FileXfer
File Transfer Jobs

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Abstract

The FileXfer application is a system for automated file transfer jobs for copying files. "There are 3 applications that make up the usage collection framework: `filexfer`, which does the actual file transfers; `filexfer-jobmonitor`, which is configured to monitor various aspects of jobs and create NMS alarms when necessary; and `filexfer-dataloader`, which bulk-loads file data into database tables. There are also housekeeping scripts called `filexfer-filearchive`, which keeps files in the data directory pruned and compressed, and `filexfer-fileunarchive`, which allows files to be pulled out of the archive so filexfer jobs can work with them again."[1]

[1] Usage Collection Framework (filexfer)

Contents

List of Figures

List of Tables

List of Definitions and Abbreviations

- **MOA** - Municipality of Anchorage

1 Introduction

The FileXfer system...

2 Design

[FIXME: Need data here...]

3 Implementation

[FIXME: Need data here...]

4 Test

[FIXME: Need data here...]

5 Issues

[FIXME: Need data here...]

6 Operation

[FIXME: Need data here...]

6.1 Job Scheduling

Jobs are scheduled using a web interface at `nms.operations.gci.com/relevance`. Navigate to the "FileXfer" application and click the "File Transfer Jobs" link. Job execution happens on `prod-prov4-cdr1.operations.gci.com`. A `cron` job executes every minute from `/etc/cron.d/filexfer` to kick off the various `filexfer` scripts.[2]

Job Timing

The parent `filexfer` script is responsible for spawning child processes for each job. Since a large number of jobs can be scheduled at any given interval, the parent process limits how many children can run concurrently. As long as the limit is reached and more jobs need to be spawned, the parent process must stay alive. Since this may take longer than 1 minute, it is possible for `filexfer` to miss certain scheduling intervals.

For example, if 500 jobs are scheduled to run at the top of every hour `(0 * * * *)` and the

[2] Usage Collection Framework (filexfer)

maximum child process limit is 50, there is a good chance `filexfer` will not execute any jobs scheduled to run at 1 minute past the hour `(1 * * * *)`. The best way to avoid this is to use `0`, `15`, `30`, or `45` in the minute field of the job schedule. These intervals are always executed.[3]

7 Application Logging

The filexfer applications log to the `/var/log/filexfer` directory on `prod-prov4-cdr1.\ operations.gci.com`. The parent `filexfer` jobs log to `filexfer-get.log` and `filexfer-\ put.log`. The `jobmonitor` and `dataloader` applications log to `jobmonitor.log` and `dataloader.log`, The `filexfer` applications log to the `/var/log/filexfer` directory on `prod-prov4-cdr1.operations.gci.com`. The parent `filexfer` jobs log to `filexfer-get.\ log` and `filexfer-put.log`. The `jobmonitor` and `dataloader` applications log to `jobmonitor.log` and `dataloader.log`, respectively. Each file transfer job is executed as a child process and gets its own log file. The format is `filexfer-{neName}-{idJob}-{get,put}.log`.

By default, the jobs log at the warn level. Adjust the level to info to get a high-level view of the application's state. Adjust log verbosity by modifying the appropriate config file in `/etc/filexfer`. The changes will take effect after the next program execution.

Errors are also logged to a database table which can be browsed in the filexfer web interface under the '`Logs & Errors`' view. This view includes messages logged at `warn`, `error`, and `fatal` severity.[4]

8 File Transfer Logging

Every file transfer is recorded in a database table. There are two reasons for this table: first, it tells `filexfer` hich files have already been transferred, and second, it provides an audit trail for SOX compliance. The table is `filexfer.logs` on `sadc-cdr-mysql1.operations.gci.com`. Use the `filexfer.joblogs` view to easily find logs by job name or network element ID.

File transfer logs may also be viewed in the '`Logs & Errors`' page of the web interface.[5]

9 Dataloader

Dataloader jobs are configured using the web interface at `nms.operations.gci.com/relevance`. Navigate to the "`FileXfer`" application and click the "`Data Load Jobs`" link. These jobs are executed every minute as long as there are files in the load queue.[6]

[3] Job Timing
[4] Usage Collection Framework (filexfer)
[5] Usage Collection Framework (filexfer)
[6] Usage Collection Framework (filexfer)

10 Examples

Series of useful LaTeX markup. Need to break out to separate examples.tex file.

10.1 Escaping < and > Symbols

To get $<$ or $>$ just wrap the symbols in $ for math mode.

10.2 Enumerate

1. DNR - Alaska State Department of Natural Resources
    - HI - Historical Index, not maintained since 1982
    - LE - Land Estate, maintained by SGU
    - ME - Mineral Estate, maintaind by SGU
2. Alaska State Surveys
    - ASBLT - As-Built Survey
    - ASCS - Cadastral Survey

10.3 Comments

`COMMENTS` Comment — *Sean Weems, Spring 2003*
We should get the `COMMENTS` column searchable via the landrecords application before we do much anything else – shouldn't be too hard.

Errata: Plats spanning multiple sections
A few anomalies can be observed in the `AKPLATS` table. Specifically plats exist that span multiple sections. Since the table only has a single column, `SCODE`, that accepts a single section code, SGU (Status Graphics Unit) has handled this problem by entering multiple rows in the table, each with a different section that point to the same plat or file. Multiple section plats are indicated by setting the `TCODE` column to the value `37`, and making an appropriate notation like *Section 24-25-26-27* in the `REMARKS` column.
[FIXME: Perhaps the `SCODE` column should accept an array of sections?]

10.4 Footnotes

See my footnote[7] generated with:

```
\footnote{\href{http://www.google.com/search?q=latex+footnotes}
{Search google for footnotes.}}
```

GoogleGuide — Linking to Search Results.[8]

10.5 Hyperlinks

Use \href{} to generate hyperlinks:

```
\href{http://www.google.com}{Google}}
```

Yields: Google

10.6 Table Examples

Column Name	Type	Description
EQS	VARCHAR2(1)	!NULL map shows village selections
ITM_COL	VARCHAR2(1)	USGS ITM column: 1-6
ITM_ROW	VARCHAR2(1)	USGS ITM row: A-E
QMQ_ABBR_DNR	VARCHAR2(3)	Three character DNR abbreviation for the QMQ
RASTER_FILENAME	VARCHAR2(50)	Physical path to file
RASTER_PATHNAME	VARCHAR2(50)	URL path to PDF of map
SCODE	VARCHAR2(2)	Supplement map code: 1,2,3,...
COMMENTS	VARCHAR2(256)	Plat comments

Table 1: `EASEMENTS_17B` Table

[7] Search google for footnotes.
[8] GoogleGuide — Linking to Search Results.

XML element	Descripton
FNUM	US Survey file number
MERIDIAN	BLM meridian code 12 = Copper River 13 = Fairbanks 28 = Seward 44 = Kateel 45 = Umiat
TOWNSHIP	Five character Township code
RANGE	Five character Range code
PAGE	Survey page number 1,2,3,...
FILENAME	Relative path to file in direcory

Table 2: USS XML index elements

col 1	col 2	col 3	col 4
item 1	item 2	item 3	item 4
item 1	item 2	item 3	item 4

Table 3: Demo

Virtual Machine	Apache	ELM	LM	Elluminate Server
`dcs-elive-prod01`		x	x	x
`uaa-elive-dev01`	x	x	x	
`uaa-elive-server01`				x
`uaa-elive-prod01`		x	x	x
`uaf-elive-prod01`		x	x	x
`uas-elive-prod01`		x	x	x

Table 4: Daemons

Column Name	Type	Description
MTR	VARCHAR2(9)	Meridian, Township, Range, example: *C026S054E*
QMQ	VARCHAR2(3)	Quarter Million Quadrangle code, example: *DIL* (Dillingham quadrangle)

Table 5: `XREF_MTR_QMQ` Table

10.7 Verbatim

"The verbatim environment is a paragraph-making environment that gets LaTeX to print exactly what you type in. It turns LaTeX into a typewriter with carriage returns and blanks having the same effect that they would on a typewriter."[9]

```
\begin{verbatim}
    text
\end{verbatim\}
```

Figure formatting with verbatim
The following figure leverages verbatim for proper formatting:

```
gis/raster/
  dnr/
    map_library/
    plats/
      SP/YYYYMMDD/*.pdf               # indexed
      HI/YYYYMMDD/*.pdf               # Indexed
      ASLS/YYYYMMDD/*.pdf             # Indexed
    recorded-plats/
      YYYYMMDD/*.pdf
  blm/
    easements_17b/YYYYMMDD/*.pdf      # indexed
    mtp/YYYYMMDD/*.pdf                # non-indexed
    usrs/YYYYMMDD/*.pdf               # indexed
    usrs-notes/YYYYMMDD/*.pdf         # indexed
    uss/YYYYMMDD/*.pdf                # indexed
    uss-notes/YYYYMMDD/*.pdf          # indexed
    usms/YYYYMMDD/*.pdf               # indexed
    usms-notes/YYYYMMDD/*.pdf         # indexed
  usgs/
    drg/
      collared/
        250K/
        63K/
        25K/
        24/
      decollared/
      tools/
      missing\_data/
    dem/
    doq/
    topo/
```

Figure 1: File and Directory Structure

Appendix

Source

[FIXME: Need data here]

Links

A Guide to LaTeX
http://www.astro.rug.nl/ kuijken/latex.html

LaTeX - From Wikibooks,the open-content textbooks collection
http://en.wikibooks.org/wiki/LaTeX

LaTeX Notes
http://luke.breuer.com/time/item/LaTeX_Notes/180.aspx