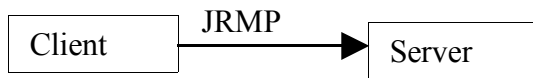# Direct connection

Direct connection to the server using the JRMP protocol. This is the simplest method since only a server and a client are involved.

For this setting the following cases are presented:

- Three computers with Linux as their operating system, one of them executing the server + registry (application RemoteCalculatorServer), other the client (RemotecalculatorClient) and other acting as firewall and proxy. A test will be performed with the server being on and it should work without problems.
- On the other hand, we will try to make a connection with the server, being this off. In this case, the client must fail.
- Finally, we will test if the inoperability with the package provided by SUN does not work.

Execution Case 1

Requirements

Two Computers that have Linux as their operating system
JDK 1.5.0 of SUN
Computer N° 1 must execute RemoteCalculatorServer
Computer N° 2 must execute RemoteCalculatorClient

Output Computer N° 1 (RemoteCalculatorServer)

INFO: RemoteCalculator Server Ready.
Mar 9, 2006 12:32:55 PM ar.org.fitc.rmi.transport.RMIServerSocket accept
INFO: Socket accepted Socket[addr=/10.100.2.241,port=34044,localport=1099]
Mar 9, 2006 12:33:56 PM ar.org.fitc.rmi.transport.RMIServerSocket accept
INFO: Socket accepted Socket[addr=/10.100.2.241,port=34045,localport=1099]
Mar 9, 2006 12:33:56 PM ar.org.fitc.rmi.transport.RMIServerSocket accept
INFO: Socket accepted Socket[addr=/10.100.2.241,port=34046,localport=1099]
Matrix A entered from 10.100.2.241
[9, 2]
[6, 4]

Matrix B entered from 10.100.2.241
[1, 4]
[1, 5]

multiply Matrix called from 10.100.2.241
Result Matrix (multiply)
[11, 46]
[10, 44]

multiply Matrix called from 10.100.2.241
Result Matrix (multiply)
[11, 46]

[10, 44]

add Matrix called from 10.100.2.241
Result Matrix (add)
[10, 6]
[7, 9]

add Matrix called from 10.100.2.241
Result Matrix (add)
[10, 6]
[7, 9]

Vector A entered from 10.100.2.241
[50.21, 2000.125, 196.15, 36.95]

get Standard Deviation and Average called from 10.100.2.241
Standard Deviation: 955.5700453863042
Average: 570.85875
get Standard Deviation and Average called from 10.100.2.241
Standard Deviation: 955.5700453863042
Average: 570.85875

Output Computer N° 2 (RemoteCalculatorClient)

Mar 9, 2006 12:08:56 PM ar.org.fitc.test.rmi.integration.RemoteCalculatorClient main
INFO: RemoteCalculatorClient locating RMI registry on remote host "10.100.2.246".
Mar 9, 2006 12:08:57 PM ar.org.fitc.test.rmi.integration.RemoteCalculatorClient main
INFO: RemoteCalculatorClient looking up service "RemoteCalculator".
Mar 9, 2006 12:08:57 PM ar.org.fitc.rmi.transport.ClientProtocolHandler writeHandshake
INFO: Writing handshake
Mar 9, 2006 12:08:57 PM ar.org.fitc.rmi.transport.ClientProtocolHandler writeHandshake
INFO: Writing handshake
Matrix A
[9, 2]
[6, 4]

Matrix B
[1, 4]
[1, 5]

Result Matrix (multiply)
[11, 46]
[10, 44]

Result Matrix (add)
[10, 6]
[7, 9]

Vector
[50.21, 2000.125, 196.15, 36.95]

Standard Deviation: 955.5700453863042
Average: 570.85875

Output Computer N°1 (RemoteCalculatorServerB1)

Mar 10, 2006 6:09:32 AM ar.org.fitc.test.rmi.integration.RemoteCalculatorServerBI main
INFO: RemoteCalculator Server Ready.
Mar 10, 2006 6:10:22 AM ar.org.fitc.rmi.transport.RMIServerSocket accept
INFO: Socket accepted Socket[addr=/10.100.2.241,port=34732,localport=1099]
Mar 10, 2006 6:10:23 AM ar.org.fitc.rmi.transport.RMIServerSocket accept
INFO: Socket accepted Socket[addr=/10.100.2.241,port=34733,localport=1099]
Matrix A entered from 10.100.2.241
[9, 2]
[6, 4]

Matrix B entered from 10.100.2.241
[1, 4]
[1, 5]

multiply Matrix called from 10.100.2.241
Result Matrix (multiply)
[11, 46]
[10, 44]

multiply Matrix called from 10.100.2.241
Result Matrix (multiply)
[11, 46]
[10, 44]

add Matrix called from 10.100.2.241
Result Matrix (add)
[10, 6]
[7, 9]

add Matrix called from 10.100.2.241
Result Matrix (add)
[10, 6]
[7, 9]

Vector A entered from 10.100.2.241
[50.21, 2000.125, 196.15, 36.95]

get Standard Deviation and Average called from 10.100.2.241
Standard Deviation: 955.5700453863042
Average: 570.85875
get Standard Deviation and Average called from 10.100.2.241
Standard Deviation: 955.5700453863042
Average: 570.85875

Output Computer N° 2 (RemoteCalculatorClientB1)

Mar 10, 2006 5:45:23 AM ar.org.fitc.test.rmi.integration.RemoteCalculatorClientBI main

INFO: RemoteCalculatorClient locating RMI registry on remote host "10.100.2.246".

Mar 10, 2006 5:45:23 AM ar.org.fitc.test.rmi.integration.RemoteCalculatorClientBI main

INFO: RemoteCalculatorClient looking up service "RemoteCalculator".

Mar 10, 2006 5:45:23 AM ar.org.fitc.rmi.transport.ClientProtocolHandler writeHandshake

INFO: Writing handshake

Mar 10, 2006 5:45:23 AM ar.org.fitc.rmi.transport.ClientProtocolHandler writeHandshake

INFO: Writing handshake

Matrix A

[9, 2]

[6, 4]

Matrix B

[1, 4]

[1, 5]

Result Matrix (multiply)

[11, 46]

[10, 44]

Result Matrix (add)

[10, 6]

[7, 9]

Vector

[50.21, 2000.125, 196.15, 36.95]

Standard Deviation: 955.5700453863042

Average: 570.85875

Output Computer N°1 (RemoteHashMapServer)
INFO: RemoteCalculator Server Ready.
Mar 9, 2006 12:32:55 PM ar.org.fitc.rmi.transport.RMIServerSocket accept
INFO: Socket accepted Socket[addr=/10.100.2.241,port=34044,localport=1099]
Mar 9, 2006 12:33:56 PM ar.org.fitc.rmi.transport.RMIServerSocket accept
INFO: Socket accepted Socket[addr=/10.100.2.241,port=34045,localport=1099]

Mar 9, 2006 12:33:56 PM ar.org.fitc.rmi.transport.RMIServerSocket accept
INFO: Socket accepted Socket[addr=/10.100.2.241,port=34046,localport=1099]
Matrix A entered from 10.100.2.241
[9, 2]
[6, 4]

Matrix B entered from 10.100.2.241
[1, 4]
[1, 5]

multiply Matrix called from 10.100.2.241
Result Matrix (multiply)
[11, 46]
[10, 44]

multiply Matrix called from 10.100.2.241
Result Matrix (multiply)
[11, 46]
[10, 44]

add Matrix called from 10.100.2.241
Result Matrix (add)
[10, 6]
[7, 9]

add Matrix called from 10.100.2.241
Result Matrix (add)
[10, 6]
[7, 9]

Vector A entered from 10.100.2.241
[50.21, 2000.125, 196.15, 36.95]

get Standard Deviation and Average called from 10.100.2.241
Standard Deviation: 955.5700453863042
Average: 570.85875
get Standard Deviation and Average called from 10.100.2.241
Standard Deviation: 955.5700453863042
Average: 570.85875

Output Computer N° 2 (RemoteHashMapClient)
RemoteMapClient locating RMI registry on remote host "10.100.2.246".
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient main
INFO: RemoteMapClient looking up service "RemoteHashMap".
Mar 9, 2006 12:22:08 PM ar.org.fitc.rmi.transport.ClientProtocolHandler writeHandshake
INFO: Writing handshake
Mar 9, 2006 12:22:08 PM ar.org.fitc.rmi.transport.ClientProtocolHandler writeHandshake
INFO: Writing handshake
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient putCall
INFO: RemoteMapClient inserting on 10.100.2.246 key=one, value=pride
pride
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient putCall
INFO: RemoteMapClient inserting on 10.100.2.246 key=two, value=envy
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient putCall

INFO: RemoteMapClient inserting on 10.100.2.246 key=three, value=gluttony
envy
gluttony
lust
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient putCall
INFO: RemoteMapClient inserting on 10.100.2.246 key=four, value=lust
anger
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient putCall
INFO: RemoteMapClient inserting on 10.100.2.246 key=five, value=anger
greed
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient putCall
INFO: RemoteMapClient inserting on 10.100.2.246 key=six, value=greed
sloth
RemoteMapClient HashMap successfully populated...
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient putCall
INFO: RemoteMapClient inserting on 10.100.2.246 key=seven, value=sloth
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient sizeCall
INFO: RemoteMapClient HashMap size: 7
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient main
INFO: RemoteMapClient HashMap size correct...
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient getCall
INFO: RemoteMapClient found at 10.100.2.246, value=pride
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient getCall
INFO: RemoteMapClient found at 10.100.2.246, value=envy
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient getCall
INFO: RemoteMapClient found at 10.100.2.246, value=gluttony
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient getCall
INFO: RemoteMapClient found at 10.100.2.246, value=lust
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient getCall
INFO: RemoteMapClient found at 10.100.2.246, value=anger
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient getCall
INFO: RemoteMapClient found at 10.100.2.246, value=greed
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient getCall
INFO: RemoteMapClient found at 10.100.2.246, value=sloth
Mar 9, 2006 12:22:08 PM ar.org.fitc.test.rmi.integration.RemoteHashClient main
INFO: RemoteMapClient HashMap check passed...

Execution Case N° 2

Requirements

A computer that has Linux as its operating system

The computer must execute RemoteCalculatorClient with the JDK 1.5.0 of SUN

Output Computer N°1 (RemoteCalculatorClient)
Mar 10, 2006 7:45:04 AM ar.org.fitc.test.rmi.integration.RemoteCalculatorClient main
INFO: RemoteCalculatorClient locating RMI registry on remote host "10.100.2.246".
Mar 10, 2006 7:45:05 AM ar.org.fitc.test.rmi.integration.RemoteCalculatorClient main
INFO: RemoteCalculatorClient looking up service "RemoteCalculator".
Mar 10, 2006 7:45:05 AM ar.org.fitc.rmi.transport.ClientProtocolHandler writeHandshake
INFO: Writing handshake
java.lang.NullPointerException
    at ar.org.fitc.test.rmi.integration.RemoteCalculatorClient.main(RemoteCalculatorClient.java:51)

Mar 10, 2006 7:45:05 AM ar.org.fitc.test.rmi.integration.RemoteCalculatorClient main
INFO: RemoteCalculatorClient problem with RemoteCalculator, exception:
java.lang.NullPointerException

Output Computer N° 1 (RemoteHashMapCLient)

RemoteMapClient locating RMI registry on remote host "10.100.2.246".
Mar 10, 2006 7:50:01 AM ar.org.fitc.test.rmi.integration.RemoteHashClient main
INFO: RemoteMapClient looking up service "RemoteHashMap".
Mar 10, 2006 7:50:02 AM ar.org.fitc.rmi.transport.ClientProtocolHandler writeHandshake
INFO: Writing handshake
pride
Mar 10, 2006 7:50:02 AM ar.org.fitc.test.rmi.integration.RemoteHashClient putCall
INFO: RemoteMapClient inserting on 10.100.2.246 key=one, value=pride
Exception in thread "main" java.lang.NullPointerException
    at ar.org.fitc.test.rmi.integration.RemoteHashClient.putCall(RemoteHashClient.java:110)
        at ar.org.fitc.test.rmi.integration.RemoteHashClient.populateHashMap
(RemoteHashClient.java:100)
            at ar.org.fitc.test.rmi.integration.RemoteHashClient.main(RemoteHashClient.java:80)

Execution Case N° 3

Requirements

Two Computers that have Linux as their operating system
Computer N° 1 must execute RemoteCalculatorServer with the JKD 1.5.0 of SUN
Computer N° 2 must execute RemoteCalculatorClient with the JKD 1.5.0 and the jar of rmi
provided by ITC in the bootclasspath

Output Computer N°1 (RemoteCalculatorServer)
Mar 10, 2006 8:35:16 AM ar.org.fitc.test.rmi.integration.RemoteHashServer main
INFO: RemoteMapServer creating a local RMI registry on the default port.
Mar 10, 2006 8:35:16 AM ar.org.fitc.test.rmi.integration.RemoteHashServer main
INFO: RemoteMapServer creating local object and remote adapter.
Mar 10, 2006 8:35:16 AM ar.org.fitc.test.rmi.integration.RemoteHashServer main
INFO: RemoteMapServer publishing service "RemoteHashMap" in local registry.
Mar 10, 2006 8:35:16 AM ar.org.fitc.test.rmi.integration.RemoteHashServer main
INFO: Published RemoteMap as service "RemoteHashMap". Ready.
Mar 10, 2006 8:35:23 AM ar.org.fitc.rmi.transport.RMIServerSocket accept
INFO: Socket accepted Socket[addr=/10.100.2.241,port=55761,localport=1099]

Output Computer N°2 (RemoteCalculatorClient)
RemoteMapClient locating RMI registry on remote host "10.100.2.246".
Mar 10, 2006 8:10:23 AM sun.rmi.transport.tcp.TCPEndpoint <clinit>
FINE: main: localHostKnown = false, localHost = null
Mar 10, 2006 8:10:23 AM ar.org.fitc.test.rmi.integration.RemoteHashClient main
INFO: RemoteMapClient looking up service "RemoteHashMap".
Mar 10, 2006 8:10:23 AM sun.rmi.transport.tcp.TCPTransport <init>
FINE: main: Version = 2, ep = [:0]
Mar 10, 2006 8:10:23 AM sun.rmi.transport.tcp.TCPEndpoint getLocalEndpoint
FINE: main: created local endpoint for socket factory null on port 0
Mar 10, 2006 8:10:23 AM sun.rmi.transport.tcp.TCPChannel createConnection
FINE: main: create connection
Mar 10, 2006 8:10:23 AM sun.rmi.transport.tcp.TCPEndpoint newSocket
FINER: main: opening socket to [10.100.2.246:1099]
Mar 10, 2006 8:10:23 AM sun.rmi.transport.proxy.RMIMasterSocketFactory createSocket
FINE: main: host: 10.100.2.246, port: 1099

Mar 10, 2006 8:10:23 AM sun.rmi.transport.proxy.RMIMasterSocketFactory createSocket
FINE: main: direct socket connection successful
RemoteMapClient problem with RemoteMap, exception:
   java.rmi.ConnectIOException: error during JRMP connection establishment; nested exception is:
   java.io.EOFException
   pride
   Mar 10, 2006 8:10:23 AM ar.org.fitc.test.rmi.integration.RemoteHashClient putCall
   INFO: RemoteMapClient inserting on 10.100.2.246 key=one, value=pride
   Exception in thread "main" java.lang.NullPointerException
      at ar.org.fitc.test.rmi.integration.RemoteHashClient.putCall(RemoteHashClient.java:110)
         at ar.org.fitc.test.rmi.integration.RemoteHashClient.populateHashMap
(RemoteHashClient.java:100)
            at ar.org.fitc.test.rmi.integration.RemoteHashClient.main(RemoteHashClient.java:80)

__Output Computer N°1 (RemoteHashMapServer)__
Mar 10, 2006 8:39:26 AM ar.org.fitc.test.rmi.integration.RemoteCalculatorServer main
INFO: RemoteCalculator Server Ready.
Mar 10, 2006 8:39:35 AM ar.org.fitc.rmi.transport.RMIServerSocket accept
INFO: Socket accepted Socket[addr=/10.100.2.241,port=50320,localport=1099]
__Output Computer N°1 (RemotehashMapClient)__
RemoteMapClient locating RMI registry on remote host "10.100.2.246".
Mar 10, 2006 8:14:35 AM sun.rmi.transport.tcp.TCPEndpoint <clinit>
FINE: main: localHostKnown = false, localHost = null
Mar 10, 2006 8:14:35 AM ar.org.fitc.test.rmi.integration.RemoteHashClient main
INFO: RemoteMapClient looking up service "RemoteHashMap".
Mar 10, 2006 8:14:35 AM sun.rmi.transport.tcp.TCPTransport <init>
FINE: main: Version = 2, ep = [:0]
Mar 10, 2006 8:14:35 AM sun.rmi.transport.tcp.TCPEndpoint getLocalEndpoint
FINE: main: created local endpoint for socket factory null on port 0
Mar 10, 2006 8:14:35 AM sun.rmi.transport.tcp.TCPChannel createConnection
FINE: main: create connection
Mar 10, 2006 8:14:35 AM sun.rmi.transport.tcp.TCPEndpoint newSocket
FINER: main: opening socket to [10.100.2.246:1099]
Mar 10, 2006 8:14:35 AM sun.rmi.transport.proxy.RMIMasterSocketFactory createSocket
FINE: main: host: 10.100.2.246, port: 1099
Mar 10, 2006 8:14:35 AM sun.rmi.transport.proxy.RMIMasterSocketFactory createSocket
FINE: main: direct socket connection successful
RemoteMapClient problem with RemoteMap, exception:
   java.rmi.ConnectIOException: error during JRMP connection establishment; nested exception is:
   java.io.EOFException
   pride
   Mar 10, 2006 8:14:35 AM ar.org.fitc.test.rmi.integration.RemoteHashClient putCall
   INFO: RemoteMapClient inserting on 10.100.2.246 key=one, value=pride
   Exception in thread "main" java.lang.NullPointerException
      at ar.org.fitc.test.rmi.integration.RemoteHashClient.putCall(RemoteHashClient.java:110)
         at ar.org.fitc.test.rmi.integration.RemoteHashClient.populateHashMap(RemoteHashClient.java:100)
            at ar.org.fitc.test.rmi.integration.RemoteHashClient.main(RemoteHashClient.java:80)