 21:28:22.847 group        - updateGroup          (     9ms,   1 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Updated group: newStem:aGroup, Fields changed: description.description: FROM: 'null', TO:
'some group'
  Server:             grouperUI, host: AIT100229, user: mchyzer
2009-04-26 21:28:22.800 group        - updateGroup          (    17ms,   1 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Updated group: newStem:aGroup, Fields changed: none
  Server:             grouperUI, host: AIT100229, user: mchyzer
gsh 11% new UserAuditQuery().executeReportExtended()
Results 1 - 10 of 25    ordered by: lastUpdatedDb desc
```

```
2009-04-26 21:37:29.522 privilege    - addPrivilege         (   597ms,  14 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added privilege: group: newStem:aGroup, subject: pennperson.10021368, privilege: admin
  Server:             grouperWS, host: AIT100229, user: mchyzer
  PrivilegeName:      admin
  MemberId:           d03585aa-b2e7-405a-b9bc-91f73413c60b
  PrivilegeType:      access
  OwnerType:          group
  OwnerId:            913f36a9-c842-4fa1-911e-062a256028b2
  OwnerName:          newStem:aGroup
2009-04-26 21:28:49.284 membership   - addMembership        (    78ms,  14 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added membership: group: newStem:aGroup, subject: pennperson.10021368, field: members
  Server:             grouperUI, host: AIT100229, user: mchyzer
  Id:                 5c1db55a-7d3c-4010-869f-a7e013cac7b5
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
  MemberId:           d03585aa-b2e7-405a-b9bc-91f73413c60b
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            913f36a9-c842-4fa1-911e-062a256028b2
  OwnerName:          newStem:aGroup
2009-04-26 21:28:22.847 group        - updateGroup          (     9ms,   1 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Updated group: newStem:aGroup, Fields changed: description.description: FROM: 'null', TO:
'some group'
  Server:             grouperUI, host: AIT100229, user: mchyzer
  Id:                 913f36a9-c842-4fa1-911e-062a256028b2
  Name:               newStem:aGroup
  ParentStemId:       82b8cd54-9a69-4754-b6da-649dc87670b6
  DisplayName:        new stem:a group
  Description:        some group
2009-04-26 21:28:22.800 group        - updateGroup          (    17ms,   1 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Updated group: newStem:aGroup, Fields changed: none
  Server:             grouperUI, host: AIT100229, user: mchyzer
  Id:                 913f36a9-c842-4fa1-911e-062a256028b2
  Name:               newStem:aGroup
  ParentStemId:       82b8cd54-9a69-4754-b6da-649dc87670b6
  DisplayName:        new stem:a group
2009-04-26 21:27:44.206 membership   - addMembership        (    53ms,  13 queries)
  Description:        Added membership: group: penn:etc:webServiceClientUsers, subject: pennperson.10021368,
field: members
  Server:             grouperUI, host: AIT100229, user: mchyzer
  Id:                 21e2bd30-3c09-4a20-98cb-133f33fa8e56
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
  MemberId:           d03585aa-b2e7-405a-b9bc-91f73413c60b
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            e7b8f0c4-a6f3-4259-8fe0-2c0b232a5602
  OwnerName:          penn:etc:webServiceClientUsers
2009-04-26 21:27:44.143 membership   - addMembership        (    47ms,  13 queries)
  Description:        Added membership: group: penn:etc:webServiceActAsGroup, subject: pennperson.10021368,
field: members
  Server:             grouperUI, host: AIT100229, user: mchyzer
  Id:                 aa146747-7856-4b8a-b854-70bd86b3c1b2
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
  MemberId:           d03585aa-b2e7-405a-b9bc-91f73413c60b
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            ffd6c90b-3b39-49be-8393-4e79884cb8cd
  OwnerName:          penn:etc:webServiceActAsGroup
2009-04-26 21:27:44.050 membership   - addMembership        (    46ms,  13 queries)
  Description:        Added membership: group: penn:etc:userInterfaceUsers, subject: pennperson.10021368,
field: members
  Server:             grouperUI, host: AIT100229, user: mchyzer
  Id:                 0086d53a-5507-4bb4-8850-deda7118b6ce
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
```

```
  MemberId:           d03585aa-b2e7-405a-b9bc-91f73413c60b
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            2e3f6b80-537b-4d2b-85d8-4e182c5d0c9e
  OwnerName:          penn:etc:userInterfaceUsers
2009-04-26 21:27:43.987 membership   - addMembership        (   276ms,  21 queries)
  Description:        Added membership: group: penn:etc:sysAdminGroup, subject: pennperson.10021368, field:
members
  Server:             grouperUI, host: AIT100229, user: mchyzer
  Id:                 b0981d60-d404-4ca7-90da-184fee9a57bb
  FieldId:            f015c16f-a784-45e3-95aa-d6479a190e59
  FieldName:          members
  MemberId:           d03585aa-b2e7-405a-b9bc-91f73413c60b
  MembershipType:     immediate
  OwnerType:          group
  OwnerId:            74190a41-7da3-48e0-a1a3-c5c4a26454fe
  OwnerName:          penn:etc:sysAdminGroup
2009-04-26 21:22:00.672 groupTypeAssignment - assignGroupType      (   569ms,   7 queries)
  Description:        Assigned group type: newStem:aGroup, typeId: f7cb86b1-dc75-45d7-ba37-8f7c809d30e2, to
group: newStem:aGroup, groupId: 913f36a9-c842-4fa1-911e-062a256028b2
  Server:             grouperShell, host: AIT100229, user: mchyzer
  Id:                 02db5bdb20e5260e0120e52a11510006
  GroupId:            913f36a9-c842-4fa1-911e-062a256028b2
  GroupName:          newStem:aGroup
  TypeId:             f7cb86b1-dc75-45d7-ba37-8f7c809d30e2
  TypeName:           testType
2009-04-26 21:21:16.922 group        - addGroup            (   283ms,  22 queries)
  Description:        Added group: newStem:aGroup
  Server:             grouperShell, host: AIT100229, user: mchyzer
  Id:                 913f36a9-c842-4fa1-911e-062a256028b2
  Name:               newStem:aGroup
  ParentStemId:       82b8cd54-9a69-4754-b6da-649dc87670b6
  DisplayName:        new stem:a group
gsh 13% fromDate = edu.internet2.middleware.grouper.util.GrouperUtil.toTimestamp("2009/04/26 21:28:30");
java.sql.Timestamp: 2009-04-26 21:28:30.0
gsh 39% new UserAuditQuery().loggedInMember(member).setFromDate(fromDate).executeReport()
Results 1 - 2 of 2    ordered by: lastUpdatedDb desc
2009-04-26 21:37:29.522 privilege    - addPrivilege         (   597ms,  14 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added privilege: group: newStem:aGroup, subject: pennperson.10021368, privilege: admin
  Server:             grouperWS, host: AIT100229, user: mchyzer
2009-04-26 21:28:49.284 membership   - addMembership        (    78ms,  14 queries)
  Logged in user:     pennperson - 10021368 - Chris Hyzer (ip: 127.0.0.1)
  Description:        Added membership: group: newStem:aGroup, subject: pennperson.10021368, field: members
  Server:             grouperUI, host: AIT100229, user: mchyzer
```