

Fix on HTTP Server Threading Policy based on Number of Cores

In the Eclipse Jetty Server package, the Jetty Server class (`org.eclipse.jetty.server.Server.java`) is involved with the class called `SelectChannelConnector.java`. The number of the acceptors in `SelectChannelConnector.java` is computed as follows:

```
public SelectChannelConnector() {  
    .....  
    setAcceptors(Math.max(1, (Runtime.getRuntime().availableProcessors() + 3))  
    .....  
}
```

`Runtime.getRuntime().availableProcessors()` returns the total number of the cores on the entire machine.

The above constructor is called by `JettyUtils.scala` class directly. The same constructor is called by `RestSubmissionServer.scala` via `org.eclipse.jetty.server.Server.java`. As a result, the total number of the server threads launched in a Spark Master or a Spark Executor is large, when such a Spark process is launched in a multicore machine with large number of the cores (for example, in a machine with 80 cores or 240 cores).

In reality, each process is bound to a specific socket of the multicore NUMA-aware machine, and thus the number of the server threads should be only proportional to the number of the cores on a socket, not to the total number of the cores on the entire machine.

The proposed code fix for both `JettyUtils.scala` and `RestSubmissionServer.scala` is to introduce a configuration parameter called: `spark.jetty.httpserver.numThreads`, to allow the Spark application to set the maximum thread number in `spark-defaults.conf`. By default, this number is set to 10. This is similar to what has been implemented in Netty Dispatcher class to set the netty dispatcher thread number via the configuration parameter:

```
spark.rpc.netty.dispatcher.numThreads.
```

The two modified files from Spark 2.0: `JettyUtils.scala` and `RestSubmissionServer.scala`, are put in the directory called “threading-fixed”. The user can replace the corresponding files in Spark 2.0 with these two files before making source code compilation.