Tellus Job Scheduler development Setup (RestfulSchedulingService)

Wednesday, June 07, 2017   10:59 AM

- GIT Repo: https://gitlab.factset.com/app-qa-automation/RestfulSchedulingService
- Scheduler Status: http://tellusstgb01.pc.factset.com:8080/RestfulSchedulingService/scheduler/status
- Deployment Location: \\tellusstgb01\apache-tomee-plus-1.7.3\webapps\
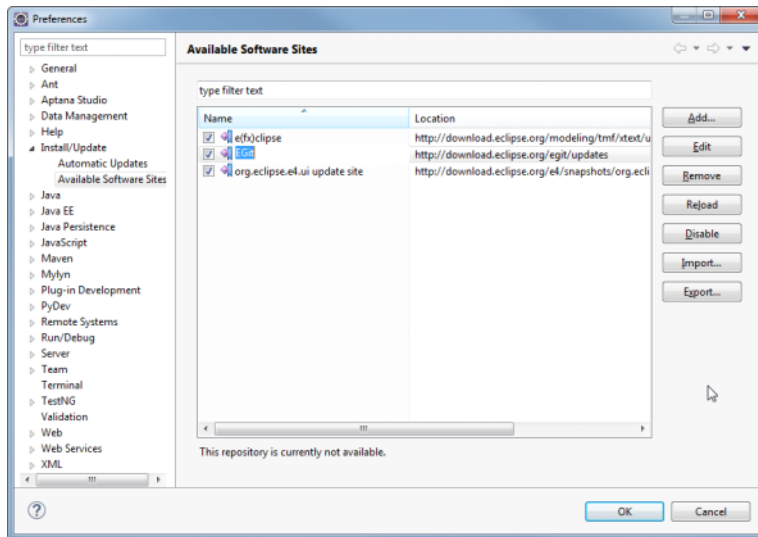- log files under **C:\apache-tomee-plus-1.7.4\logs**job-scheduler.log.*

TomEE:
- TomEE directory is C:\apache-tomee-plus-1.7.3 on tellusstgb01
- TomEE runs as Windows Service called "Apache TomEE"

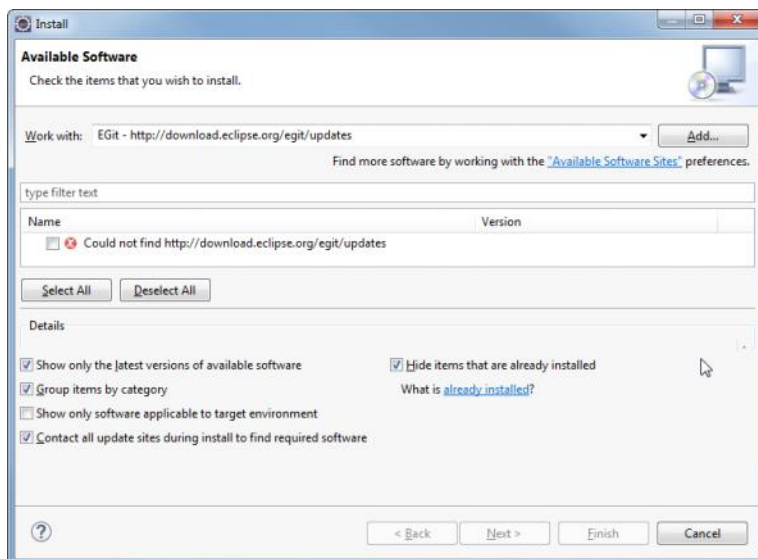## Development Environment Setup (Eclipse)
Eclipse Git Setup

Install egit plugin "http://download.eclipse.org/egit/updates" by adding EGit location to Eclipse:

Help->**Install new software**->**Available Software Sites**->**Add** to the available software sites

Then add EGIT:

Add server runtime:
- Select **Window > Preferences**

- ○ Select **Server > Runtime Environments > Add**
- ○ Select **Apache > Apache Tomcat v7.0**
- ○ Click **Next**
- ○ Select your local TomEE directory, for example `C:\apache-tomee-plus-1.7.4`
- ○ Click **Finish**

Dependencies

- You need to install TomEE 1.7.3 or 1.7.4 on your development laptop:
  http://tomee.apache.org/downloads.html
  Choose TomEE Plus version 1.7.3 (or 1.7.4).
  - ○ Unzip the downloaded zip file like "**apache-tomee-1.7.4-plus.zip**" under C:
- JDBC SQL Server Driver: https://www.microsoft.com/en-us/download/details.aspx?id=11774
  It is already included in repo's src/main/webapp/WEB-INF/lib folder.

Eclipse Gradle Setup

```
git clone git@github.factset.com:app-qa-automation/RestfulSchedulingService.git
```

- Select **File > Import**
- Select **Gradle > Existing Gradle Project**
- Click **Next**
- Click **Next**
- Select the git repo folder for "Project root directory"
- Click **Finish**

  To enable automatic project synchronization with gradle settings:
- Select **Window > Preferences**
- Select **Gradle**
- Check **Automatic Project Synchronization**
- Click **Apply and Close**

Running Application
- Right-click project
- Select Run As > Run on Server

Deployment
To package a .war for deployment:
- Right-click project
- Select **Export > WAR file**
- Select any **Destination** folder (use a local directory for performance)
- Click **Finish**

Installation:
- Copy the .war file to *TOMEE*/webapps/ directory on tellusstgb01 (Note: it has a Windows Share).
- It should automatically be reloaded by TomEE, but if not,, then manually restart TomEE

Logging

(1) jar file and configuration file
C:\apache-tomee-plus-1.7.4\lib**log4j-1.2.17.jar**
C:\apache-tomee-plus-1.7.4\lib**log4j.properties (configure location of log files and set log level)**

(2) log files under **C:\apache-tomee-plus-1.7.4\logs**

job-scheduler.log
job-scheduler.log.1
job-scheduler.log.2
….

Configuration
(1) C:\Tellus\webapiresource\JobSchedulerConfig.properties
Any change in this file need the Tomee server to be rebooted to take effects.

  Note: Current scheduler limits are 15 for FPE and 10 for SGE.

Example:

```
GET_COUNT_OF_ACTIVE_VMS_URL=http://tellus/vmcount
FPE_RATIO_OF_VM_USE=0.75
NIGHT_TIME_TOTAL_VMS=150  # FPE
NIGHT_TIME_RANGE=19:00:01PM-05:59:01AM
DAY_TIME_TOTAL_VMS=150    # FPE
DAY_TIME_RANGE=06:00:00-19:00:00
RUN_WEEKENDS_LIKE_NIGHT_TIME=0
VALID_PRIORITY_MIN=1
VALID_PRIORITY_MAX=4


# Database resource
DEFAULT_MAX_TOTAL=20
DEFAULT_MAX_IDLE=10
DEFAULT_MAX_WAIT_MILLIS=1000
```

Example 2 (Production):

```
GET_EVENTS_URL=http://tellusb01.pc.factset.com/app/scheduler/getEvents.php
#GET_EVENTS_URL=http://tellusdevb02.pc.factset.com/cgi-bin/scheduler/getEvents.py
GET_NUMOFVMS_URL=http://tellusb01.pc.factset.com/app/scheduler/getNumberOfVMs.php
#GET_RESOURCE_NUMBERS_URL=http://tellusdevb02.pc.factset.com/cgi-bin/scheduler/getResourceNumbers.py
GET_RESOURCE_NUMBERS_URL=http://tellusb01.pc.factset.com/app/scheduler/getResourceNumbers.php
GET_EVENT_INFO_URL=http://tellusb01.pc.factset.com/app/scheduler/getEventInfoByID.php?eventid=
GET_RUNNING_JOBS_URL=http://tellusb01.pc.factset.com/app/scheduler/getRunningJobsFromStaf.php
GET_RUNNING_JOBS_URL_FOR_DEV=http://tellusdevb01.pc.factset.com/app/scheduler/getRunningJobsFromStaf.php
JOB_SCHEDULING_METRIC_URL=http://metrics.factset.com/MetricServices/MetricsUploadService.svc/TellusFramework/FrameWorkTimings/
JobSchedulingTime/
SGE_JOBS_TOTAL_LIMIT=10
SGE_JOBS_TOTAL_LIMIT_ON_DEV=6
GET_COUNT_OF_ACTIVE_VMS_URL=http://tellus/vmcount
FPE_RATIO_OF_VM_USE=1.0
NIGHT_TIME_TOTAL_VMS=15
NIGHT_TIME_RANGE=19:00:01PM-05:59:01AM
DAY_TIME_TOTAL_VMS=15
DAY_TIME_RANGE=06:00:00-19:00:00
RUN_WEEKENDS_LIKE_NIGHT_TIME=0
VALID_PRIORITY_MIN=1
VALID_PRIORITY_MAX=4
DEV_DB_SERVER=sqldevb06.prod.factset.com
PROD_DB_SERVER=tellus-sql-primary.prod.factset.com
PROD_DB_FAILOVER_SERVER=tellus-sql-failover.prod.factset.com
DB_NAME=tellus
USER=tellus_appuser
PASS=iB8mtU6q6ir
DEFAULT_MAX_TOTAL=100
DEFAULT_MAX_IDLE=50
DEFAULT_MAX_WAIT_MILLIS=2000
#DB_USED=DEV
DB_USED=PROD
```

(2) C:\Tellus\webapiresource\resources.info
Changes in this file will be automatically picked by the server, no need to reboot the Tomee server.

Example: (new nodes need to be added to this file)

find config info on the selenium node **"tellusgridb06.pc.factset.com:5557"**
http://tellusdevb03.pc.factset.com:4444/grid/api/proxy?id=http://tellusgridb06.pc.factset.com:5557

find config info on the selenium mobile node "appiumct01.pc.factset.com:4723"
http://tellusdevb03.pc.factset.com:4444/grid/api/proxy?id=http://appiumct01.pc.factset.com:4723

Production example:
http://tellusdevb03.pc.factset.com:4444/grid/api/proxy?id=http://tellusgridb02.pc.factset.com:5555
http://tellusdevb03.pc.factset.com:4444/grid/api/proxy?id=http://tellusgridb02.pc.factset.com:5557
http://tellusdevb03.pc.factset.com:4444/grid/api/proxy?id=http://tellusgridb06.pc.factset.com:5555
http://tellusdevb03.pc.factset.com:4444/grid/api/proxy?id=http://tellusgridb06.pc.factset.com:5557
http://tellusdevb03.pc.factset.com:4444/grid/api/proxy?id=http://appiumct01.pc.factset.com:4723
http://tellusdevb03.pc.factset.com:4444/grid/api/proxy?id=http://selgridct01.pc.factset.com:4723
http://tellusdevb03.pc.factset.com:4444/grid/api/proxy?id=http://selgridct03.pc.factset.com:4723

http://tellusdevb03.pc.factset.com:4445/grid/api/proxy?id=http://tellusgridb01.pc.factset.com:5555
http://tellusdevb03.pc.factset.com:4445/grid/api/proxy?id=http://tellusgridb01.pc.factset.com:5557

# start time to consider for job scheduling
starttime=00:00:00

# end time to consider for job scheduling
endtime=23:59:00

# Number of virtual machines that are allowed to run simultaneously
FPE=115

# Number of days away from today. 0 means the same day as start day, 1 means next day from the start day (next day).
NEXT_DAY_AWAY=0

# execution host
exechost=TELLUSB01

Restart

To restart **RestfulSchedulingService**, simply restart TomEE Windows Server on tellusstgb01.

Tellus Job Scheduler REST API (RestfulSchedulingService)

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Usage

/scheduler/status

Get overall status

GET http://localhost:8080/RestfulSchedulingService/scheduler/status

Response:
```
{
   "responseStatus": {
      "message": "Job scheduling service is available",
      "status": "success"
   }
}
```

/api/findavailabletimes

Handling Query for Available Time Slots

POST
http://tellusstgb01.pc.factset.com:8080/RestfulSchedulingService/scheduler/findavailabletimes

Example POST data format:

For FPE:
```
{
   "timeQuery": {
      "startdate": "2017-06-08",
      "duration":  18,
      "priority": 1,
      "testenvironment": "FPE"
   }
}
```

For SGE:
```
{
    "timeQuery": {
        "startdate": "2015-07-31",
        "duration":  18,
        "priority": 1
        "testenvironment": "SGE",
        "sgbrowsername": "chrome",
        "sgbrowserversion": "35"
    }
}
```

duration is in minutes.

Note: The client-side would need to ensure that the schedule is not less than current time plus allowing for latency, for example, so Cron will not miss the start time by the time it is ready to execute.

Example JSON response:
```
{
   "freeSlots": {
```

```
    "availabletimes": [
      {
        "duration": 745.95,
        "end": "2017-06-08T23:59:00.0000000",
        "resourcenumber": 5,
        "start": "2017-06-08T11:33:03.0000000",
        "testenvironment": "FPE"
      },
      {
        "duration": 745.95,
        "end": "2017-06-08T23:59:00.0000000",
        "resourcenumber": 4,
        "start": "2017-06-08T11:33:03.0000000",
        "testenvironment": "FPE"
      },
      {
        "duration": 745.95,
        "end": "2017-06-08T23:59:00.0000000",
        "resourcenumber": 3,
        "start": "2017-06-08T11:33:03.0000000",
        "testenvironment": "FPE"
      },
      {
        "duration": 745.95,
        "end": "2017-06-08T23:59:00.0000000",
        "resourcenumber": 2,
        "start": "2017-06-08T11:33:03.0000000",
        "testenvironment": "FPE"
      },
      {
        "duration": 745.95,
        "end": "2017-06-08T23:59:00.0000000",
        "resourcenumber": 1,
        "start": "2017-06-08T11:33:03.0000000",
        "testenvironment": "FPE"
      },
      {
        "duration": 745.95,
        "end": "2017-06-08T23:59:00.0000000",
        "resourcenumber": 0,
        "start": "2017-06-08T11:33:03.0000000",
        "testenvironment": "FPE"
      }
    ]
  }
}
```

/scheduler/schedulejobs
- This handles request from Job Entry Page (and JobQueue's queue for the same)

Request format:
POST http://tellusstgb01.pc.factset.com:8080/RestfulSchedulingService/scheduler/schedulejobs
Content-Type: application/json

Request data format:

```
{
 "task": [
  {
    "start": "2017-06-07T23:00:00",
    "end": "2017-06-07T23:12:00",
    "priority": 4,
    "testenvironment": "FPE",
    "sgbrowsername": null,
    "sgbrowserversion": null
  }
 ]
}
```

Example request with no groupid:

```
{
   "task": [
      {
         "start": "2017-06-07T23:00:00",
         "end": "2017-06-07T23:12:00",
         "priority": 4,
         "testenvironment": "FPE",
         "sgbrowsername": null,
         "sgbrowserversion": null
      }
   ]
}
```

Example response:

```
{
   "updatedJobs": {
     "updatedjobs": {
        "allday": false,
        "cronid": 0,
        "durationinmins": 20,
        "end": "2017-06-08T12:46:20.0000000",
        "enddate": "2017-06-08",
        "endtime": "12:46:20.0000000",
        "eventid": 0,
        "fixedtime": 0,
        "groupid": 0,
        "id": 0,
        "isdev": 0,
        "isexception": 0,
        "isresult": false,
        "lastmodified": 0,
        "numberofvirtualmachines": 1,
        "numoftestcases": 0,
        "oldend": "2017-06-08 12:06:20.616",
        "oldstart": "2017-06-08 11:46:20.616",
        "precedent": 0,
        "priority": 4,
        "resourcenumber": 50,
```

```
                "seriesid": 0,
                "sgbrowsername": "",
                "sgbrowserversion": "",
                "start": "2017-06-08T12:26:20.0000000",
                "startdate": "2017-06-08",
                "starteditable": false,
                "starttime": "12:26:20.0000000",
                "testenvironment": "FPE"
            }
        }
    }
```

TimelineTest (test/admin tool)

http://tellusb01.pc.factset.com/autocrontest/scheduleJobsTest.html

This is tool to help visualize the arrangement of jobs.

JobQueue Request

This handles request from JobQueue (for prioritizing a day).

POST http://tellusstgb01.pc.factset.com:8080/RestfulSchedulingService/scheduler/jobQueueRequest

```
{
  "jobQueue": {
    "fixedjobs": [
      {
        "groupid": 138779,
        "startdatetime": "2016-06-16T00:00:00",
        "duration": 26,
        "startdate": "2016-06-16",
        "starttime": "00:00:00.0000000",
        "cronid": 56082,
        "instanceid": 81161,
        "eventid": 96386,
        "parentid": 4014,
        "ismultiplan": "1",
        "isseries": "1",
        "isexception": "0",
        "title": "Spots",
        "allday": "0",
        "priority": 1,
        "lastmodified": "2016-02-17T06:25:10.957",
        "exechost": "TELLUSB01",
        "isdev": "0",
        "runnow": "0",
        "scheduletype": "AddRecurrence",
        "emailrecipient": "results_coma@factset.com",
        "buildid": "8310",
        "buildversion": "/2016_V1/atlas_snapshot_2013.13.300/2013.13.300.167",
        "bitversion": "32bit",
        "windowsversion": "Win 7",
        "officeversion": "Office 2K7 SP2",
        "languagename": "English (US)",
        "vmsuserid": "FDSQAR_C",
        "stage": "Devel",
        "prebuildname": null,
        "htmlreports": "Devel",
        "htmlreportsos": "DEFAULT",
        "caccesscode": "LARGESETCACCESS",
        "tickerlistrequired": "0",
        "tickerlist": "-1",
        "browsertype": "CEFMp",
        "browserversion": "Any",
```

```
          "testserver": null,
          "controlserver": null,
          "justifiersystemid": "0",
          "justifierbuildid": "23192",
          "justifierlibraryid": "-1",
          "justifierproductid": "3712",
          "testenvironment": "FPE",
          "seleniumgridhub": null,
          "platform": null,
          "platformname": null,
          "platformversion": null,
          "devicename": null,
          "sgbrowsername": null,
          "sgbrowserversion": null,
          "webstage": null,
          "testcasestage": "Live",
          "testcaseprebuildname": null,
          "fixedtime": 1,
          "isregressionjob": "1",
          "islateregressionjob": "0",
          "basebuild": "-1",
          "testbuild": "-1",
          "gherkin": "0",
          "chunkid": 168013,
          "resourcenumber": 9,
          "start": "2016-06-16T00:00:00",
          "end": "2016-06-16T00:26:00",
          "chunkids": [],
          "resourcenumbers": []
      }
    ],
    "movablejobs": [
      {
        "groupid": 138788,
        "startdatetime": "2016-06-16T00:00:00",
        "duration": 54,
        "startdate": "2016-06-16",
        "starttime": "00:00:00.0000000",
        "cronid": 56091,
        "instanceid": 81170,
        "eventid": 96396,
        "parentid": 4030,
        "ismultiplan": "1",
        "isseries": "1",
        "isexception": "0",
        "title": "Supply Chain - Automation",
        "allday": "0",
        "priority": 1,
        "lastmodified": "2016-02-19T12:12:46",
        "exechost": "TELLUSB01",
        "isdev": "0",
        "runnow": "0",
        "scheduletype": "AddRecurrence",
        "emailrecipient": "results_coma@factset.com",
        "buildid": "8310",
        "buildversion": "/2016_V1/atlas_snapshot_2013.13.300/2013.13.300.167",
        "bitversion": "32bit",
        "windowsversion": "Win 7",
        "officeversion": "Office 2K7 SP2",
        "languagename": "English (US)",
        "vmsuserid": "FDSQAR_C",
        "stage": "Devel",
        "prebuildname": null,
        "htmlreports": "Staging",
        "htmlreportsos": "DEFAULT",
        "caccesscode": "LARGESETCACCESS",
        "tickerlistrequired": "0",
        "tickerlist": "-1",
        "browsertype": "Chrome",
        "browserversion": "29",
```

```json
      "testserver": null,
      "controlserver": null,
      "justifiersystemid": "0",
      "justifierbuildid": "23192",
      "justifierlibraryid": "-1",
      "justifierproductid": "3842",
      "testenvironment": "FPE",
      "seleniumgridhub": null,
      "platform": null,
      "platformname": null,
      "platformversion": null,
      "devicename": null,
      "sgbrowsername": null,
      "sgbrowserversion": null,
      "webstage": null,
      "testcasestage": "QA",
      "testcaseprebuildname": "",
      "fixedtime": 0,
      "isregressionjob": "1",
      "islateregressionjob": "0",
      "basebuild": "-1",
      "testbuild": "-1",
      "gherkin": "0",
      "chunkid": 168022,
      "resourcenumber": 0,
      "start": "2016-06-16T00:00:00",
      "end": "2016-06-16T00:54:00",
      "chunkids": [],
      "resourcenumbers": []
    },
    {
      "groupid": 138789,
      "startdatetime": "2016-06-16T00:00:00",
      "duration": 12,
      "startdate": "2016-06-16",
      "starttime": "00:00:00.0000000",
      "cronid": 56092,
      "instanceid": 81171,
      "eventid": 96397,
      "parentid": 4031,
      "ismultiplan": "1",
      "isseries": "1",
      "isexception": "0",
      "title": "Holder Type Analysis - Automation",
      "allday": "0",
      "priority": 1,
      "lastmodified": "2016-02-19T12:15:15",
      "exechost": "TELLUSB01",
      "isdev": "0",
      "runnow": "0",
      "scheduletype": "AddRecurrence",
      "emailrecipient": "results_coma@factset.com",
      "buildid": "8310",
      "buildversion": "/2016_V1/atlas_snapshot_2013.13.300/2013.13.300.167",
      "bitversion": "32bit",
      "windowsversion": "Win 7",
      "officeversion": "Office 2K7 SP2",
      "languagename": "English (US)",
      "vmsuserid": "FDSQAR_C",
      "stage": "Devel",
      "prebuildname": null,
      "htmlreports": "Staging",
      "htmlreportsos": "DEFAULT",
      "caccesscode": "LARGESETCACCESS",
      "tickerlistrequired": "0",
      "tickerlist": "-1",
      "browsertype": "Chrome",
      "browserversion": "29",
      "testserver": null,
      "controlserver": null,
```

```
        "justifiersystemid": "0",
        "justifierbuildid": "23192",
        "justifierlibraryid": "-1",
        "justifierproductid": "3649",
        "testenvironment": "FPE",
        "seleniumgridhub": null,
        "platform": null,
        "platformname": null,
        "platformversion": null,
        "devicename": null,
        "sgbrowsername": null,
        "sgbrowserversion": null,
        "webstage": null,
        "testcasestage": "QA",
        "testcaseprebuildname": "",
        "fixedtime": 0,
        "isregressionjob": "1",
        "islateregressionjob": "0",
        "basebuild": "-1",
        "testbuild": "-1",
        "gherkin": "0",
        "chunkid": 168023,
        "resourcenumber": 0,
        "start": "2016-06-16T00:00:00",
        "end": "2016-06-16T00:12:00",
        "chunkids": [],
        "resourcenumbers": []
      }
    ]
  }
}
```

Currently it sends all the fields above, but it only require the same fields as JEP above.

Response format for JobQueue

```
{
  "updatedJobs": {
    "fixedjobs": [
      {
        "allday": false,
        "chunkid": 168013,
        "cronid": 56082,
        "durationinmins": 26,
        "emailrecipient": "results_coma@factset.com",
        "end": "2016-06-16T00:26:00.0000000",
        "enddate": "2016-06-16",
        "endtime": "00:26:00.0000000",
        "eventid": 96386,
        "exechost": "TELLUSB01",
        "fixedtime": 1,
        "groupid": 138779,
        "id": 0,
        "isdev": 0,
        "isexception": 0,
        "isresult": false,
        "lastmodified": 0,
        "numberofvirtualmachines": 1,
        "numoftestcases": 0,
        "officeversion": "Office 2K7 SP2",
        "oldend": "2016-06-16T00:26:00",
        "oldstart": "2016-06-16T00:00:00",
        "parentid": 4014,
        "platform": "",
        "precedent": 0,
        "priority": 1,
        "resourcenumber": 9,
        "seleniumgridhub": "",
```

```
      "seriesid": 96386,
      "sgbrowsername": "",
      "sgbrowserversion": "",
      "stage": "Devel",
      "start": "2016-06-16T00:00:00.0000000",
      "startdate": "2016-06-16",
      "starteditable": false,
      "starttime": "00:00:00.0000000",
      "testenvironment": "FPE",
      "title": "Spots",
      "webstage": "",
      "windowsversion": "Win 7"
    },
    {
      "allday": false,
      "chunkid": 168140,
      "cronid": 56206,
      "durationinmins": 48,
      "emailrecipient": "results_coma@factset.com",
      "end": "2016-06-16T06:31:54.0000000",
      "enddate": "2016-06-16",
      "endtime": "06:31:54.0000000",
      "eventid": 97586,
      "exechost": "TELLUSB01",
      "fixedtime": 1,
      "groupid": 138903,
      "id": 0,
      "isdev": 0,
      "isexception": 0,
      "isresult": false,
      "lastmodified": 0,
      "numberofvirtualmachines": 1,
      "numoftestcases": 0,
      "officeversion": "Office 2K7 SP2",
      "oldend": "2016-06-16T06:31:54",
      "oldstart": "2016-06-16T05:43:54",
      "parentid": 4420,
      "platform": "",
      "precedent": 0,
      "priority": 1,
      "resourcenumber": 8,
      "seleniumgridhub": "",
      "seriesid": 97586,
      "sgbrowsername": "",
      "sgbrowserversion": "",
      "stage": "QA",
      "start": "2016-06-16T05:43:54.0000000",
      "startdate": "2016-06-16",
      "starteditable": false,
      "starttime": "05:43:54.0000000",
      "testenvironment": "FPE",
      "title": "Price History [results_coma]",
      "webstage": "",
      "windowsversion": "Win 7"
    }
  ],
  "updatedjobs": [
    {
      "allday": false,
      "chunkid": 168109,
      "cronid": 56288,
      "durationinmins": 28,
      "emailrecipient": "results_platform@factset.com",
      "end": "2016-06-16T00:44:00.0000000",
      "enddate": "2016-06-16",
      "endtime": "00:44:00.0000000",
      "eventid": 96527,
      "exechost": "TELLUSB01",
      "fixedtime": 0,
      "groupid": 138872,
```

```
        "id": 0,
        "isdev": 0,
        "isexception": 0,
        "isresult": false,
        "lastmodified": 0,
        "numberofvirtualmachines": 1,
        "numoftestcases": 0,
        "officeversion": "Office 2K7 SP2",
        "oldend": "2016-06-16T00:47:00",
        "oldstart": "2016-06-16T00:19:00",
        "parentid": 4303,
        "platform": "",
        "precedent": 0,
        "priority": 1,
        "resourcenumber": 6,
        "seleniumgridhub": "",
        "seriesid": 96527,
        "sgbrowsername": "",
        "sgbrowserversion": "",
        "stage": "Devel",
        "start": "2016-06-16T00:16:00.0000000",
        "startdate": "2016-06-16",
        "starteditable": false,
        "starttime": "00:16:00.0000000",
        "testenvironment": "FPE",
        "title": "Create Book",
        "webstage": "",
        "windowsversion": "Win 8.1x64"
    },
    {
        "allday": false,
        "chunkid": 168113,
        "cronid": 56290,
        "durationinmins": 17,
        "emailrecipient": "results_platform@factset.com",
        "end": "2016-06-16T00:36:00.0000000",
        "enddate": "2016-06-16",
        "endtime": "00:36:00.0000000",
        "eventid": 96531,
        "exechost": "TELLUSB01",
        "fixedtime": 0,
        "groupid": 138876,
        "id": 0,
        "isdev": 0,
        "isexception": 0,
        "isresult": false,
        "lastmodified": 0,
        "numberofvirtualmachines": 1,
        "numoftestcases": 0,
        "officeversion": "Office 2010x64",
        "oldend": "2016-06-16T00:40:00",
        "oldstart": "2016-06-16T00:23:00",
        "parentid": 4307,
        "platform": "",
        "precedent": 0,
        "priority": 1,
        "resourcenumber": 0,
        "seleniumgridhub": "",
        "seriesid": 96531,
        "sgbrowsername": "",
        "sgbrowserversion": "",
        "stage": "Devel",
        "start": "2016-06-16T00:19:00.0000000",
        "startdate": "2016-06-16",
        "starteditable": false,
        "starttime": "00:19:00.0000000",
        "testenvironment": "FPE",
        "title": "Templates",
        "webstage": "",
        "windowsversion": "Win 7x64"
```

```
        }
    ]
  }
}
```

Note: If the number of objects is 1, then it will return an object instead of array (e.g. for updatedjobs.)

Tellus Job Scheduler code overview

Friday, June 09, 2017   11:20 AM

- JobScheduler is RESTful Web Service implemented with JaxRS.
- It is currently compatible with TomEE plus 1.7.3 and TomEE plus 1.7.4

- Application code is under src/.
- Main class is com.factset.rest.schedulercaller.SchedulingClass.

- REST entry point is defined by @GET and @POST methods in SchedulingClass class
- REST service path:
        @Path("/scheduler")
        @Singleton
        public class SchedulingClass {
        .....

- /scheduler/status REST entry point:
        @GET
        @Path("/status")
        @Produces(MediaType.APPLICATION_JSON)
        public Response getStatus(){
        .....

- /scheduler/schedulejobs. This is REST entry point for scheduling jobs:

        @POST
        @Path("/schedulejobs")
        @Consumes(MediaType.APPLICATION_JSON)
        @Produces(MediaType.APPLICATION_JSON)
        public Response scheduleJobs(@Context HttpServletRequest req, ArrayList<Task> tasks){
      . . .

    ○ SchedulingClassclass is the main logic for scheduling jobs and jobQueue. It is usually called by jobqueue and sends the updat ed/rescheduled jobs with new start time back to jobqueue which then updates the db and re-registers the jobs. It takes in a list of jobs that the user wants to schedule and calls the Job Scheduler to schedule the jobs.

- /scheduler/jobQueueRequest. This is the entry point for jobqueue.
        @POST
        @Path("/jobQueueRequest")
        @Consumes(MediaType.APPLICATION_JSON)
        @Produces(MediaType.APPLICATION_JSON)
        public Response jobQueueRequest(JobQueue request){
        ......

        This entry point handles a job queue request, which includes fixed jobs and movable jobs.

- /scheduler/findavailabletimes. This is the entry point for finding all available free times that are compatible with the spedfied query

        @POST
        @Path("/findavailabletimes")
        @Consumes(MediaType.APPLICATION_JSON)
        @Produces(MediaType.APPLICATION_JSON)
        public Response findAvailableTimes(@Context HttpServletRequest req, TimeQuery query){
        ......

        This entry point handles a query that contains a job's priority, duration, start date, and test environment.

Tellus Job Scheduler Configuration (RestfulSchedulingService)
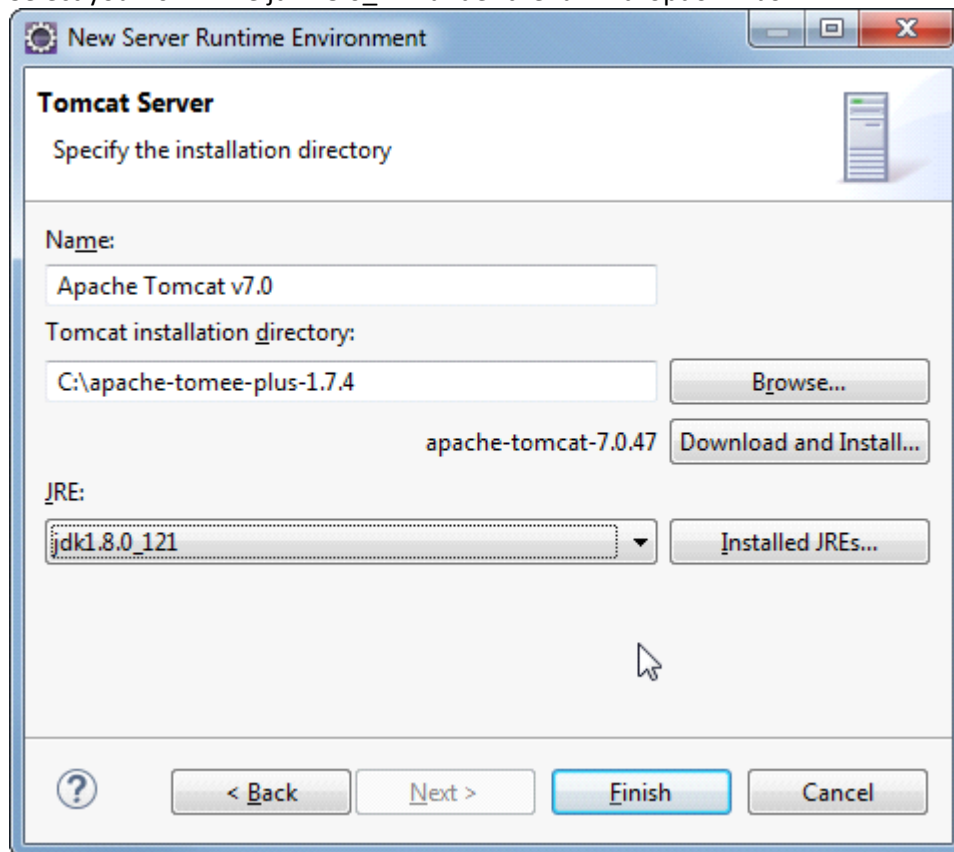
Current Scheduler limits in configuration:
FPE: 15
SGE: 10

OLD Eclipse Web Application Setup
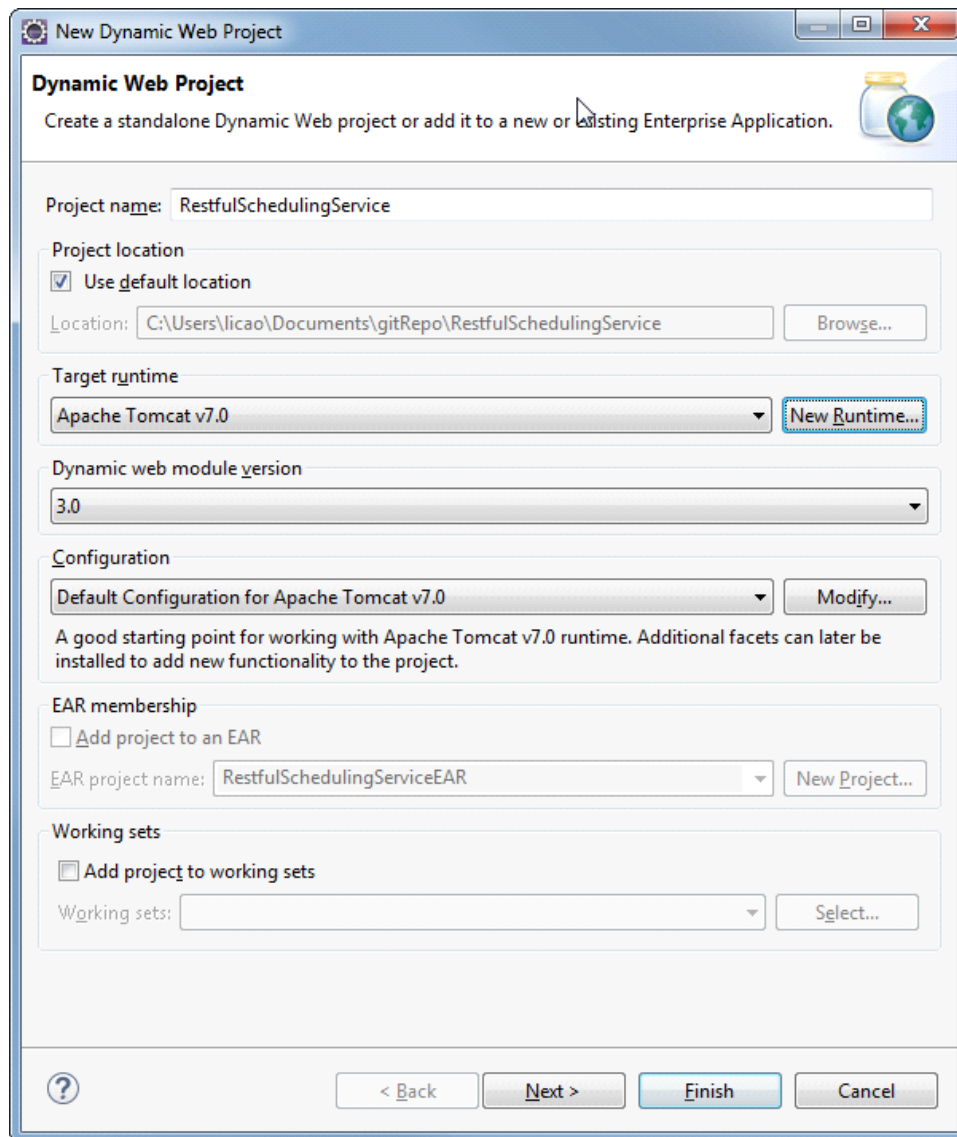## Install Dependencies:
- log4j-1.2.17.jar file: https://mvnrepository.com/artifact/log4j/log4j/1.2.17
- Copy its jar file to TomEE\lib\

- Create a directory like "C:\Users\username\Documents\gitRepo" as the workspace for Eclipse
- Change to the above directory
- Download source code:
  `git clone git@gitlab.factset.com:app-qa-automation/`RestfulSchedulingService.git
  to the current directory.
- Open Eclipse and select the directory like "C:\Users\licao\Documents\gitRepo" you created as the Workspace

- Create a new Dynamic Web project called "**RestfulSchedulingService**" (the same name as the project you pulled) in Eclipse:
    - Click **New Runtime** button for **Target runtime** and select "Apache->**Apache Tomcat v7.0**"
    - Click **Next**
    - Click **Browse** button to find the "**Tomcat installation directory**" (for me, this is C:\apache-tomee-plus-1.7.4)
    - Select your "**JRE**" like jdk1.8.0_121 under the "JRE" dropdown box.
    -

        ![New Server Runtime Environment dialog. Tomcat Server - Specify the installation directory. Name: Apache Tomcat v7.0. Tomcat installation directory: C:\apache-tomee-plus-1.7.4 with Browse button. apache-tomcat-7.0.47 with Download and Install button. JRE: jdk1.8.0_121 with Installed JREs button. Buttons: Back, Next, Finish, Cancel.]

    - Click **Finish**
    - You will see a window like this:

- ○ Click **Finish**

An Easy Way to Create a scheduler project in Eclipse

- ○ Copy the latest war file "RestfulSchedulingService.war" with source code under the folder C:\apache-tomee-plus-1.7.3\webapps on the server tellusstgb01 to your laptop
- ○ Open Eclipse IDE
- ○ Set java compiler to 1.8
- ○ Set up Server Runtime environment (refer to Development Environment Setup above)
- ○ Import the war file "RestfulSchedulingService.war" into your IDE.

- • Add SQL Server JDBC driver dependency:
  - ○ Right-click project **RestfulSchedulingService** and open **Properties** window
  - ○ select **Build Path > Configure Build Path**
  - ○ Click **Add External Jars**
  - ○ Select path to **sqljdbc42.jar, log4j-1.2.17.jar**
  - ○ Click **OK**

Building the Project

Eclipse automatically compiles when you modify the source code, so no need to build explicitly.