Templeton

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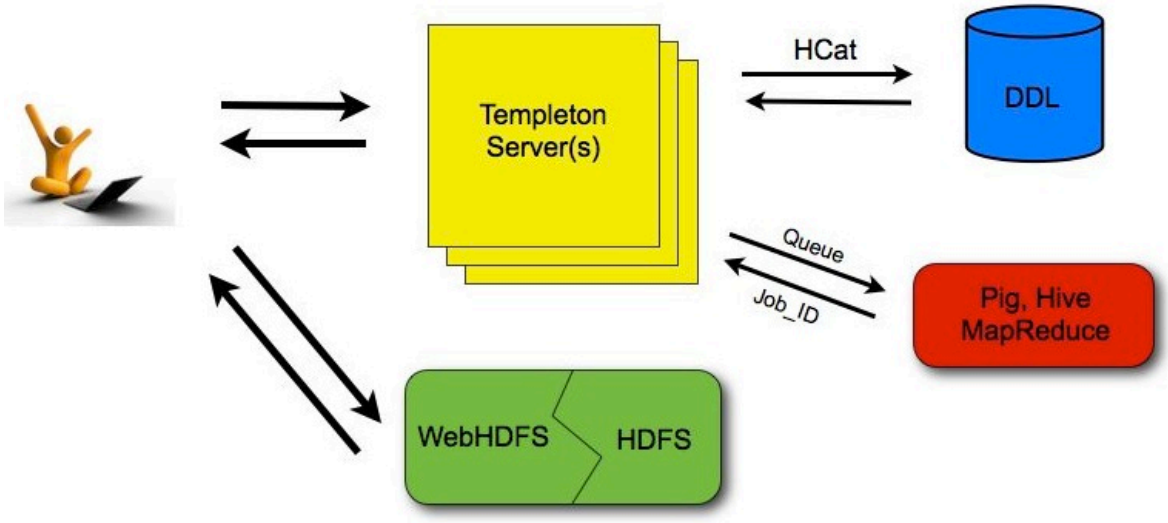
1.1 Templeton

1.1.1 Introduction

Templeton provides a REST-like web API for HCatalog and related Hadoop components. As shown in the figure below, developers make HTTP requests to access Hadoop MapReduce, Pig, Hive, and HCatalog DDL from within applications. Data and code used by Templeton is maintained in HDFS. HCatalog DDL commands are executed directly when requested. MapReduce, Pig, and Hive jobs are placed in queue by Templeton and can be monitored for progress or stopped as required. Developers specify a location in HDFS into which Templeton should place Pig, Hive, and MapReduce results.



1.1.2 URL format

Templeton resources are accessed using the following URL format:

`http://`*`yourserver`*`/templeton/v1/`*`resource`*

where "*yourserver*" is replaced with your server name, and "*resource*" is replaced by the Templeton resource name.

For example, to check if the Templeton server is running you could access the following URL:

```
http://www.myserver.com/templeton/v1/status
```

1.1.3 Security

The current version of Templeton supports two types of security:

- Default security (without additional authentication)
- Authentication via Kerberos

1.1.3.1 Standard Parameters

Every Templeton resource can accept the following parameters to aid in authentication:

- user.name: The user name as a string. Only valid when using default security.
- SPNEGO credentials: When running with Kerberos authentication.

1.1.3.2 Security Error Response

If the user.name parameter is not supplied when required, Templeton returns the following error:

```
{
  "error": "No user found.  Missing user.name parameter."
}
```

1.1.4 WebHDFS and Code Push

Data and code that are used by Templeton resources must first be placed in Hadoop. The current version of Templeton does not attempt to integrate or replace existing web interfaces that can perform this task, like WebHDFS. (Integration of these functions in some way, perhaps forwarding, is planned for a future release.) When placing files into HDFS is required you can use whatever method is most convienient for you.

1.1.5 Error Codes and Responses

The Templeton server returns the following HTTP status codes.

- **200 OK:** Success!
- **400 Bad Request:** The request was invalid.
- **401 Unauthorized:** Credentials were missing or incorrect.
- **404 Not Found:** The URI requested is invalid or the resource requested does not exist.
- **500 Internal Server Error:** We received an unexpected result.
- **503 Busy, please retry:** The server is busy.

Other data returned directly by Templeton is currently returned in JSON format. JSON responses are limited to 1MB in size. Responses over this limit must be stored into HDFS using provided options instead of being directly returned. If an HCatalog DDL command

might return results greater than 1MB, it's suggested that a corresponding Hive request be executed instead.

1.1.6 Log Files

The Templeton server creates three log files when in operation:

- **templeton.log** is the log4j log. This the main log the application writes to.
- **templeton-console.log** is what Java writes to stdout when Templeton is started. It is a small amount of data, similar to "hcat.out".
- **tempelton-console-error.log** is what Java writes to stderr, similar to "hcat.err".

In the tempelton-log4j.properties file you can set the location of these logs using the variable templeton.log.dir. This log4j.properties file is set in the server startup script.

1.1.7 Project Name

The Templeton project is named after the a character in the award-winning children's novel Charlotte's Web, by E. B. White. The novel's protagonist is a pig named Wilber. Templeton is a rat who helps Wilber by running errands and making deliveries.

1.2 Installation

1.2.1 Introduction

Templeton is deep in the middle of development and does not yet have a smooth install procedure. It is also designed to connect together services that are not normally connected and therefore has a complex configuration. As such, this version of Templeton should only be installed by expert developers.

1.2.2 Procedure

1. Ensure that the required related installations are in place, and place required files into the Hadoop distributed cache.
2. Download and unpack the Templeton distribution.
3. Set the `TEMPLETON_HOME` environment variable to the base of the Templeton installation. This is used to find the Templeton configuration.
4. Review the Templeton configuration and update or create `templeton-site.xml` as required. Ensure that site specific component installation locations are accurate, especially the Hadoop configuration path. Configuration variables that use a filesystem path try to have reasonable defaults, but it's always safe to specify a full and complete path.
5. Verify that HCatalog is installed and that the `hcat` executable is in the PATH.
6. Build Templeton using the command `ant jar` from the top level Templeton directory.

7. Start the Templeton server with the command `bin/templeton_server.sh start`.
8. Check that your local install works. Assuming that Tomcat is running on port 8080, the following command would give output similar to that shown.

```
% curl -i http://localhost:50111/templeton/v1/status
HTTP/1.1 200 OK
Content-Type: application/json
Transfer-Encoding: chunked
Server: Jetty(7.6.0.v20120127)

{"status":"ok","version":"v1"}
%
```

1.2.3 Server Commands

- **Start the server:** `bin/templeton_server.sh start`
- **Stop the server:** `bin/templeton_server.sh stop`
- **End-to-end build, run, test:** `ant e2e`

1.2.4 Requirements

- Ant, version 1.8 or higher
- Hadoop, version 0.20.205.0
- ZooKeeper is required if you are using the ZooKeeper storage class. (Be sure to review and update the ZooKeeper related Templeton configuration.)
- HCatalog. Version 0.4.1 or higher. The hcat executable must be both in the PATH and properly configured in the Templeton configuration.
- Permissions must be given to the user running Templeton server. (see below)
- If running a secure cluster, Kerberos keys and principals must be created. (see below)
- Hadoop Distributed Cache. To use the Hive, Pig, or hadoop/streaming resources, see instructions below for placing the required files in the Hadoop Distributed Cache.

1.2.5 Hadoop Distributed Cache

Templeton requires some files be accessible on the Hadoop distributed cache. For example, to avoid the installation of Pig and Hive everywhere on the cluster, Templeton gathers a version of Pig or Hive from the Hadoop distributed cache whenever those resources are invoked. After placing the following components into HDFS please update the site configuration as required for each.

- **Hive**: Download the HCatalog tar.gz file and place it in HDFS. (If you need a version that is not yet released, you may need to build it yourself following the HCatalog instructions.)

```
hadoop fs -put /tmp/hcatalog-0.3.0.tar.gz /user/templeton/hcatalog-0.3.0.tar.gz
```

- **Pig**: Download the Pig tar.gz file and place it into HDFS. For example:

```
hadoop fs -put /tmp/pig-0.9.2.tar.gz /user/templeton/pig-0.9.2.tar.gz
```

- **Hadoop Streaming**: Place `hadoop-streaming.jar` into HDFS. For example, use the following command, substituting your path to the jar for the one below.

```
hadoop fs -put $HADOOP_PREFIX/hadoop-0.20.205.0/contrib/streaming/hadoop-
streaming-0.20.205.0.jar \
 /user/templeton/hadoop-streaming.jar
```

- **Override Jars**: Place override jars required (if any) into HDFS. *Note*: As of this writing, all released versions of Hadoop require a patch to properly run Templeton. This patch is distributed with Templeton (located at `templeton/src/hadoop_temp_fix/ugi.jar`) and should be placed into HDFS, as reflected in the current default configuration.

```
hadoop fs -put ugi.jar /user/templeton/ugi.jar
```

The location of these files in the cache, and the location of the installations inside the archives, can be specified using the following Templeton configuration variables. (See the Configuration documentation for more information on changing Templeton configuration parameters.)

Name	Default	Description
templeton.pig.archive	`hdfs:///user/templeton/pig-0.9.2.tar.gz`	The path to the Pig archive.
templeton.pig.path	`pig-0.9.2.tar.gz/pig-0.9.2/bin/pig`	The path to the Pig executable.
templeton.hive.archive	`hdfs:///user/templeton/hcatalog-0.3.0.tar.gz`	The path to the Hive archive.
templeton.hive.path	`hcatalog-0.3.0.tar.gz/hcatalog-0.3.0/bin/hive`	The path to the Hive executable.
templeton.streaming.jar	`hdfs:///user/templeton/hadoop-streaming.jar`	The path to the Hadoop streaming jar file.
templeton.override.jars	`hdfs:///user/templeton/ugi.jar`	Jars to add to the HADOOP_CLASSPATH for all Map Reduce jobs. These jars must exist on HDFS.

1.2.6 Permissions

Permission must given for the user running the templeton executable to run jobs for other users. That is, the templeton server will impersonate users on the Hadoop cluster.

Create (or assign) a Unix user who will run the Templeton server. Call this USER. See the Secure Cluster section below for choosing a user on a Kerberos cluster.

Modify the Hadoop core-site.xml file and set these properties:

Variable	Value
hadoop.proxyuser.USER.groups	A comma separated list of the Unix groups whose users will be impersonated.
hadoop.proxyuser.USER.hosts	A comma separated list of the hosts that will run the hcat and JobTracker servers.

1.2.7 Secure Cluster

To run Templeton on a secure cluster follow the Permissions instructions above but create a Kerberos principal for the Templeton server with the name `HTTP/host@realm`. Add the hadoop.proxyuser.* config parameters to hive/hcat metastore's hive-site.xml as well.

Also, set the templeton configuration variables

Variable	Value
templeton.kerberos.principal	The kerberos principal used by templeton server. It should be of the form HTTP/host@realm.
templeton.kerberos.keytab	keytab file for templeton kerberos principal.
templeton.kerberos.secret	any random string.

1.3 Configuration

The configuration for Templeton merges the normal Hadoop configuration with the Templeton specific variables. Because Templeton is designed to connect services that are not normally connected, the configuration is more complex than might be desirable.

The Templeton specific configuration is split into two layers:

1. **templeton-default.xml** - All the configuration variables that Templeton needs. This file sets the defaults that ship with Templeton and should only be changed by Templeton developers. Do not copy this file and/or change it to maintain local installation settings. Because templeton-default.xml is present in the Templeton war file, editing a local copy of it will not change the configuration.

2. **templeton-site.xml -** The (possibly empty) configuration file in which the system administrator can set variables for their Hadoop cluster. Create this file and maintain entries in it for configuration variables that require you to override default values based on your local installation.

The configuration files are loaded in this order with later files overriding earlier ones.

Note: the Templeton server will require restart after any change to the configuration.

To find the configuration files, Templeton first attempts to load a file from the `CLASSPATH` and then looks in the directory specified in the `TEMPLETON_HOME` environment variable.

Configuration files may access the special environment variable `env` for all environment variables. For example, the pig executable could be specified using:

```
${env.PIG_HOME}/bin/pig
```

Configuration variables that use a filesystem path try to have reasonable defaults. However, it's always safe to specify the full and complete path if there is any uncertainty.

Note: The location of the log files created by Templeton and some other properties of the logging system are set in the templeton-log4j.properties file.

1.3.1 Variables

Name	Default	Description
templeton.port	`50111`	The HTTP port for the main server.
templeton.hadoop.config.dir	`$(env.HADOOP_CONFIG_DIR)`	The path to the Hadoop configuration.
templeton.jar	`${env.TEMPLETON_HOME}/templeton/templeton-0.1.0-dev.jar`	The path to the Templeton jar file.
templeton.libjars	`${env.TEMPLETON_HOME}/lib/zookeeper-3.3.4.jar`	Jars to add to the classpath.
templeton.override.jars	`hdfs:///user/templeton/ugi.jar`	Jars to add to the HADOOP_CLASSPATH for all Map Reduce jobs. These jars must exist on HDFS.
templeton.override.enabled	`true`	Enable the override path in templeton.override.jars

Name	Default	Description
templeton.streaming.jar	`hdfs:///user/templeton/hadoop-streaming.jar`	The hdfs path to the Hadoop streaming jar file.
templeton.hadoop	`${env.HADOOP_PREFIX}/bin/hadoop`	The path to the Hadoop executable.
templeton.pig.archive	`hdfs:///user/templeton/pig-0.9.2.tar.gz`	The path to the Pig archive.
templeton.pig.path	`pig-0.9.2.tar.gz/pig-0.9.2/bin/pig`	The path to the Pig executable.
templeton.hcat	`${env.HCAT_PREFIX}/bin/hcat`	The path to the Hcatalog executable.
templeton.hive.archive	`hdfs:///user/templeton/hcatalog-0.3.0.tar.gz`	The path to the Hive archive.
templeton.hive.path	`hcatalog-0.3.0.tar.gz/hcatalog-0.3.0/bin/hive`	The path to the Hive executable.
templeton.hive.properties	`hive.metastore.local=fal hive.metastore.uris=thri localhost:9933, hive.metastore.sasl.enab`	Properties to set when running hive.
templeton.exec.encoding	`UTF-8`	The encoding of the stdout and stderr data.
templeton.exec.timeout	`10000`	How long in milliseconds a program is allowed to run on the Templeton box.
templeton.exec.max-procs	`16`	The maximum number of processes allowed to run at once.
templeton.exec.max-output-bytes	`1048576`	The maximum number of bytes from stdout or stderr stored in ram.
templeton.exec.envs	`HADOOP_PREFIX,HADOOP_HOM`	The environment variables passed through to exec.
templeton.zookeeper.hosts	`127.0.0.1:2181`	ZooKeeper servers, as comma separated host:port pairs
templeton.zookeeper.session-timeout	`30000`	ZooKeeper session timeout in milliseconds

Name	Default	Description
templeton.callback.retry.interval	`10000`	How long to wait between callback retry attempts in milliseconds
templeton.callback.retry.attempts	`5`	How many times to retry the callback
templeton.storage.class	`org.apache.hcatalog.temp`	The class to use as storage ge
templeton.storage.root	`/templeton-hadoop`	The path to the directory to use for storage
templeton.hdfs.cleanup.interval	`43200000`	The maximum delay between a thread's cleanup checks
templeton.hdfs.cleanup.maxage	`604800000`	The maximum age of a templeton job
templeton.zookeeper.cleanup.inter	`43200000`	The maximum delay between a thread's cleanup checks
templeton.zookeeper.cleanup.max	`604800000`	The maximum age of a templeton job
templeton.kerberos.secret	A random value	The secret used to sign the HTTP cookie value. The default value is a random value. Unless multiple Templeton instances need to share the secret the random value is adequate.
templeton.kerberos.principal	None	The Kerberos principal to used by the server. As stated by the Kerberos SPNEGO specification, it should be `USER/${HOSTNAME}@{REALM}`. It does not have a default value.
templeton.kerberos.keytab	None	The keytab file containing the credentials for the Kerberos principal.

1.4 Reference

1.4.1 Templeton Resources

Resource	Description
:version	Returns a list of supported response types.
status	Returns the Templeton server status.
version	Returns the a list of supported versions and the current version.
ddl	Performs an HCatalog DDL command.
ddl/database	List HCatalog databases.
ddl/database/:db (GET)	Describe an HCatalog database.
ddl/database/:db (PUT)	Create an HCatalog database.
ddl/database/:db (DELETE)	Delete (drop) an HCatalog database.
ddl/database/:db/table	List the tables in an HCatalog database.
ddl/database/:db/table/:table (GET)	Describe an HCatalog table.
ddl/database/:db/table/:table (PUT)	Create a new HCatalog table.
ddl/database/:db/table/:table (POST)	Rename an HCatalog table.
ddl/database/:db/table/:table (DELETE)	Delete (drop) an HCatalog table.
ddl/database/:db/table/:existingtable/like/:newtable (PUT)	Create a new HCatalog table like an existing one.
ddl/database/:db/table/:table/partion	List all partitions in an HCatalog table.
ddl/database/:db/table/:table/partion/:partition (GET)	Describe a single partition in an HCatalog table.
ddl/database/:db/table/:table/partion/:partition (PUT)	Create a partition in an HCatalog table.
ddl/database/:db/table/:table/partion/:partition (DELETE)	Delete (drop) a partition in an HCatalog table.
ddl/database/:db/table/:table/column	List the columns in an HCatalog table.
ddl/database/:db/table/:table/column/:column (GET)	Describe a single column in an HCatalog table.
ddl/database/:db/table/:table/column/:column (PUT)	Create a column in an HCatalog table.
ddl/database/:db/table/:table/property (GET)	List table properties.

Resource	Description
ddl/database/:db/table/:table/property/:property (GET)	Return the value of a single table property.
ddl/database/:db/table/:table/property/:property (PUT)	Set a table property.
mapreduce/streaming	Creates and queues Hadoop streaming MapReduce jobs.
mapreduce/jar	Creates and queues standard Hadoop MapReduce jobs.
pig	Creates and queues Pig jobs.
hive	Runs Hive queries and commands.
queue	Returns a list of all jobids registered for the user.
queue/:jobid (GET)	Returns the status of a job given its ID.
queue/:jobid (DELETE)	Kill a job given its ID.

1.4.2 GET :version

1.4.2.1 Description

Returns a list of the response types supported by Templeton.

1.4.2.2 URL

`http://`www.myserver.com`/templeton/`:version

1.4.2.3 Parameters

Name	Description	Required?	Default
:version	The Templeton version number. (Currently this must be "v1")	Required	None

1.4.2.4 Results

Name	Description
responseTypes	A list of all supported response types

1.4.2.5 Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1'
```

JSON Output

```
{
  "responseTypes": [
    "application/json"
  ]
}
```

JSON Output (error)

```
{
  "error": "null for uri: http://localhost:50111/templeton/v2"
}
```

1.4.3 GET status

1.4.3.1 Description

Returns the current status of the Templeton server. Useful for heartbeat monitoring.

1.4.3.2 URL

`http://`www.myserver.com`/templeton/v1/status`

1.4.3.3 Parameters

Only the standard parameters are accepted.

1.4.3.4 Results

Name	Description
status	"ok" if the Templeton server was contacted.
version	String containing the version number similar to "v1".

1.4.3.5 Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/status'
```

JSON Output

```
{
 "status": "ok",
 "version": "v1"
}
```

1.4.4 GET version

1.4.4.1 Description

Returns a list of supported versions and the current version.

1.4.4.2 URL

`http://`www.myserver.com`/templeton/v1/version`

1.4.4.3 Parameters

Only the standard parameters are accepted.

1.4.4.4 Results

Name	Description
supportedVersions	A list of all supported versions.
version	The current version.

1.4.4.5 Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/version'
```

JSON Output

```
{
 "supportedVersions": [
   "v1"
 ],
 "version": "v1"
}
```

1.4.5 ddl

1.4.5.1 Templeton DDL Resources

Resource	Description
ddl	Performs an HCatalog DDL command.
ddl/database	List HCatalog databases.
ddl/database/:db (GET)	Describe an HCatalog database.
ddl/database/:db (PUT)	Create an HCatalog database.
ddl/database/:db (DELETE)	Delete (drop) an HCatalog database.
ddl/database/:db/table	List the tables in an HCatalog database.
ddl/database/:db/table/:table (GET)	Describe an HCatalog table.
ddl/database/:db/table/:table (PUT)	Create a new HCatalog table.
ddl/database/:db/table/:table (POST)	Rename an HCatalog table.
ddl/database/:db/table/:table (DELETE)	Delete (drop) an HCatalog table.
ddl/database/:db/table/:existingtable/like/:newtable (PUT)	Create a new HCatalog table like an existing one.
ddl/database/:db/table/:table/partion	List all partitions in an HCatalog table.
ddl/database/:db/table/:table/partion/:partition (GET)	Describe a single partition in an HCatalog table.
ddl/database/:db/table/:table/partion/:partition (PUT)	Create a partition in an HCatalog table.
ddl/database/:db/table/:table/partion/:partition (DELETE)	Delete (drop) a partition in an HCatalog table.
ddl/database/:db/table/:table/column	List the columns in an HCatalog table.
ddl/database/:db/table/:table/column/:column (GET)	Describe a single column in an HCatalog table.
ddl/database/:db/table/:table/column/:column (PUT)	Create a column in an HCatalog table.
ddl/database/:db/table/:table/property (GET)	List table properties.
ddl/database/:db/table/:table/property/:property (GET)	Return the value of a single table property.
ddl/database/:db/table/:table/property/:property (PUT)	Set a table property.

1.4.5.2 POST ddl

Description

Performs an HCatalog DDL command. The command is executed immediately upon request. Responses are limited to 1MB. For requests which may return longer results consider using the Hive resource as an alternative.

URL

`http://`www.myserver.com`/templeton/v1/ddl`

Parameters

Name	Description	Required?	Default
exec	The HCatalog ddl string to execute	Required	None
group	The user group to use when creating a table	Optional	None
permissions	The permissions string to use when creating a table. The format is "`rwxrw-r-x`".	Optional	None

Results

Name	Description
stdout	A string containing the result HCatalog sent to standard out (possibly empty).
stderr	A string containing the result HCatalog sent to standard error (possibly empty).
exitcode	The exitcode HCatalog returned.

Example

Curl Command

```
% curl -s -d user.name=ctdean \
       -d 'exec=show tables;' \
       'http://localhost:50111/templeton/v1/ddl'
```

JSON Output

```
```

```
{
 "stdout": "important_table
            my_other_table
            my_table
            my_table_2
            pokes
            ",
 "stderr": "WARNING: org.apache.hadoop.metrics.jvm.EventCounter is deprecated...
            Hive history file=/tmp/ctdean/hive_job_log_ctdean_201111111258_2117356679.txt
            OK
            Time taken: 1.202 seconds
            ",
 "exitcode": 0
}
```

JSON Output (error)

```
{
  "stdout": "",
  "stderr": "WARNING: org.apache.hadoop.metrics.jvm.EventCounter is deprecated...
            Hive history file=/tmp/ctdean/hive_job_log_ctdean_201204051246_689834593.txt
            FAILED: Parse Error: line 1:5 Failed to recognize predicate 'tab'...

            ",
  "exitcode": 11
}
```

1.4.5.3 GET ddl/database

Description

List the databases in HCatalog.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database`

Parameters

Name	Description	Required?	Default
like	List only databases whose names match the specified pattern	Optional	"*" (List all)

Results

Name	Description
databases	A list of database names

Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/ddl/database?user.name=ctdean&like=n*'
```

JSON Output

```
{
 "databases": [
   "newdb",
   "newdb2"
 ]
}
```

1.4.5.4 GET ddl/database/:db

Description

Describe a database. (Note: this resource has a "format=extended" parameter however the output structure does not change if it is used.)

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None

Results

Name	Description
location	The database location
params	The database parameters
comment	The database comment
database	The database name

Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/ddl/database/newdb?user.name=ctdean'
```

JSON Output

```
{
 "location":"hdfs://localhost:9000/warehouse/newdb.db",
 "params":"{a=b}",
 "comment":"Hello there",
 "database":"newdb"
}
```

JSON Output (error)

```
{
  "error": "No such database: newdb",
  "errorCode": 404
}
```

1.4.5.5 PUT ddl/database/:db

Description

Create a database.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
group	The user group to use	Optional	None
permissions	The permissions string to use	Optional	None
location	The database location	Optional	None
comment	A comment for the database, like a description	Optional	None
properties	The database properties	Optional	None

Results

Name	Description
database	The database name

Example

Curl Command

```
% curl -s -X PUT -HContent-type:application/json \
       -d '{ "comment":"Hello there",
             "location":"hdfs://localhost:9000/user/hive/my_warehouse",
             "properties":{"a":"b"}}' \
       'http://localhost:50111/templeton/v1/ddl/database/newdb?user.name=rachel'
```

JSON Output

```
{
 "database":"newdb"
}
```

1.4.5.6 DELETE ddl/database/:db

Description

Delete a database.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
ifExists	Hive returns an error if the database specified does not exist, unless ifExists is set to true.	Optional	false
option	Parameter set to either "restrict" or "cascade". Restrict will remove the schema if all the tables are empty. Cascade removes everything	Optional	None

Name	Description	Required?	Default
	including data and definitions.		
group	The user group to use	Optional	None
permissions	The permissions string to use. The format is "rwxrw-r-x".	Optional	None

Results

Name	Description
database	The database name

Example

Curl Command

```
% curl -s -X DELETE "http://localhost:50111/templeton/v1/ddl/database/newdb?
user.name=ctdean"
```

JSON Output

```
{
 "database":"newdb"
}
```

JSON Output (error)

```
{
  "errorDetail": "
    NoSuchObjectException(message:There is no database named my_db)
        at org.apache.hadoop.hive.metastor...
    ",
  "error": "There is no database named newdb",
  "errorCode": 404,
  "database": "newdb"
}
```

1.4.5.7 GET ddl/database/:db/table

Description

List the tables in an HCatalog database.

URL

`http://www.myserver.com/templeton/v1/ddl/database/:db/table`

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
like	List only tables whose names match the specified pattern	Optional	"*" (List all tables)

Results

Name	Description
tables	A list of table names
database	The database name

Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/ddl/database/default/table?
user.name=ctdean&like=m*'
```

JSON Output

```
{
 "tables": [
   "my_table",
   "my_table_2",
   "my_table_3"
 ],
 "database": "default"
}
```

JSON Output (error)

```
{
  "errorDetail": "
    org.apache.hadoop.hive.ql.metadata.HiveException: ERROR: The database defaultsd does
 not exist.
        at org.apache.hadoop.hive.ql.exec.DDLTask.switchDatabase(DDLTask.java:3122)
        at org.apache.hadoop.hive.ql.exec.DDLTask.execute(DDLTask.java:224)
        at org.apache.hadoop.hive.ql.exec.Task.executeTask(Task.java:134)
        at org.apache.hadoop.hive.ql.exec.TaskRunner.runSequential(TaskRunner.java:57)
        at org.apache.hadoop.hive.ql.Driver.launchTask(Driver.java:1332)
```

```
        at org.apache.hadoop.hive.ql.Driver.execute(Driver.java:1123)
        at org.apache.hadoop.hive.ql.Driver.run(Driver.java:931)
        at org.apache.hcatalog.cli.HCatDriver.run(HCatDriver.java:42)
        at org.apache.hcatalog.cli.HCatCli.processCmd(HCatCli.java:247)
        at org.apache.hcatalog.cli.HCatCli.processLine(HCatCli.java:203)
        at org.apache.hcatalog.cli.HCatCli.main(HCatCli.java:162)
        at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
        at sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:39)
        at
 sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:25)
        at java.lang.reflect.Method.invoke(Method.java:597)
        at org.apache.hadoop.util.RunJar.main(RunJar.java:156)
    ",
  "error": "FAILED: Error in metadata: ERROR: The database defaultsd does not exist.",
  "errorCode": 500,
  "database": "defaultsd"
}
```

1.4.5.8 GET ddl/database/:db/table/:table

Description

Describe an HCatalog table. Normally returns a simple list of columns (using "desc table"), but the extended format will show more information (using "show table extended like").

URL

`http://www.myserver.com/templeton/v1/ddl/database/:db/table/:table`

`http://www.myserver.com/templeton/v1/ddl/database/:db/table/:table?format=extended`

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The table name	Required	None
format	Set "format=extended" to see additional information (using "show table extended like")	Optional	Not extended

Results

Name	Description
columns	A list of column names and types
database	The database name

Name	Description
table	The table name
partitioned (extended only)	True if the table is partitioned
location (extended only)	Location of table
outputFormat (extended only)	Output format
owner (extended only)	The owner's user name
partitionColumns (extended only)	List of the partition columns
inputFormat (extended only)	Input format

Example

Curl Command (simple)

```
% curl -s 'http://localhost:50111/templeton/v1/ddl/database/default/table/my_table?
user.name=ctdean'
```

JSON Output (simple)

```
{
 "columns": [
   {
     "name": "id",
     "type": "bigint"
   },
   {
     "name": "user",
     "comment": "The user name",
     "type": "string"
   },
   {
     "name": "my_p",
     "type": "string"
   },
   {
     "name": "my_q",
     "type": "string"
   }
 ],
 "database": "default",
 "table": "my_table"
}
```

Curl Command (extended)

```

```

```
% curl -s 'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table?
user.name=ctdean&format=extended'
```

JSON Output (extended)

```
{
  "partitioned": true,
  "location": "hdfs://ip-10-77-6-151.ec2.internal:8020/apps/hive/warehouse/test_table",
  "outputFormat": "org.apache.hadoop.hive.ql.io.RCFileOutputFormat",
  "columns": [
    {
      "name": "id",
      "type": "bigint"
    },
    {
      "name": "price",
      "comment": "The unit price",
      "type": "float"
    }
  ],
  "owner": "ctdean",
  "partitionColumns": [
    {
      "name": "country",
      "type": "string"
    }
  ],
  "inputFormat": "org.apache.hadoop.hive.ql.io.RCFileInputFormat",
  "database": "default",
  "table": "test_table"
}
```

JSON Output (error)

```
{
  "error": "Table xtest_table does not exist",
  "errorCode": 404,
  "database": "default",
  "table": "xtest_table"
}
```

1.4.5.9 PUT ddl/database/:db/table/:table

Description

Create a new HCatalog table. For more information, please refer to the Hive documentation.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The new table name	Required	None
group	The user group to use when creating a table	Optional	None
permissions	The permissions string to use when creating a table.	Optional	None
external	Allows you to specify a location so that Hive does not use the default location for this table.	Optional	false
ifNotExists	If true, you will not receive an error if the table already exists.	Optional	false
comment	Comment for the table	Optional	None
columns	A list of column descriptions, including name, type, and an optional comment.	Optional	None
partitionedBy	A list of column descriptions used to partition the table. Like the columns parameter this is a list of name, type, and comment fields.	Optional	None
clusteredBy	An object describing how to cluster the table including the parameters columnNames, sortedBy, numberOfBuckets. The sortedBy parameter includes the parameters columnName and order. For further information please refer to the	Optional	None

Name	Description	Required?	Default
	examples below or to the Hive documentation.		
format	Storage format description including paraeters for rowFormat, storedAs and storedBy. For further information please refer to the examples below or to the Hive documentation.	Optional	None
location	The HDFS path	Optional	None
tableProperties	A list of table property names and values (key/ value pairs)	Optional	None

Results

Name	Description
table	The new table name
database	The database name

Example

Curl Command

```
% curl -s -X PUT -HContent-type:application/json -d '{
 "comment": "Best table made today",
 "columns": [
   { "name": "id", "type": "bigint" },
   { "name": "price", "type": "float", "comment": "The unit price" } ],
 "partitionedBy": [
   { "name": "country", "type": "string" } ],
 "format": { "storedAs": "rcfile" } }' \
 'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table?
user.name=ctdean'
```

Curl Command (using clusteredBy)

```
% curl -s -X PUT -HContent-type:application/json -d '{
  "comment": "Best table made today",
  "columns": [
    { "name": "id", "type": "bigint"},
    { "name": "price", "type": "float", "comment": "The unit price" } ],
  "partitionedBy": [
```

```
    { "name": "country", "type": "string" } ],
  "clusteredBy": {
    "columnNames": ["id"],
    "sortedBy": [
      { "columnName": "id", "order": "ASC" } ],
    "numberOfBuckets": 10 },
  "format": {
    "storedAs": "rcfile",
    "rowFormat": {
      "fieldsTerminatedBy": "\u0001",
      "serde": {
        "name": "org.apache.hadoop.hive.serde2.columnar.ColumnarSerDe",
        "properties": {
          "key": "value" } } } }
  } ' \
  'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table_c?
user.name=ctdean'
```

JSON Output

```
{
 "table": "test_table",
 "database": "default"
}
```

JSON Output (error)

```
{
  "statement": "use default; create table test_table_c(id bigint, price float comment ...",
  "error": "unable to create table: test_table_c",
  "exec": {
    "stdout": "",
    "stderr": "WARNING: org.apache.hadoop.metrics.jvm.EventCounter is deprecated...
        Hive history file=/tmp/ctdean/hive_job_log_ctdean_201204051335_2016086186.txt
        SLF4J: Class path contains multiple SLF4J bindings.
        SLF4J: Found binding in ...
        SLF4J: See http://www.slf4j.org/codes.html#multiple_bindings for an explanation.
        OK
        Time taken: 0.448 seconds
        FAILED: Error in semantic analysis: Operation not supported. HCatalog doesn't allow
 Clustered By in create table.
        ",
    "exitcode": 10
  }
}
```

1.4.5.10 POST ddl/database/:db/table/:table

Description

Rename an HCatalog table.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The existing (old) table name	Required	None
rename	The new table name	Required	None
group	The user group to use	Optional	None
permissions	The permissions string to use. The format is "`rwxrw-r-x`".	Optional	None

Results

Name	Description
table	The new table name
database	The database name

Example

Curl Command

```
% curl -s -d user.name=ctdean \
       -d rename=test_table_2 \
       'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table'
```

JSON Output

```
{
 "table": "test_table_2",
 "database": "default"
}
```

JSON Output (error)

```
{
  "error": "Table test_table does not exist",
  "errorCode": 404,
  "database": "default",
```

```
  "table": "test_table_2"
}
```

1.4.5.11 DELETE ddl/database/:db/table/:table

Description

Delete (drop) an HCatalog table.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The table name	Required	None
ifExists	Hive 0.70 and later returns an error if the table specified does not exist, unless ifExists is set to true.	Optional	false
group	The user group to use	Optional	None
permissions	The permissions string to use. The format is "`rwxrw-r-x`".	Optional	None

Results

Name	Description
table	The table name
database	The database name

Example

Curl Command

```
% curl -s -X DELETE 'http://localhost:50111/templeton/v1/ddl/database/default/table/
test_table?user.name=ctdean'
```

JSON Output

```
{
 "table": "test_table",
 "database": "default"
}
```

1.4.5.12 PUT ddl/database/:db/table/:existingtable/like/:newtable

Description

Create a new HCatalog table like an existing one

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:existingtable`/like/`:newtable

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:existingtable	The existing table name	Required	None
:newtable	The new table name.	Required	None
group	The user group to use when creating a table	Optional	None
permissions	The permissions string to use when creating a table.	Optional	None
external	Allows you to specify a location so that Hive does not use the default location for this table.	Optional	false
ifNotExists	If true, you will not receive an error if the table already exists.	Optional	false
location	The HDFS path	Optional	None

Results

Name	Description
table	The new table name

Name	Description
database	The database name

Example

Curl Command

```
% curl -s -X PUT -HContent-type:application/json -d {} \
 'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table/like/
test_table_2?user.name=ctdean'
```

JSON Output

```
{
 "table": "test_table_2",
 "database": "default"
}
```

1.4.5.13 GET ddl/database/:db/table/:table/partition

Description

List all the partitions in an HCatalog table.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table`/partition`

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The table name	Required	None

Results

Name	Description
partitions	A list of partition values and of partition names
database	The database name
table	The table name

Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/ddl/database/default/table/my_table/
partition?user.name=ctdean'
```

JSON Output

```
{
  "partitions": [
    {
      "values": [
        {
          "columnName": "dt",
          "columnValue": "20120101"
        },
        {
          "columnName": "country",
          "columnValue": "US"
        }
      ],
      "name": "dt='20120101',country='US'"
    }
  ],
  "database": "default",
  "table": "my_table"
}
```

1.4.5.14 GET ddl/database/:db/table/:table/partition/:partition

Description

Describe a single partition in an HCatalog table.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table`/partition/`:partition

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The table name	Required	None
:partition	The partition name, col_name='value' list. Be careful to properly encode the quote for http,	Required	None

Name	Description	Required?	Default
	for example, country=%27algeria%27.		

Results

Name	Description
database	The database name
table	The table name
partition	The partition name
partitioned	True if the table is partitioned
location	Location of table
outputFormat	Output format
columns	list of column names, types, and comments
owner	The owner's user name
partitionColumns	List of the partition columns
inputFormat	Input format

Example

Curl Command

```
% curl -s \
   'http://localhost:50111/templeton/v1/ddl/database/default/table/mytest/partition/
country=%27US%27?user.name=ctdean'
```

JSON Output

```
{
  "partitioned": true,
  "location": "hdfs://ip-10-77-6-151.ec2.internal:8020/apps/hive/warehouse/mytest/loc1",
  "outputFormat": "org.apache.hadoop.hive.ql.io.RCFileOutputFormat",
  "columns": [
    {
      "name": "i",
      "type": "int"
    },
    {
      "name": "j",
      "type": "bigint"
    },
```

```
    {
      "name": "ip",
      "comment": "IP Address of the User",
      "type": "string"
    }
  ],
  "owner": "rachel",
  "partitionColumns": [
    {
      "name": "country",
      "type": "string"
    }
  ],
  "inputFormat": "org.apache.hadoop.hive.ql.io.RCFileInputFormat",
  "database": "default",
  "table": "mytest",
  "partition": "country='US'"
}
```

1.4.5.15 PUT ddl/database/:db/table/:table/partition/:partition

Description

Create a partition in an HCatalog table.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table`/partition/`:partition

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The table name	Required	None
:partition	The partition name, col_name='value' list. Be careful to properly encode the quote for http, for example, country= %27algeria%27.	Required	None
group	The user group to use	Optional	None
permissions	The permissions string to use	Optional	None
location	The location for partition creation	Required	None

Name	Description	Required?	Default
ifNotExists	If true, return an error if the partition already exists.	Optional	False

Results

Name	Description
partition	The partition name
table	The table name
database	The database name

Example

Curl Command

```
% curl -s -X PUT -HContent-type:application/json -d '{"location": "loc_a"}' \
       'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table/
partition/country=%27algeria%27?user.name=ctdean'
```

JSON Output

```
{
 "partition": "country='algeria'",
 "table": "test_table",
 "database": "default"
}
```

1.4.5.16 DELETE ddl/database/:db/table/:table/partition/:partition

Description

Delete (drop) a partition in an HCatalog table.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table`/partition/`:partition

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None

Name	Description	Required?	Default
:table	The table name	Required	None
:partition	The partition name, col_name='value' list. Be careful to properly encode the quote for http, for example, country=%27algeria%27.	Required	None
ifExists	Hive returns an error if the partition specified does not exist, unless ifExists is set to true.	Optional	false
group	The user group to use	Optional	None
permissions	The permissions string to use. The format is "`rwxrw-r-x`".	Optional	None

Results

Name	Description
partition	The partition name
table	The table name
database	The database name

Example

Curl Command

```
% curl -s -X DELETE \
       'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table/
partition/country=%27algeria%27?user.name=ctdean'
```

JSON Output

```
{
 "partition": "country='algeria'",
 "table": "test_table",
 "database": "default"
}
```

1.4.5.17 GET ddl/database/:db/table/:table/column

Description

List the columns in an HCatalog table.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table`/column`

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The table name	Required	None

Results

Name	Description
columns	A list of column names and types
database	The database name
table	The table name

Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/ddl/database/default/table/my_table/column?
user.name=ctdean'
```

JSON Output

```
{
 "columns": [
   {
     "name": "id",
     "type": "bigint"
   },
   {
     "name": "user",
     "comment":"The user name",
     "type": "string"
   },
   {
     "name": "my_p",
```

```
      "type": "string"
    },
    {
      "name": "my_q",
      "type": "string"
    }
  ],
  "database": "default",
  "table": "my_table"
}
```

1.4.5.18 GET ddl/database/:db/table/:table/column/:column

Description

Describe a single column in an HCatalog table.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table`/column/`:column

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The table name	Required	None
:column	The column name	Required	None

Results

Name	Description
database	The database name
table	The table name
column	A JSON object containing the column name, type, and comment (if any)

Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table/
column/price?user.name=ctdean'
```

JSON Output

```
{
 "database": "default",
 "table": "test_table",
 "column": {
   "name": "price",
   "comment": "The unit price",
   "type": "float"
 }
}
```

1.4.5.19 PUT ddl/database/:db/table/:table/column/:column

Description

Create a column in an HCatalog table.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table`/column/`:column

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The table name	Required	None
:column	The column name	Required	None
group	The user group to use	Optional	None
permissions	The permissions string to use	Optional	None
type	The type of column to add, like "string" or "int"	Required	None
comment	The column comment, like a description	Optional	None

Results

Name	Description
column	The column name
table	The table name

Name	Description
database	The database name

Example

Curl Command

```
% curl -s -X PUT -HContent-type:application/json \
       -d '{"type": "string", "comment": "The brand name"}' \
       'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table/column/
brand?user.name=ctdean'
```

JSON Output

```
{
 "column": "brand",
 "table": "test_table",
 "database": "default"
}
```

1.4.5.20 GET ddl/database/:db/table/:table/property

Description

List all the properties of an HCatalog table.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table`/property`

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The table name	Required	None

Results

Name	Description
properties	A list of the tables properties in name: value pairs
database	The database name
table	The table name

Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table/
property?user.name=ctdean'
```

JSON Output

```
{
 "properties": {
   "fruit": "apple",
   "last_modified_by": "ctdean",
   "hcat.osd": "org.apache.hcatalog.rcfile.RCFileOutputDriver",
   "color": "blue",
   "last_modified_time": "1331620706",
   "hcat.isd": "org.apache.hcatalog.rcfile.RCFileInputDriver",
   "transient_lastDdlTime": "1331620706",
   "comment": "Best table made today",
   "country": "Albania"
 },
 "table": "test_table",
 "database": "default"
}
```

1.4.5.21 GET ddl/database/:db/table/:table/property/:property

Description

Return the value of a single table property.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table`/property/`:property

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None
:table	The table name	Required	None
:property	The property name	Required	None

Results

Name	Description
property	The requested property's name: value pair

Name	Description
database	The database name
table	The table name

Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table/
property/fruit?user.name=ctdean'
```

JSON Output

```
{
 "property": {
   "fruit": "apple"
 },
 "table": "test_table",
 "database": "default"
}
```

JSON Output (error)

```
{
  "error": "Table test_table does not exist",
  "errorCode": 404,
  "database": "default",
  "table": "test_table"
}
```

1.4.5.22 PUT ddl/database/:db/table/:table/property/:property

Description

Add a single property on an HCatalog table. This will also reset an existing property.

URL

`http://`www.myserver.com`/templeton/v1/ddl/database/`:db`/table/`:table`/property/`:property

Parameters

Name	Description	Required?	Default
:db	The database name	Required	None

Name	Description	Required?	Default
:table	The table name	Required	None
:property	The property name	Required	None
group	The user group to use	Optional	None
permissions	The permissions string to use	Optional	None
value	The property value	Required	None

Results

Name	Description
database	The database name
table	The table name
property	The property name

Example

Curl Command

```
% curl -s -X PUT -HContent-type:application/json -d '{ "value": "apples" }' \
  'http://localhost:50111/templeton/v1/ddl/database/default/table/test_table/property/
fruit?user.name=ctdean'
```

JSON Output

```
{
 "property": "fruit",
 "table": "test_table",
 "database": "default"
}
```

1.4.6 POST mapreduce/streaming

1.4.6.1 Description

Create and queue an Hadoop streaming MapReduce job.

1.4.6.2 URL

`http://www.myserver.com/templeton/v1/mapreduce/streaming`

1.4.6.3 Parameters

Name	Description	Required?	Default
input	Location of the input data in Hadoop.	Required	None
output	Location in which to store the output data. If not specified, Templeton will store the output in a location that can be discovered using the queue resource.	Optional	See description
mapper	Location of the mapper program in Hadoop.	Required	None
reducer	Location of the reducer program in Hadoop.	Required	None
file	Add an HDFS file to the distributed cache.	Optional	None
define	Set an Hadoop configuration variable using the syntax `define=NAME=VALUE`	Optional	None
cmdenv	Set an environment variable using the syntax `cmdenv=NAME=VALUE`	Optional	None
arg	Set a program argument.	Optional	None
statusdir	A directory where Templeton will write the status of the Map Reduce job. If provided, it is the caller's responsibility to remove this directory when done.	Optional	None
callback	Define a URL to be called upon job completion. You may embed a specific job ID into this URL using `$jobId`. This tag will be replaced in the callback	Optional	None

Name	Description	Required?	Default
	URL with this job's job ID.		

1.4.6.4 Results

Name	Description
id	A string containing the job ID similar to "job_201110132141_0001".
info	A JSON object containing the information returned when the job was queued. See the Hadoop documentation (Class TaskController) for more information.

1.4.6.5 Example

Code and Data Setup

```
% cat mydata/file01 mydata/file02
Hello World Bye World
Hello Hadoop Goodbye Hadoop

% hadoop fs -put mydata/ .

% hadoop fs -ls mydata
Found 2 items
-rw-r--r--   1 ctdean supergroup         23 2011-11-11 13:29 /user/ctdean/mydata/file01
-rw-r--r--   1 ctdean supergroup         28 2011-11-11 13:29 /user/ctdean/mydata/file02
```

Curl Command

```
% curl -s -d user.name=ctdean \
       -d input=mydata \
       -d output=mycounts \
       -d mapper=/bin/cat \
       -d reducer="/usr/bin/wc -w" \
       'http://localhost:50111/templeton/v1/mapreduce/streaming'
```

JSON Output

```
{
 "id": "job_201111111311_0008",
 "info": {
          "stdout": "packageJobJar: [] [/Users/ctdean/var/hadoop/hadoop-0.20.205.0/share/
hadoop/contrib/streaming/hadoop-streaming-0.20.205.0.jar...
                    templeton-job-id:job_201111111311_0008
                    ",
```

```
          "stderr": "11/11/11 13:26:43 WARN mapred.JobClient: Use GenericOptionsParser for
 parsing the arguments
                    11/11/11 13:26:43 INFO mapred.FileInputFormat: Total input paths to
 process : 2
                    ",
          "exitcode": 0
         }
}
```

Results

```
% hadoop fs -ls mycounts
Found 3 items
-rw-r--r--   1 ctdean supergroup          0 2011-11-11 13:27 /user/ctdean/mycounts/_SUCCESS
drwxr-xr-x   - ctdean supergroup          0 2011-11-11 13:26 /user/ctdean/mycounts/_logs
-rw-r--r--   1 ctdean supergroup         10 2011-11-11 13:27 /user/ctdean/mycounts/
part-00000

% hadoop fs -cat mycounts/part-00000
      8
```

1.4.7 POST mapreduce/jar

1.4.7.1 Description

Creates and queues a standard Hadoop MapReduce job.

1.4.7.2 URL

`http://`www.myserver.com`/templeton/v1/mapreduce/jar`

1.4.7.3 Parameters

Name	Description	Required?	Default
jar	Name of the jar file for Map Reduce to use.	Required	None
class	Name of the class for Map Reduce to use.	Required	None
libjars	Comma separated jar files to include in the classpath.	Optional	None
files	Comma separated files to be copied to the map reduce cluster	Optional	None
arg	Set a program argument.	Optional	None

Name	Description	Required?	Default
define	Set an Hadoop configuration variable using the syntax `define=NAME=VALUE`	Optional	None
statusdir	A directory where Templeton will write the status of the Map Reduce job. If provided, it is the caller's responsibility to remove this directory when done.	Optional	None
callback	Define a URL to be called upon job completion. You may embed a specific job ID into this URL using `$jobId`. This tag will be replaced in the callback URL with this job's job ID.	Optional	None

1.4.7.4 Results

Name	Description
id	A string containing the job ID similar to "job_201110132141_0001".
info	A JSON object containing the information returned when the job was queued. See the Hadoop documentation (Class TaskController) for more information.

1.4.7.5 Example

Code and Data Setup

```
% hadoop fs -put wordcount.jar .
% hadoop fs -put transform.jar .

% hadoop fs -ls .
Found 2 items
-rw-r--r--   1 ctdean supergroup         23 2011-11-11 13:29 /user/ctdean/wordcount.jar
-rw-r--r--   1 ctdean supergroup         28 2011-11-11 13:29 /user/ctdean/transform.jar
```

Curl Command

```
% curl -s -d user.name=ctdean \
       -d jar=wordcount.jar \
       -d class=org.myorg.WordCount \
       -d libjars=transform.jar \
       -d arg=wordcount/input \
       -d arg=wordcount/output \
       'http://localhost:50111/templeton/v1/mapreduce/jar'
```

JSON Output

```
{
 "id": "job_201111121211_0001",
 "info": {
          "stdout": "templeton-job-id:job_201111121211_0001
                    ",
          "stderr": "",
          "exitcode": 0
         }
}
```

1.4.8 POST pig

1.4.8.1 Description

Create and queue a Pig job.

1.4.8.2 URL

`http://www.myserver.com/templeton/v1/pig`

1.4.8.3 Parameters

Name	Description	Required?	Default
execute	String containing an entire, short pig program to run.	One of either "execcute" or "file" is required	None
file	HDFS file name of a pig program to run.	One of either "exec" or "file" is required	None
arg	Set a program argument.	Optional	None
files	Comma separated files to be copied to the map reduce cluster	Optional	None

Name	Description	Required?	Default
statusdir	A directory where Templeton will write the status of the Pig job. If provided, it is the caller's responsibility to remove this directory when done.	Optional	None
callback	Define a URL to be called upon job completion. You may embed a specific job ID into this URL using `$jobId`. This tag will be replaced in the callback URL with this job's job ID.	Optional	None

1.4.8.4 Results

Name	Description
id	A string containing the job ID similar to "job_201110132141_0001".
info	A JSON object containing the information returned when the job was queued. See the Hadoop documentation (Class TaskController) for more information.

1.4.8.5 Example

Code and Data Setup

```
% cat id.pig
A = load 'passwd' using PigStorage(':');
B = foreach A generate $0 as id;
dump B;

% cat fake-passwd
ctdean:Chris Dean:secret
pauls:Paul Stolorz:good
carmas:Carlos Armas:evil
dra:Deirdre McClure:marvelous

% hadoop fs -put id.pig .
% hadoop fs -put fake-passwd passwd
```

Curl Command

```
% curl -s -d user.name=ctdean \
       -d file=id.pig \
       -d arg=-v \
       'http://localhost:50111/templeton/v1/pig'
```

JSON Output

```
{
 "id": "job_201111101627_0018",
 "info": {
          "stdout": "templeton-job-id:job_201111101627_0018
                    ",
          "stderr": "",
          "exitcode": 0
         }
}
```

1.4.9 POST hive

1.4.9.1 Description

Runs a Hive query or set of commands.

1.4.9.2 URL

`http://www.myserver.com/templeton/v1/hive`

1.4.9.3 Parameters

Name	Description	Required?	Default
execute	String containing an entire, short hive program to run.	One of either "execute" or "file" is required	None
file	HDFS file name of a hive program to run.	One of either "exec" or "file" is required	None
define	Set a Hive configuration variable using the syntax `define=NAME=VALUE`.	Optional	None
statusdir	A directory where Templeton will write the status of the Hive job. If provided, it is the caller's responsibility to remove this directory when done.	Optional	None

Name	Description	Required?	Default
callback	Define a URL to be called upon job completion. You may embed a specific job ID into this URL using `$jobId`. This tag will be replaced in the callback URL with this job's job ID.	Optional	None

1.4.9.4 Results

Name	Description
id	A string containing the job ID similar to "job_201110132141_0001".
info	A JSON object containing the information returned when the job was queued. See the Hadoop documentation (Class TaskController) for more information.

1.4.9.5 Example

Curl Command

```
% curl -s -d user.name=ctdean \
       -d execute="select+*+from+pokes;" \
       -d statusdir="pokes.output" \
       'http://localhost:50111/templeton/v1/hive'
```

JSON Output

```
{
 "id": "job_201111111311_0005",
 "info": {
          "stdout": "templeton-job-id:job_201111111311_0005
                    ",
          "stderr": "",
          "exitcode": 0
         }
}
```

Results

```
% hadoop fs -ls pokes.output
```

```
Found 2 items
-rw-r--r--   1 ctdean supergroup        610 2011-11-11 13:22 /user/ctdean/pokes.output/
stderr
-rw-r--r--   1 ctdean supergroup         15 2011-11-11 13:22 /user/ctdean/pokes.output/
stdout

% hadoop fs -cat pokes.output/stdout
1       a
2       bb
3       ccc
```

1.4.10 GET queue

1.4.10.1 Description

Return a list of all job IDs registered to the user.

1.4.10.2 URL

`http://`www.myserver.com`/templeton/v1/queue`

1.4.10.3 Parameters

Only the standard parameters are accepted.

1.4.10.4 Results

Name	Description
ids	A list of all job IDs registered to the user.

1.4.10.5 Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/queue?user.name=ctdean'
```

JSON Output

```
{
 "job_201111111311_0008",
 "job_201111111311_0012"
}
```

1.4.11 GET queue/:jobid

1.4.11.1 Description

Check the status of a job and get related job information given its job ID. Substitute ":jobid" with the job ID received when the job was created.

1.4.11.2 URL

`http://`www.myserver.com`/templeton/v1/queue/`:jobid

1.4.11.3 Parameters

Name	Description	Required?	Default
:jobid	The job ID to check. This is the ID received when the job was created.	Required	None

1.4.11.4 Results

Name	Description
status	A JSON object containing the job status information. See the Hadoop documentation (Class JobStatus) for more information.
profile	A JSON object containing the job profile information. See the Hadoop documentation (Class JobProfile) for more information.
id	The job ID.
parentId	The parent job ID.
percentComplete	The job completion percentage, for example "75% complete".
exitValue	The job's exit value.
user	User name of the job creator.
callback	The callback URL, if any.
completed	A string representing completed status, for example "done".

1.4.11.5 Example

Curl Command

```
% curl -s 'http://localhost:50111/templeton/v1/queue/job_201112212038_0003?
user.name=ctdean'
```

JSON Output

```
{
 "status": {
            "startTime": 1324529476131,
            "username": "ctdean",
            "jobID": {
                      "jtIdentifier": "201112212038",
                      "id": 4
                     },
            "jobACLs": {
                       },
            "schedulingInfo": "NA",
            "failureInfo": "NA",
            "jobId": "job_201112212038_0004",
            "jobPriority": "NORMAL",
            "runState": 2,
            "jobComplete": true
           },
 "profile": {
             "url": "http://localhost:50030/jobdetails.jsp?jobid=job_201112212038_0004",
             "jobID": {
                       "jtIdentifier": "201112212038",
                        "id": 4
                      },
             "user": "ctdean",
             "queueName": "default",
             "jobFile": "hdfs://localhost:9000/tmp/hadoop-ctdean/mapred/staging/
ctdean/.staging/job_201112212038_0004/job.xml",
             "jobName": "PigLatin:DefaultJobName",
             "jobId": "job_201112212038_0004"
            },
 "id": "job_201112212038_0004",
 "parentId": "job_201112212038_0003",
 "percentComplete": "100% complete",
 "exitValue": 0,
 "user": "ctdean",
 "callback": null,
 "completed": "done"
}
```

1.4.12 DELETE queue/:jobid

1.4.12.1 Description

Kill a job given its job ID. Substitute ":jobid" with the job ID received when the job was created.

1.4.12.2 URL

`http://`www.myserver.com`/templeton/v1/queue/`:jobid

1.4.12.3 Parameters

Name	Description	Required?	Default
:jobid	The job ID to delete. This is the ID received when the job job was created.	Required	None

1.4.12.4 Results

Name	Description
status	A JSON object containing the job status information. See the Hadoop documentation (Class JobStatus) for more information.
profile	A JSON object containing the job profile information. See the Hadoop documentation (Class JobProfile) for more information.
id	The job ID.
parentId	The parent job ID.
percentComplete	The job completion percentage, for example "75% complete".
exitValue	The job's exit value.
user	User name of the job creator.
callback	The callback URL, if any.
completed	A string representing completed status, for example "done".

1.4.12.5 Example

Curl Command

```
% curl -s -X DELETE 'http://localhost:50111/templeton/v1/queue/job_201111111311_0009?
user.name=ctdean'
```

JSON Output

```
{
 "status": {
            "startTime": 1321047216471,
            "username": "ctdean",
            "jobID": {
                      "jtIdentifier": "201111111311",
                      "id": 9
                     },
            "jobACLs": {
                       },
            "schedulingInfo": "NA",
            "failureInfo": "NA",
            "jobId": "job_201111111311_0009",
            "jobPriority": "NORMAL",
            "runState": 1,
            "jobComplete": false
           },
 "profile": {
             "url": "http://localhost:50030/jobdetails.jsp?jobid=job_201111111311_0009",
             "user": "ctdean",
             "jobID": {
                       "jtIdentifier": "201111111311",
                       "id": 9
                      },
             "queueName": "default",
             "jobFile": "hdfs://localhost:9000/tmp/hadoop-ctdean/mapred/staging/
ctdean/.staging/job_201111111311_0009/job.xml",
             "jobName": "streamjob3322518350676530377.jar",
             "jobId": "job_201111111311_0009"
            }
 "id": "job_201111111311_0009",
 "parentId": "job_201111111311_0008",
 "percentComplete": "10% complete",
 "exitValue": 0,
 "user": "ctdean",
 "callback": null,
 "completed": "false"
}
```


Note: The job is not immediately deleted, therefore the information returned may not reflect deletion, as in our example. Use `GET queue/:jobid` to monitor the job and confirm that it is eventually deleted.

1.5 PDF