



---

# Master Worker Programming Model

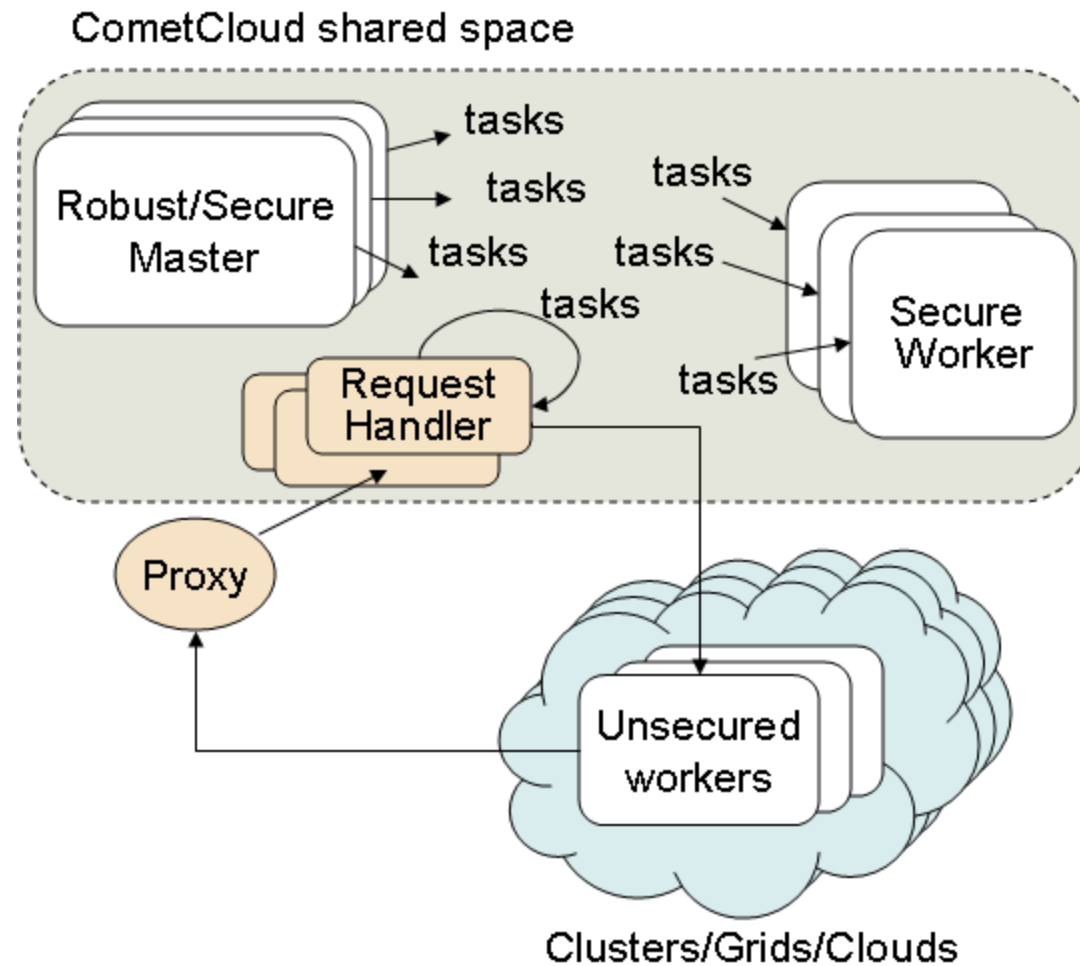
Dr. Hyunjoo Kim

[hyunjoo.kim@xerox.com](mailto:hyunjoo.kim@xerox.com)

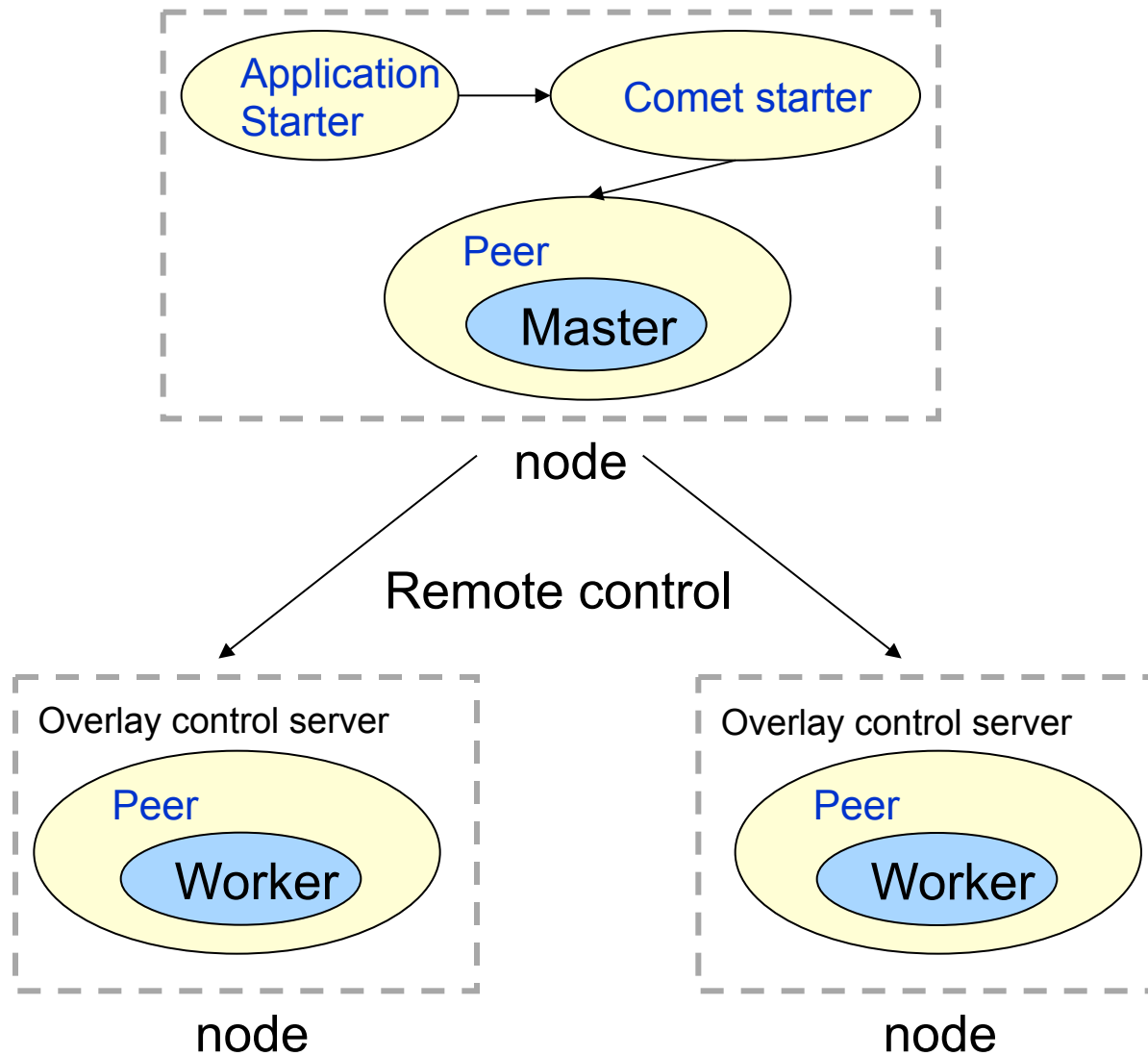


**RUTGERS**  
THE STATE UNIVERSITY  
OF NEW JERSEY

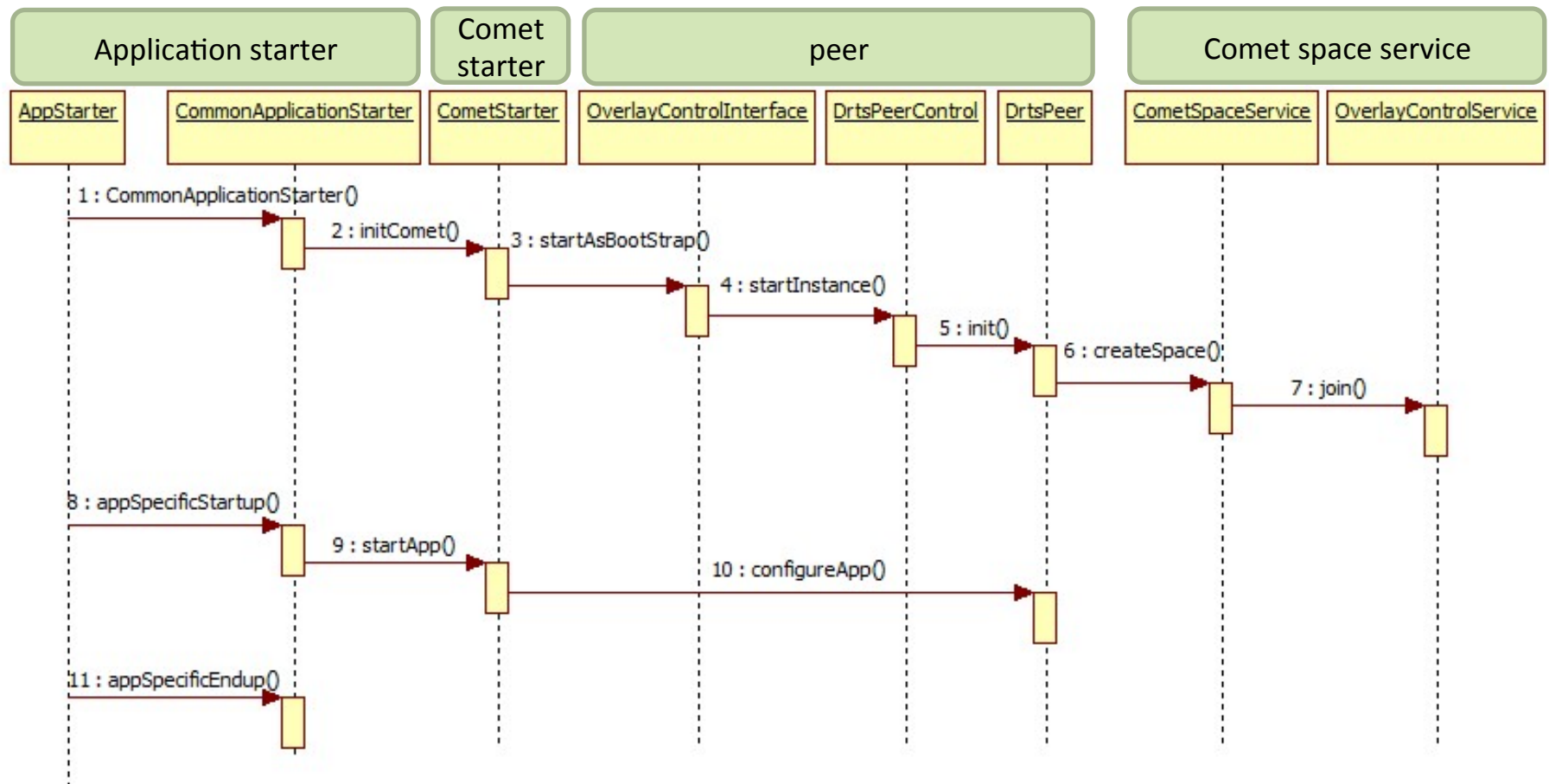
# Master/Worker model



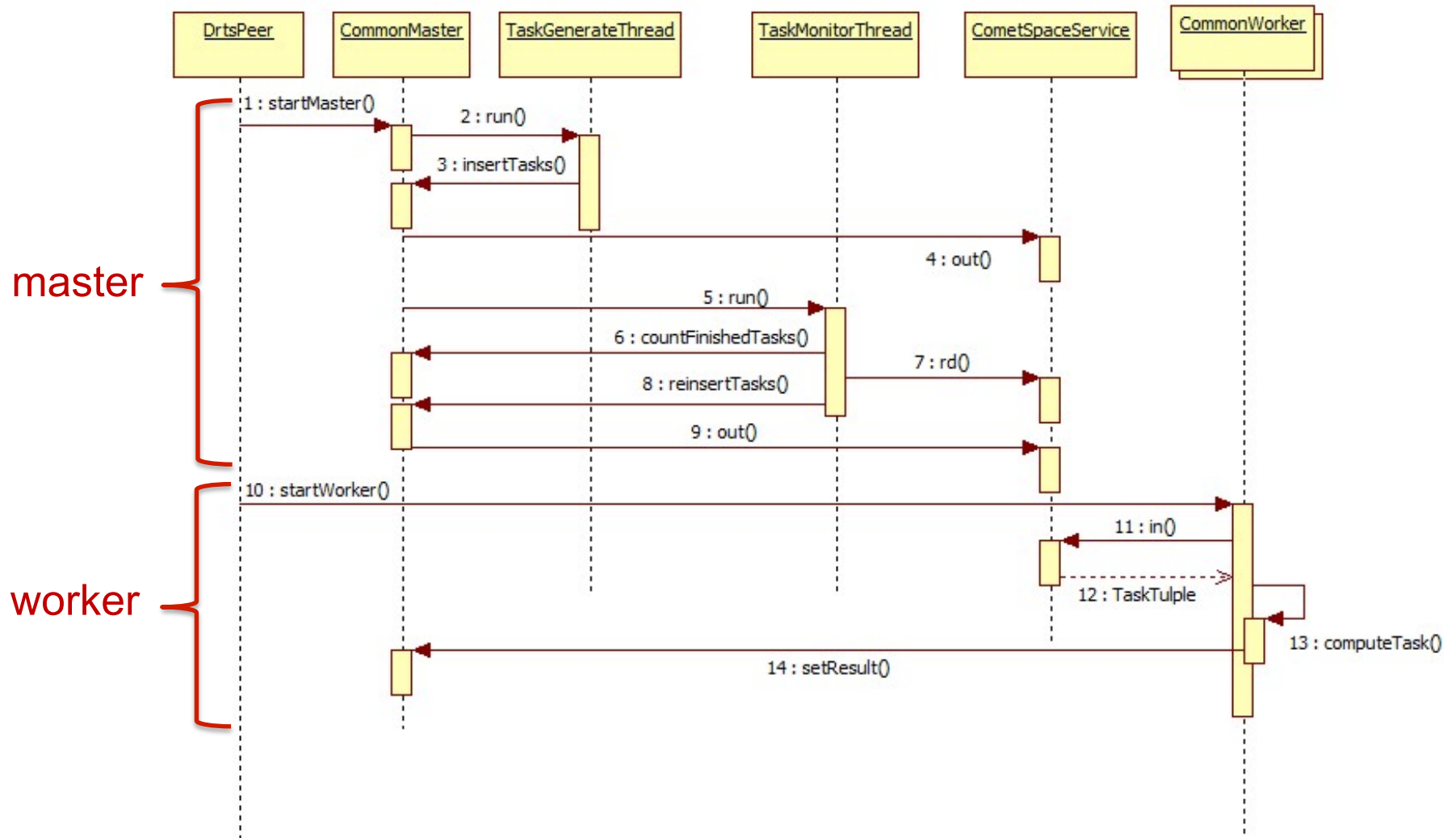
# Flow to start master/worker



# Call Diagram – Starting Comet



# 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.AppStarter -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`
  - Hasing 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?

---



**RUTGERS**  
THE STATE UNIVERSITY  
OF NEW JERSEY