Statistics Import Export Issues

- Update 2017-02-08
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- Testing Solr
    - Testing CSV Export
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    - Creating a Shard in the Admin Console

There are a number of issues with the Statistics Sharding process in DSpace.

Update 2017-02-08

- JIRA issu
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Unable to locate Jira server for this macro. It may be due to Application Link configuration.

- Documer
    - DSpace 6x: SOLR Statistics Maintenance
        - The warning section on this page should be referenced in the 6.1 and 7.0 release notes
        - Additional testing documentation for shards: Testing Solr Shards
    - DSpace 5x : SOLR Statistics Maintenance
        - The warning section on this page should be referenced in the 5.7 release notes
- PR's needing a Merge
    - Allow Shard Overwrite
        -
        -

Unable to locate Jira server for this macro. It may be due to Application Link configuration.

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    - Prevent r
        - 5x: https://github.com/DSpace/DSpace/pull/1645
        - master: https://github.com/DSpace/DSpace/pull/1644

Data Corruption Issue (DSpace 6)

1. In DSpac

Unable to locate Jira server for this macro. It may be due to Application Link configuration.

    a.
    b. try to reproduce this error.
    c. **How to test**
        i. Back up your solr directory
        ii. If you have statistics from 2016 or earlier in your statistics repository
            1. Run stats-util -s to shard last years records into a shard
        iii. If you do not have statistics from 2016 in your repository
            1. See the instructions related to testing PRs 1623/1624 to force old stats records (from a prior year) into your statistics repository
            2. Run stats-util -s
        iv. Restart tomcat
        v. Tomcat will not restart properly. The tomcat process will not resond to a stop request.
        vi. To resolve this issue
            1. kill -9 your tomcat process
            2. delete the statistics shard directories
            3. restart tomcat
2. In DSpac

Unable to locate Jira server for this macro. It may be due to Application Link configuration.

    a.
    b. he other issues listed here have been discovered.
    c. Ultimately, we need the ability to repair statistics shards that contain a corrupted owningComm (perhaps via the solr-reindex-statistics command)

While attempting to resolve this issue, a number of long standing challenges with the sharding process have become evident.

Shard Testing Issues

1. The shard process requires statistics records from a prior calendar year to be present.
    a. Proposal: Ensure that the statistics import/export tools allow for the creation of records from a prior year.
        i. See "Statistics Import/Export Tool Issues"

2. Once the shard process has been run for records from a calendar year, the process cannot be re-run
    a. Proposal

        Unable to locate Jira server for this macro. It may be due to Application Link configuration.

        i.
        ii.
            1. run stats-util -s to create shards
            2. import old records (from a prior year where a shard already exists) into the statistics repository
            3. run stats-util -s again
                a. Without this PR, the action should fail because the shard exists
                b. With this PR the action should succeed

    b. Pull Requests
        i. DSpace 5x PR: https://github.com/DSpace/DSpace/pull/1625
        ii. DSpace 6x PR: https://github.com/DSpace/DSpace/pull/1633
        iii. DSpace master PR: https://github.com/DSpace/DSpace/pull/1634

Statistics Import/Export Tool Issues

Make solr-import-statistics, solr-export-statistics, and solr-reindex-statistics easier to use.

Unable to locate Jira server for this macro. It may be due to Application Link configuration.

1. Issues
    a. The import and export tool always assume that the main statistics repo is being processed making it difficult to successfully process an individual shard.
    b. The import tool often fails when attempting to import records due to _version issues.
    c. Error messages are confusing from these tools.
    d. The export and re-index tools often fail due to the presence of existing export files.
    e. The reindex process fails on a
        i. as Unable to locate Jira server for this macro. It may be due to Application Link configuration.
    f. The reinc ts multi-value fields like owningComm
    g. Shard names are off by one ca
        i. as Unable to locate Jira server for this macro. It may be due to Application Link configuration.
2. Proposed Change
    a. Proposal 1. Do not force the inclusion of a "-i statistics" parameter to the function. Rather, set "-i statistics" as a default when no "-i" parameter is found.
        i. How to test (solr-export-statistics)
            1. You will need a shard. If you do not have one, See Proposal 2 to facilitate the creation of a shard.
            2. Clear the solr-export directory
            3. Run solr-export-statistics -i statistics-xxxx
            4. Without this PR, you will notice that both statistics and statistics-xxxx are exported
            5. With this PR, you will notice that only statistics-xxxx is exported
        ii. How to test (solr-export-statistics)
            1. You will need a shard. If you do not have one, See Proposal 2 to facilitate the creation of a shard.
            2. Clear the solr-export directory
            3. Run solr-export-statistics -i statistics-xxxx -i statistics
            4. Both statistics and statistics-xxxx are exported
            5. Without this PR
                a. Run solr-import-statistics -i statistics-xxxx
                b. You will notice that both statistics and statistics-xxxx are imported (or attempted to be imported)
            6. With this PR,
                a. Run solr-import-statistics -i statistics-xxxx -f
                b. You will notice that only statistics-xxxx is imported
        iii. How to test (solr-reindex-statistics)
            1. See Proposals 5 and 6 for testing instructions
    b. Proposal 2: Make the import process more tolerant during record ingest
        i. How to test
            1. Clear the solr-export directory
            2. run "solr-export-statistics -i statistics"
            3. extract the top 3-5 lines from the export file saving it to a new file matching the naming convention (for instance make the output file for statistics_export_2017-01.csv be statistics_export_2017-02.csv)
                a. Edit the identifier on each record (it is a uuid, so just edit with an alphanumeric character)
            4. run "solr-import-statistics -i statistics"
                a. Note that the process fails with a "_version_" error
            5. Install the PR and run "solr-import-statistics -i statistics"
                a. The records should import successfully
            6. NOTE: to force records from a prior year, repeat this process modifying the record date to use a prior year
    c. Proposal 3: Make import/export failure messages more explicit. Include the repository, the export file, and the reason for failure in error and log messages.
        i. How to test
            1. Clear the solr-export directory
            2. run "solr-export-statistics -i statistics"
            3. run "solr-export-statistics -i statistics"

- a. The second time this command is run, you will see an error message warning
- b. Without the PR, the error message will be unclear
- c. With this PR, the error message will clearly indicate that the export file cannot be overwritten

- d. Proposal 4: Add a command line option allowing export files to be overwritten on export.
  - i. How to test
    1. Clear the solr-export directory
    2. run "solr-export-statistics -i statistics"
    3. run "solr-export-statistics -i statistics"
       - a. The process will fail
    4. run "solr-export-statistics -i statistics -f"
       - a. The export file will be overwritten
- e. Proposal 5: Add a command line option allowing export files to be overwritten on re-index
  - i. How to test
    1. Clear the solr-export directory
    2. run "solr-reindex-statistics -i statistics"
    3. run "solr-reindex-statistics -i statistics"
       - a. The process will fail due to the existence of an export file
    4. run "solr-reindex-statistics -i statistics -f"
       - a. The export file will be overwritten
- f. Proposal 6: Set the correct "instanceDir" for statistics shards (since the config files reside in the "statistics" directory)
  - i. How to test
    1. Clear the solr-export directory
    2. run "solr-reindex-statistics -i statistics-xxxx"
- g. Proposal 7: Correctly re-index multi-value fields such as owningComm
  - i. How to test
    1. View an item with multiple owning communities in DSpace
    2. Find the item view record in the Solr Admin console
    3. Notice that owningComm is an array
    4. run "solr-reindex-statistics -i statistics"
    5. Find the item view record in the Solr Admin console
    6. owningComm should still be an array with multiple values
       - a. Without the fix, owningComm is a string separated by commas
- h. Proposal 8: Repair multi-value fields in a shard that were corrupted by prior sharding or prior reindex operations
  - i. How to test
    1. In the Solr Admin Console, look for owningComm fields containing either "," or "\"
       - a. Note the id's or other identifying information for the records
    2. run "solr-reindex-statistics -i statistics-xxxx"
    3. Find the records again in the Solr Admin Console
    4. If problems exist, run
       - a. solr-export-statistics -i statistics-xxxx -f
       - b. for file in *; do sed -E -e "s/[\\]+,/,/g" -i $file; done
       - c. solr-import-statistics -i statistics-xxxx
    5. The owningComm fields should be an array
- i. Proposal 9: Consistently use UTC from statistics records to determine shard name
  - i. How to test
    1. If not in UTC, create a statistic record for a shard that does not exist
    2. run shard process without the PR
       - a. Note the shard name is off by one year
       - b. Test results may vary based on your time zone relative to UTC
    3. Repeat the process with the PR in place
       - a. Note that the shard name matches the year of the records

3. Pull Requests
   - a. DSpace 5x PR: https://github.com/DSpace/DSpace/pull/1623/files
   - b. DSpace 6x PR: https://github.com/DSpace/DSpace/pull/1624/files
   - c. DSpace master PR: https://github.com/DSpace/DSpace/pull/1635

Manual Repair of Corrupted Export Files

- Use solr-export-statistics to export a repo
- Run the following to repair records

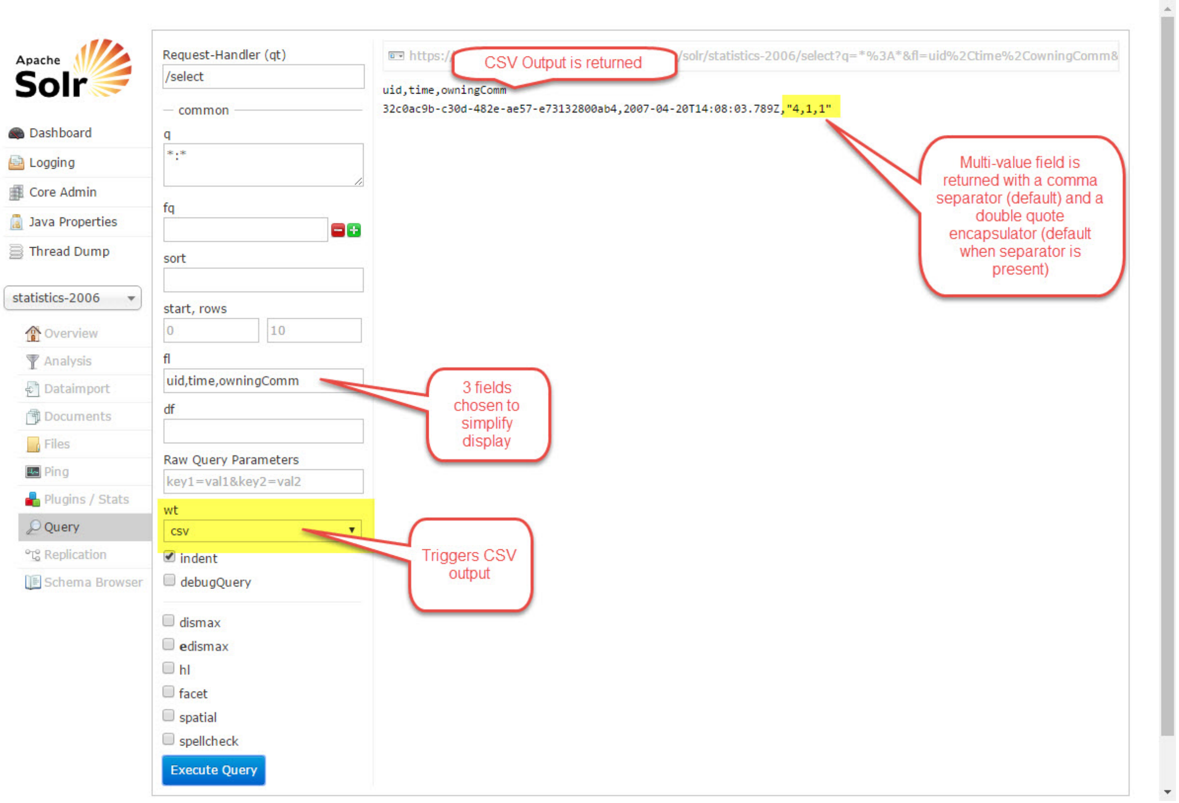
```
for file in *; do sed -E -e "s/[\\]+,/,/g" -i $file; done
```

- Run solr-import-statistics to import the fixed records

Testing Solr

Testing CSV Export

The SOLR Admin Console provides a mechanism to test the CSV Export Process and Parameters



Request-Handler (qt): /select

common

q: `*:*`

fq:

sort:

start, rows: 0 10

fl: uid,time,owningComm

df:

Raw Query Parameters: key1=val1&key2=val2

wt: csv

☑ indent

☐ debugQuery

☐ dismax

☐ edismax

☐ hl

☐ facet

☐ spatial

☐ spellcheck

```
https://…/solr/statistics-2006/select?q=*%3A*&fl=uid%2Ctime%2CowningComm&
```

```
uid,time,owningComm
32c0ac9b-c30d-482e-ae57-e73132800ab4,2007-04-20T14:08:03.789Z,"4,1,1"
```

CSV Output is returned

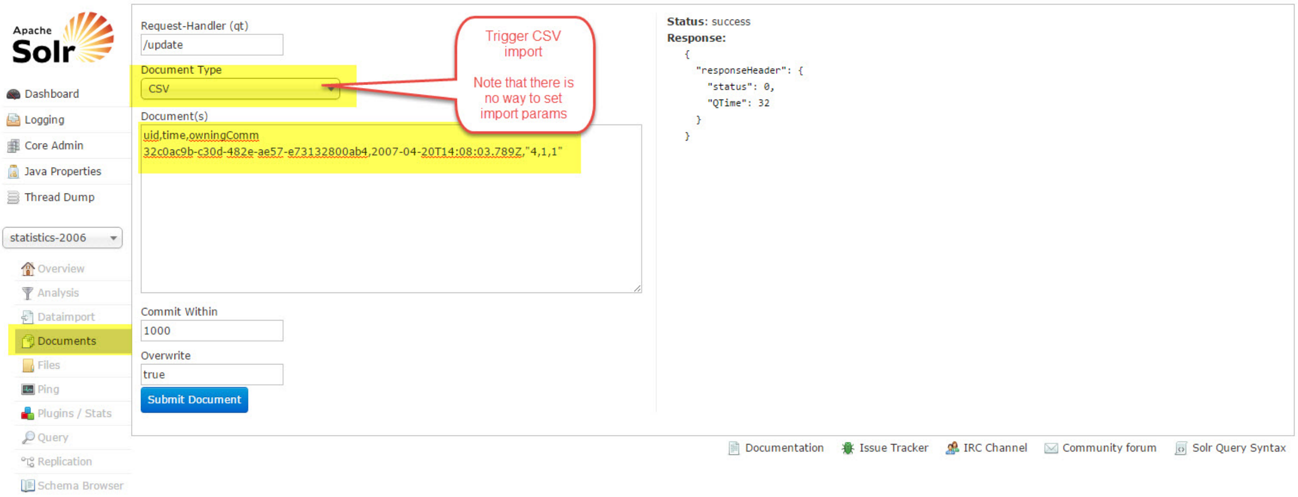
Multi-value field is returned with a comma separator (default) and a double quote encapsulator (default when separator is present)

3 fields chosen to simplify display

Triggers CSV output

Testing CSV Import

The SOLR Admin Console provides a mechanism to access the CSV Upload process. Unfortunately, it does not all parameters to be provided.



Request-Handler (qt): /update

Document Type: CSV

Document(s):

```
uid,time,owningComm
32c0ac9b-c30d-482e-ae57-e73132800ab4,2007-04-20T14:08:03.789Z,"4,1,1"
```

Commit Within: 1000

Overwrite: true

Status: success

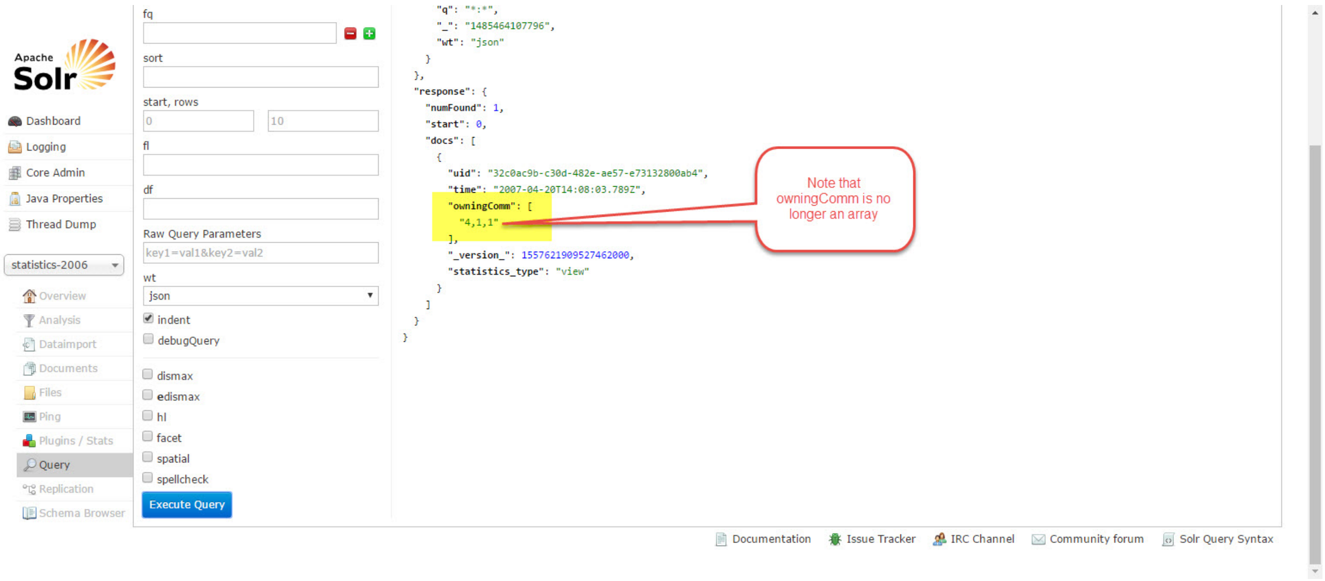
Response:

```
{
  "responseHeader": {
    "status": 0,
    "QTime": 32
  }
}
```

Trigger CSV import

Note that there is no way to set import params

Note that the multi-value field is corrupted if you import by this manner.



start, rows: 0 10

wt: json

☑ indent

☐ debugQuery

```
      "q": "*:*",
      "_": "1485464107796",
      "wt": "json"
    }
  },
  "response": {
    "numFound": 1,
    "start": 0,
    "docs": [
      {
        "uid": "32c0ac9b-c30d-482e-ae57-e73132800ab4",
        "time": "2007-04-20T14:08:03.789Z",
        "owningComm": [
          "4,1,1"
        ],
        "_version_": 1557621909527462000,
        "statistics_type": "view"
      }
    ]
  }
}
```

Note that owningComm is no longer an array

It is possible to csv import parameters using curl.

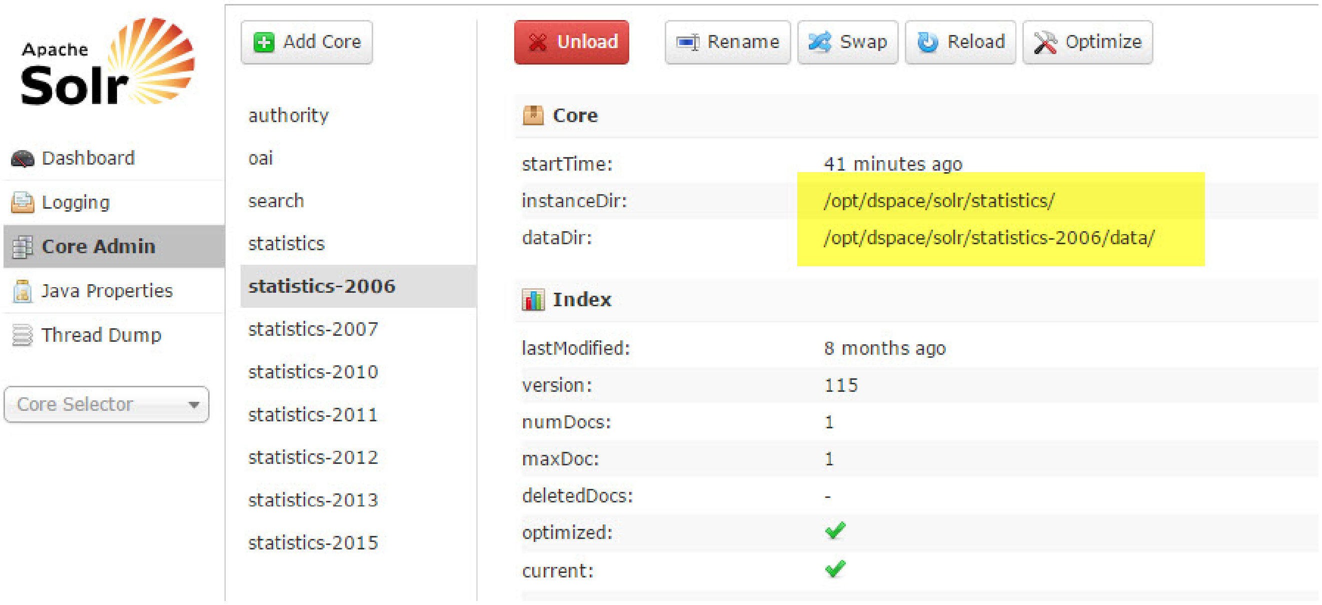
Running CSV Upload with curl

```
curl -F "data=@statistics-2006_export_2007-04.csv" "http://localhost/solr/statistics-2006/update/csv?
skip=_version_&csv.mv.escape=%5C&f.owningColl.split=true&f.owningColl.separator=%7C&f.owningComm.split=true&f.
owningComm.separator=,&f.owningItem.split=true&f.owningItem.separator=%7C&f.bundleName.split=true&f.bundleName.
separator=%7C&stream.contentType=text%2Fcsv%3Bcharset%3Dutf-
8&commit=true&softCommit=false&waitSearcher=true&wt=javabin&version=2"
```

Creating a Shard in the Admin Console

While this is probably not necessary, it is possible to create an empty shard in the Solr Admin console.

Note that existing shards use the statistics directory as an "instance" directory.



Core

startTime: 41 minutes ago

instanceDir: /opt/dspace/solr/statistics/

dataDir: /opt/dspace/solr/statistics-2006/data/

Index

lastModified: 8 months ago

version: 115

numDocs: 1

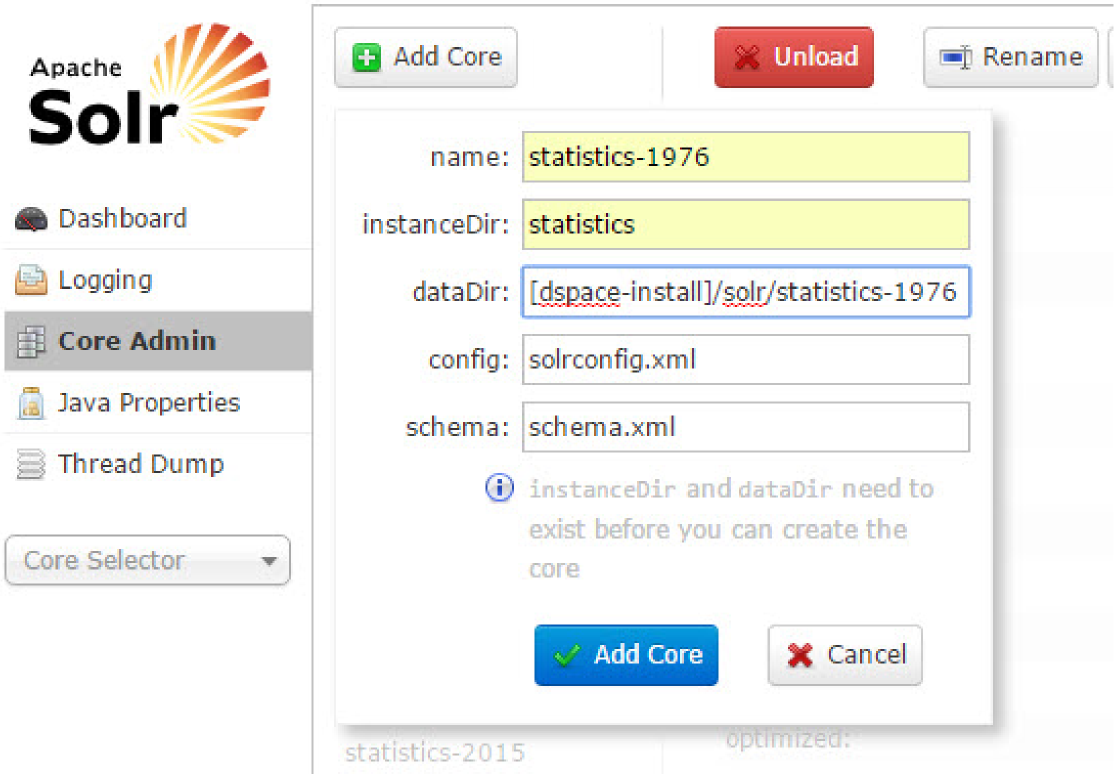
maxDoc: 1

deletedDocs: -

optimized: ✓

current: ✓

Manually create a new shard



name: statistics-1976

instanceDir: statistics

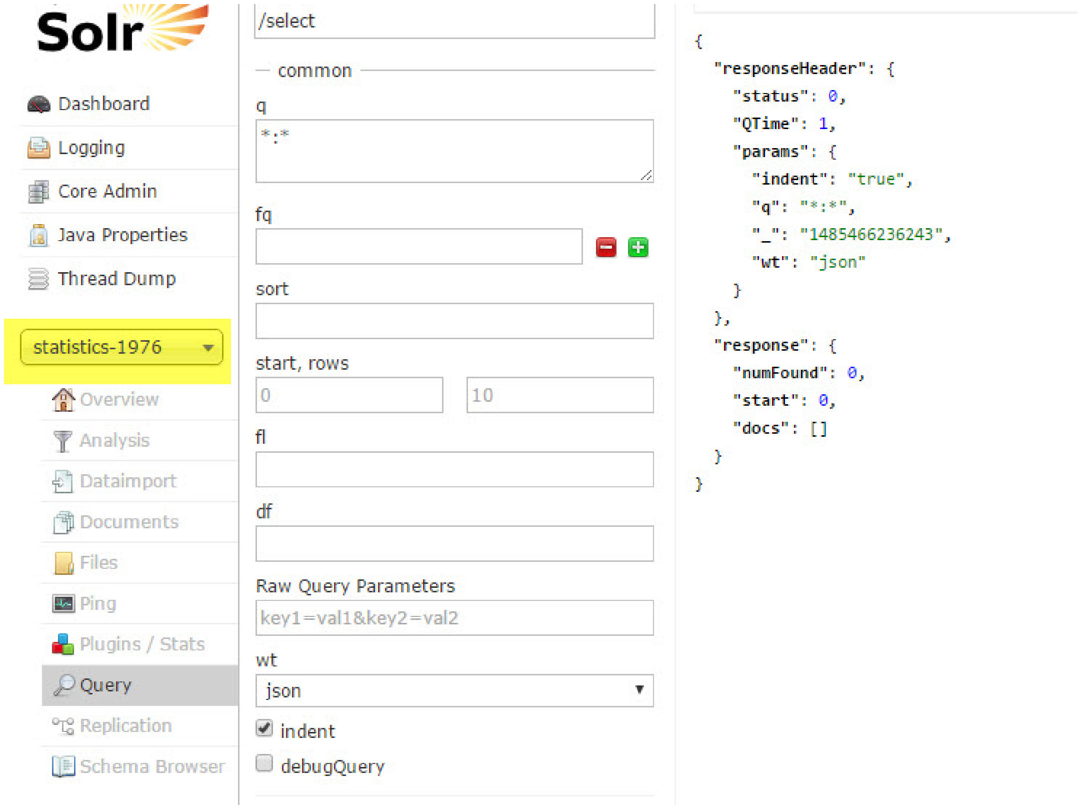
dataDir: [dspace-install]/solr/statistics-1976

config: solrconfig.xml

schema: schema.xml

instanceDir and dataDir need to exist before you can create the core

The new shard can be queried like the other ones



/select

q: *:*

fq:

sort:

start, rows: 0 10

fl:

df:

Raw Query Parameters: key1=val1&key2=val2

wt: json

☑ indent

□ debugQuery

```
{
  "responseHeader": {
    "status": 0,
    "QTime": 1,
    "params": {
      "indent": "true",
      "q": "*:*",
      "_": "1485466236243",
      "wt": "json"
    }
  },
  "response": {
    "numFound": 0,
    "start": 0,
    "docs": []
  }
}
```