Master Worker Programming Model

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Master/Worker model

CometCloud shared space

Robust/Secure Master

Request Handler

Secure Worker

Proxy

Unsecured workers

Clusters/Grids/Clouds
Flow to start master/worker

- Application Starter
- Comet starter
- Peer
- Master
- Remote control
- Overlay control server
- Peer
- Worker
- Node
- Node
Call Diagram – Starting Comet

Application starter

Comet starter

peer

Comet space service

Diagram

- Comet

Application starter

Comet starter

peer

Comet space service
Call Diagram – Master/Worker
Source code – Sample application

- Starting source package
  - tassl.automate.programmodel.masterworker.sample

- Two pairs of master/worker
  - SimpleMaster.java, SimpleWorker.java
  - AppMaster.java, AppWorker.java

- Core implementation you should do
  - TaskTuple
  - Master: insertTask, setResult
  - Worker: computeTask
Configuration

- Overlay configuration files
  - nodeFile, portFile, exceptionFile
    - Comet.NodeType MASTER|WORKER|REQUEST_HANDLER

- Properties files
  - chord.properties, squid.properties, comet.properties
  - and your additional application properties

- Examples in
  - CometCloud-lite\Automate\application\trunk\conf
Configuration

- `chord.properties`
  - `chord.ID_BITS`

- `squid.properties`
  - `squid.SPACE_DIMENSIONS`
  - `squid.BIT_LENGTH`
  - `squid.D0.KEY_TYPE`

- `comet.properties`
  - `MasterClass`
  - `WorkerClass`
  - `TaskClass`
  - `RoutingKeys`
Run procedure – Secure worker

- Run overlay control server in each node
  - java -cp $CLASSPATH
tassl.automate.overlay.OverlayControlServer 4444

- Run your application starter
  - java -cp $CLASSPATH
tassl.automate.programmodel.masterworker.sample.App Starter -nodeFile nodeFile -portFile portFile -exceptionFile
exceptionFile -propertyFile chord.properties -propertyFile
squid.properties -propertyFile comet.properties -
propertyFile sample.properties
Run procedure – Isolated (unsecured) worker

- Run overlay control server on one or more request handler nodes
- Start a proxy with RequestHandlerList
  - `java -cp $CLASSPATH tassl.automate.cloudburst.RequestHandlerProxy`
- Run your application starter
  - This will start your master and request handlers
- Start isolated workers
  - Set IsolatedProxy in comet.properties
  - `java -cp $CLASSPATH tassl.automate.cloudburst.CloudBurstStarter -propertyFile comet.properties -propertyFile`
More funs?

- Load balancing of task tuples
  - Set `squid.HASH_TYPE` and `squid.NUM_TASKS` in `squid.properties`
  - Hashing types: HASH, BIT_SHIFT

- Out control
  - Throttle task generation
  - Set `OUTCONTROLLER=true`, `OUTCONTROLLER_CHECKPERIOD`, `OUTCONTROLLER_LOWER`, `OUTCONTROLLER_OUTTASK` in `comet.properties`
More funs?

- Amazon EC2
  - Image name: cometcloud-light
  - Login id/passwd
    - cometcloud/cometcloud
  - You need an EC2 account, please see further details in http://aws.amazon.com/ec2/
Questions?