

A photograph of the Oracle New England Development Centre, featuring several modern, cylindrical glass buildings with blue-tinted windows. The buildings are situated along a body of water, with a rocky shoreline and green trees in the foreground. The sky is clear and blue.

# Oracle Rdb Technical Forums

Oracle JDBC for Rdb

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# Agenda

- Driver & Servers Overview
- V7.1.3 release
  - Multi-process server
  - XML configuration file
  - SQL/Services interface
  - Controller
  - SSL support
- Itanium
- Demonstration



# Types of JDBC Drivers

Vendor independent

JDBC Class Library

Drivers written by vendor

JavaSoft ODBC

OracleOCI

OracleThin

rdbThin

rdbNative

ODBC  
C Library

OCI  
C Library

Java Sockets

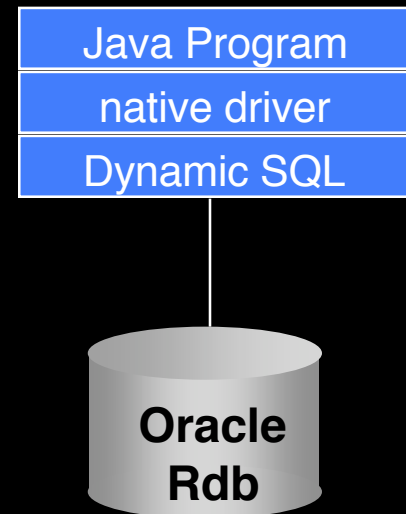
Dynamic SQL

ORACLE



# Oracle JDBC for Rdb Native Driver

- Purpose of this driver
  - Environment type Java application and Java application as a middle tier.
- JDBC call is translated to dynamic SQL
- Features
  - JAVA applet can not be used.
  - Performance is best.





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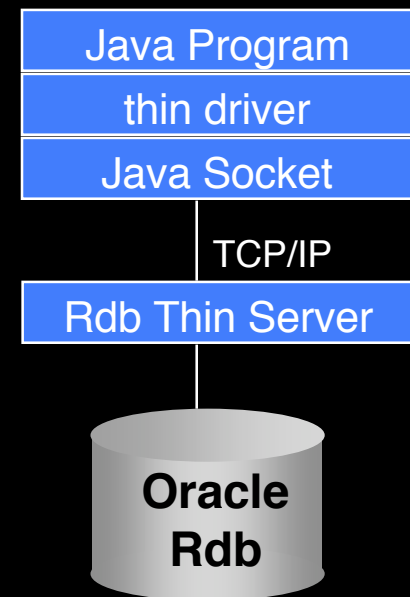
Java Sockets

Dynamic SQL



# Oracle JDBC for Rdb Thin Driver

- Thin driver connects to Oracle Rdb via JAVA sockets using TCP/IP
- Features
  - No client libraries need to be installed.
    - 100% JAVA
  - only TCP/IP protocol is supported.





# Oracle JDBC for Rdb Thin Server

- Multi-threaded server
- Listens to single port
- Single process
- Synchronization needed at Rdb interface  
may limit concurrency



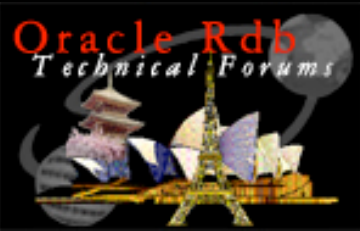
# Thin Server (cont)

Java Program

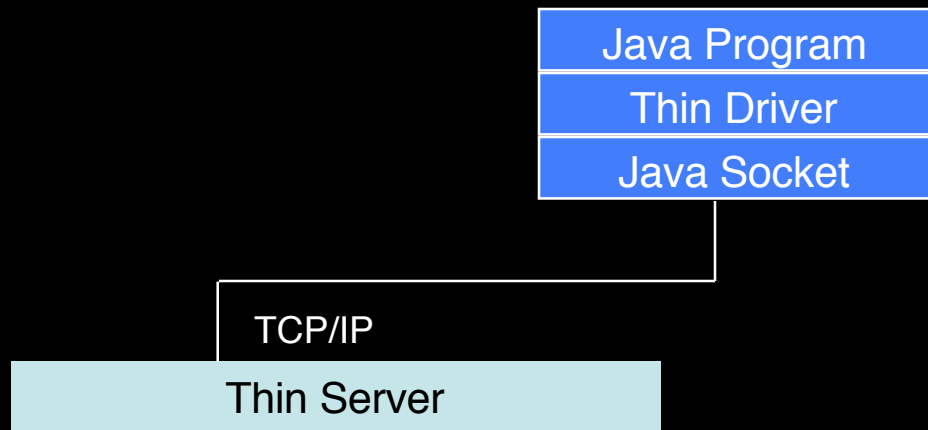
Thin Driver

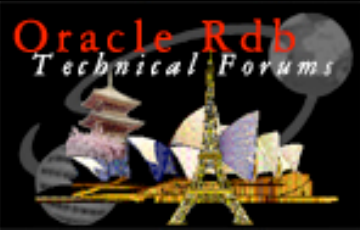
Java Socket

Thin Server

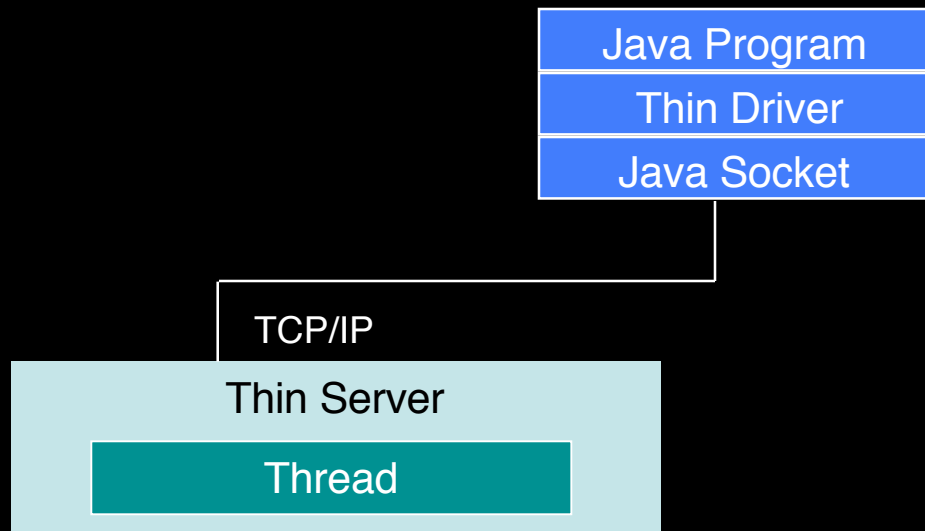


# Thin Server (cont)



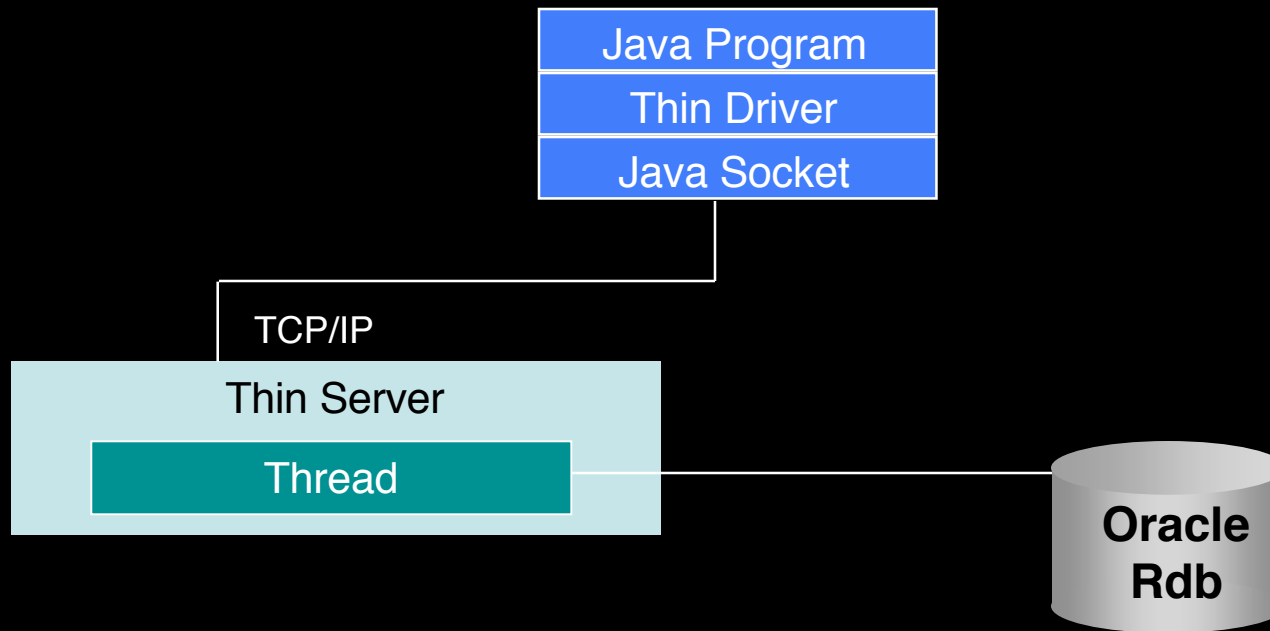


# Thin Server (cont)



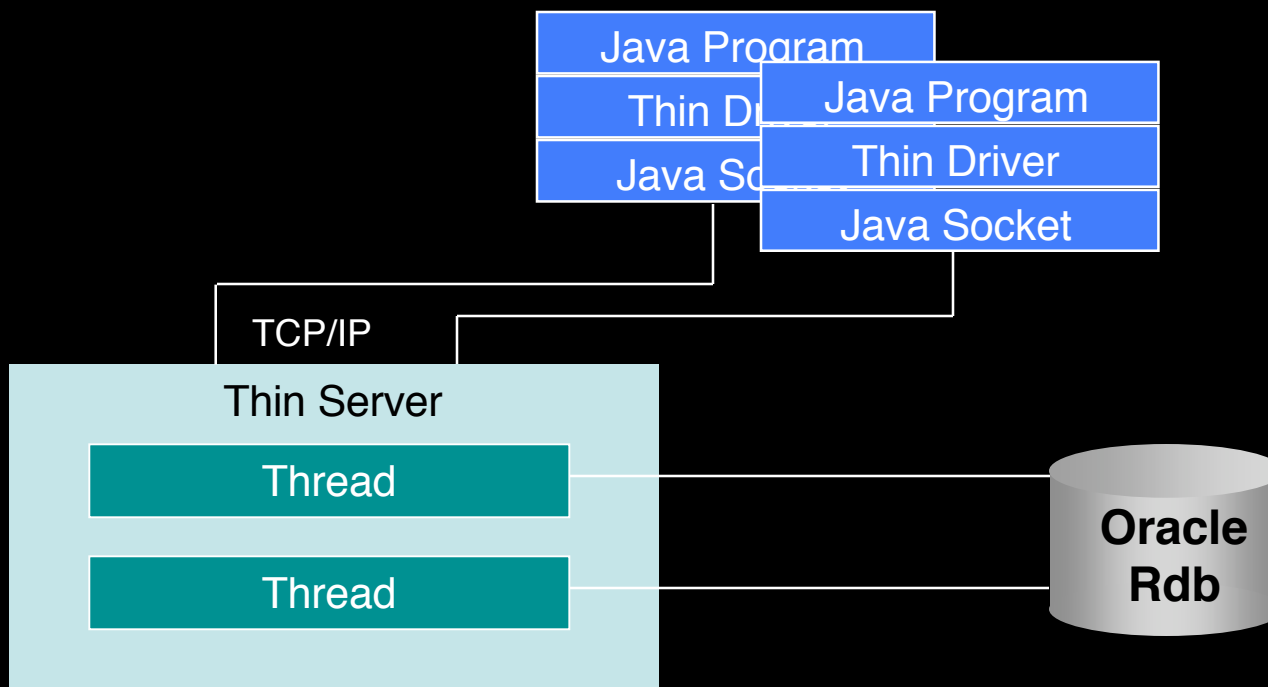


# Thin Server (cont)





# Thin Server (cont)





# Oracle JDBC for Rdb Pool Server

- Distributes connection requests
- Pool of available Thin servers
- Single Node:port address
- Thin Server may be local/remote to pool server
- Better concurrency
- NOT connection pooling



# Pool Server (cont)



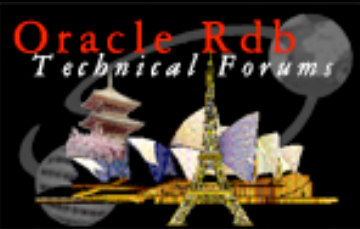
Pool Server

Thin Server

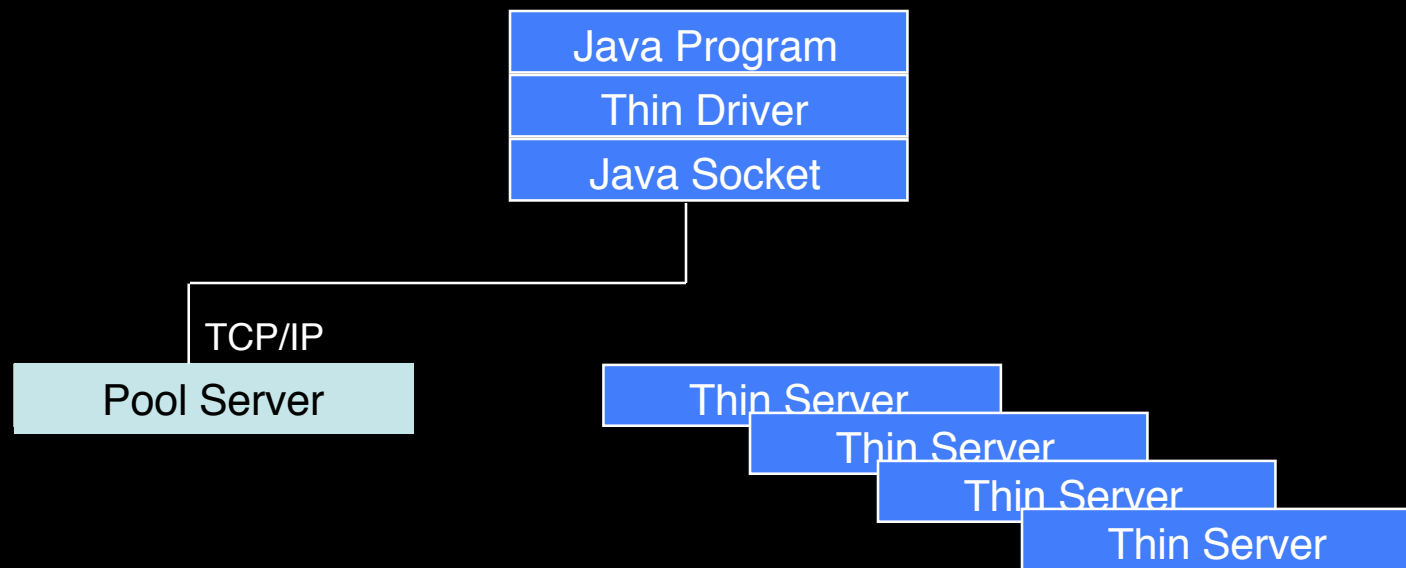
Thin Server

Thin Server

Thin Server

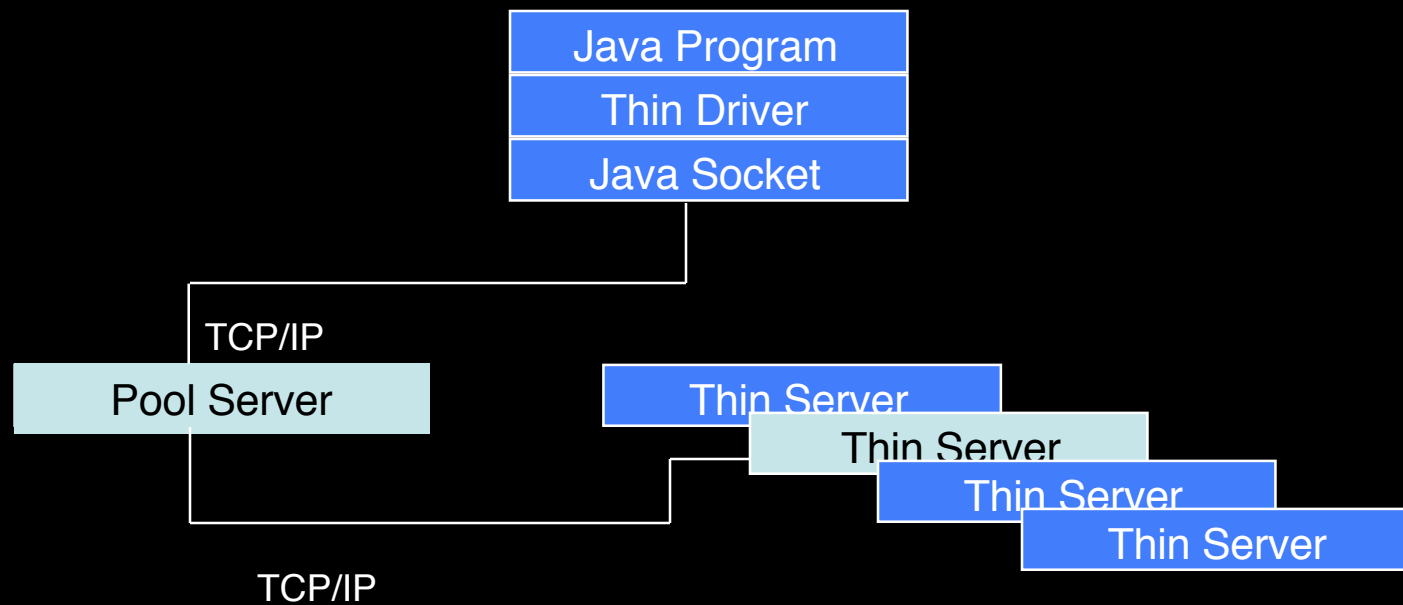


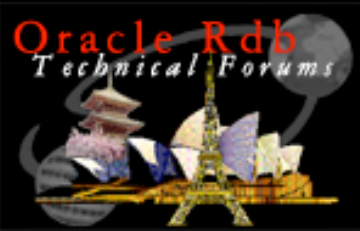
# Pool Server (cont)



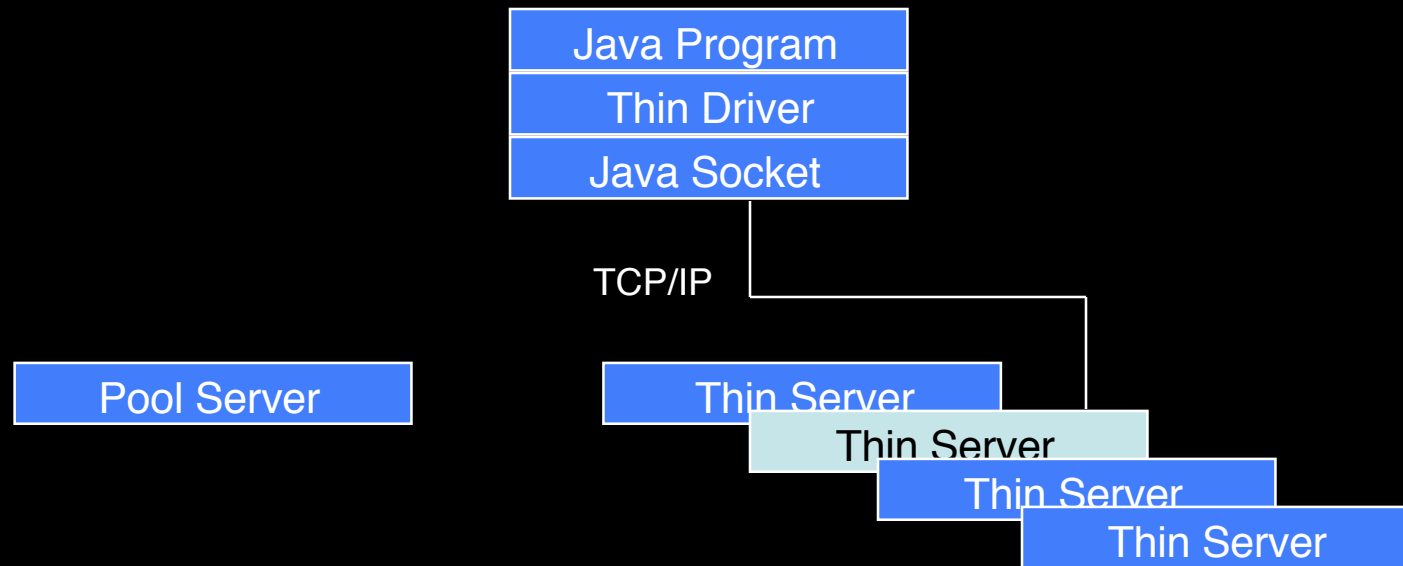


# Pool Server (cont)



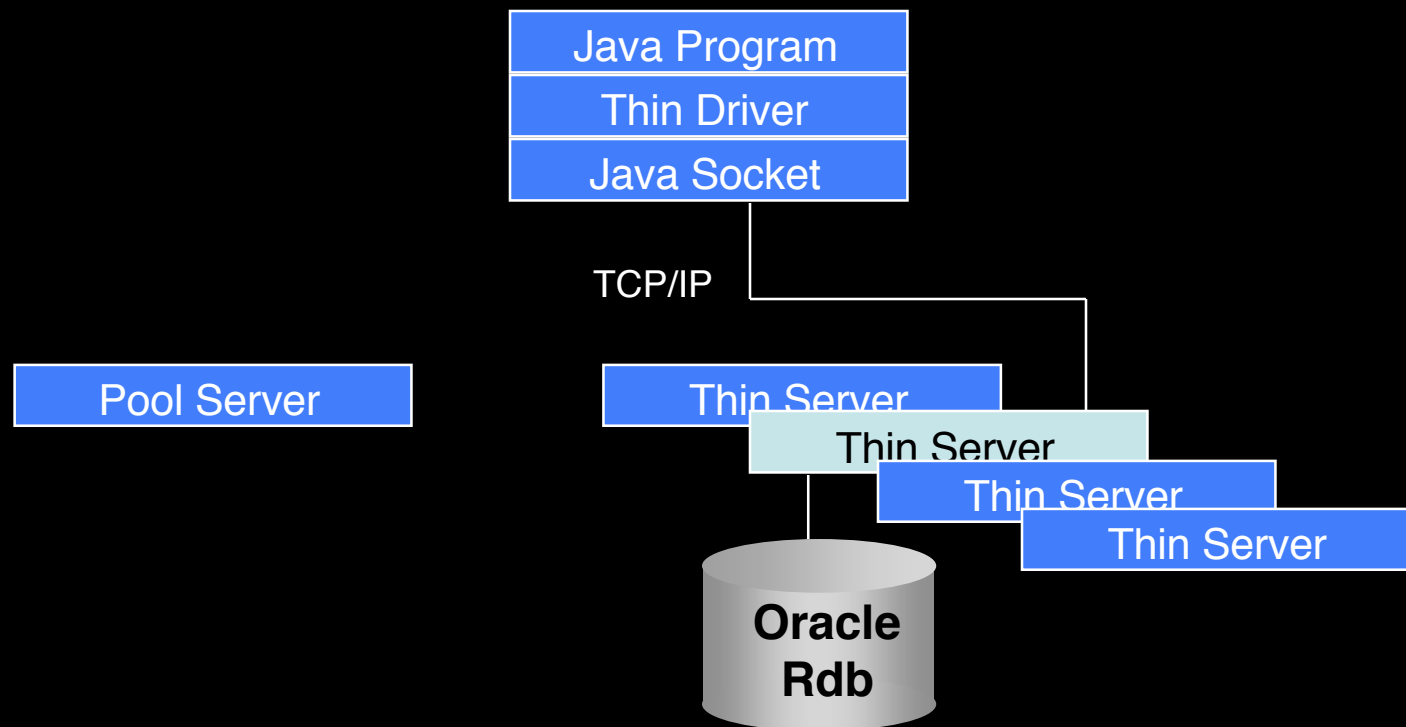


# Pool Server (cont)





# Pool Server (cont)





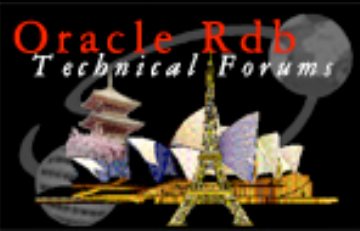
# V7.1.3 release

- Multi-Process Server
- XML –based configuration file
- SQL/Services Manager server start and close
- More Controller features
- Auto-start and keep alive with pool servers



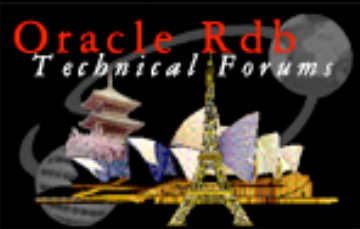
## V7.1.3 release (Cont.)

- Secure Socket support (SSL)
- DEC\_KANJI , DEC\_HANZI support is still undergoing testing



# Oracle JDBC for Rdb Multi-Process Server

- Multi-threaded server
- New sub-process started for each connection
- Single Node:port address
- Better concurrency as multiple process used, no synchronization needed



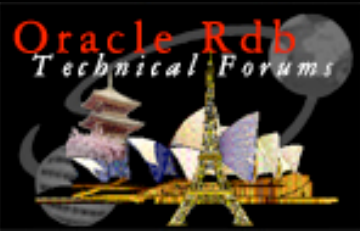
# Multi-Process Server (cont)

Java Program

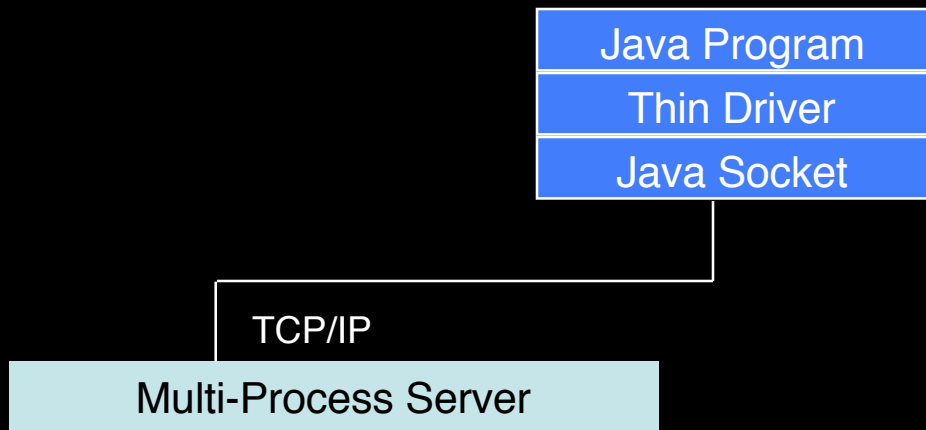
Thin Driver

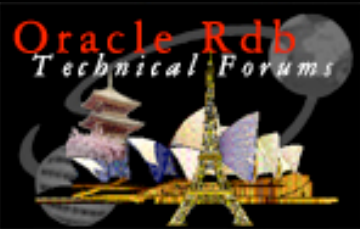
Java Socket

Multi-Process Server

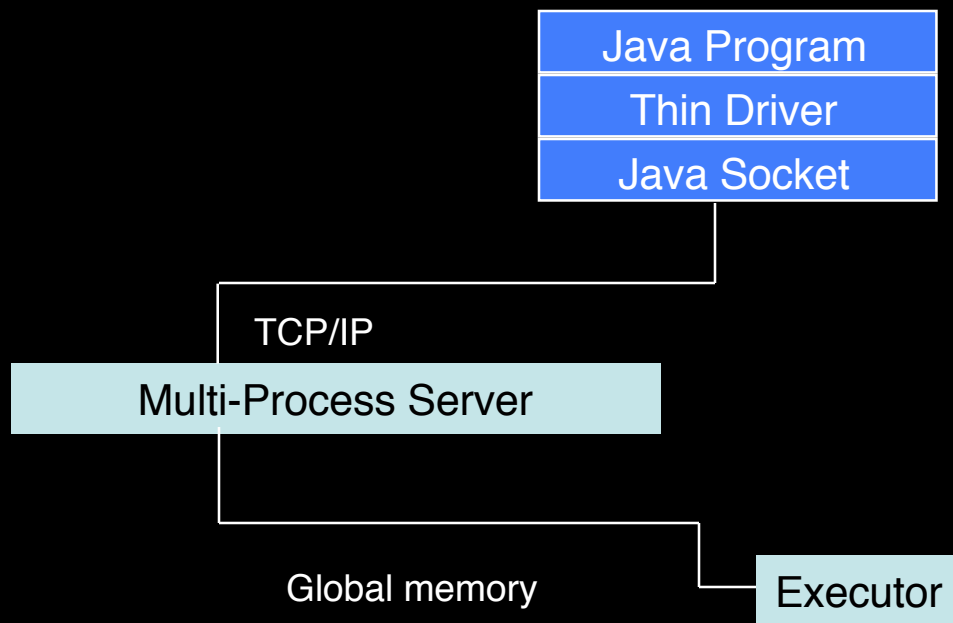


# Multi-Process Server (cont)



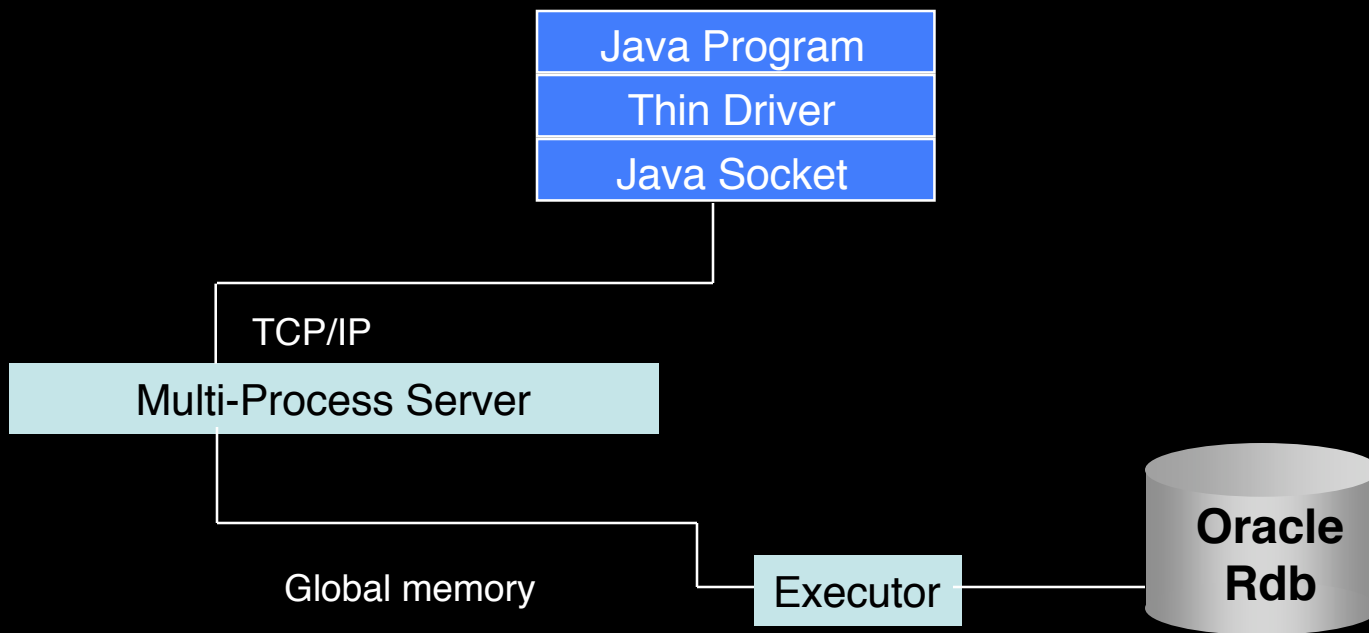


# Multi-Process Server (cont)



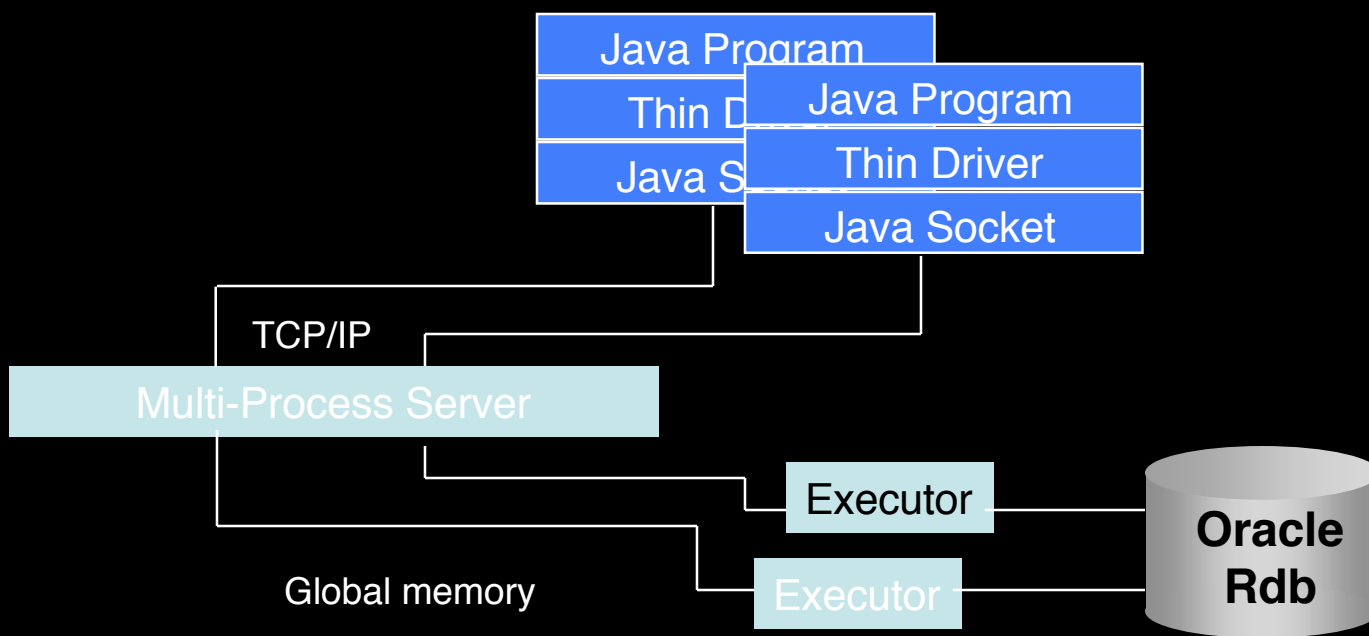


# Multi-Process Server (cont)





# Multi-Process Server (cont)





# XML-based configuration file

- \*.CFG still supported
- \*.XML provides more features
- Single configuration file for all servers or have multiple configuration files – your choice
- Other characteristics
  - Session information
  - Databases
  - DEFAULT server characteristics



# XML-based configuration file (Cont)

```
<!-- SERVERS -->
<servers>
  <!-- DEFAULT server characteristics-->
  <server
    name="DEFAULT"
    type="RdbThinSrv"
    url="//localhost:1701/"
    maxClients="-1"
    srv.bindTimeout="0"
    srv.idleTimeout="0"
    srv.mcBasePort="5517"
    srv.mcGroupIP="239.192.1.1"
    srv.startup="e:\rdjdbc\X71300\startthinsrv.bat"
    srv.execStartup="e:\rdjdbc\X71300\startexecutor.bat"
    autoStart="false"
    controlUser="jdbc_user"
    controlPass="0x811B15F866179583EB3C96751585B843"
    cfg="e:\rdjdbc\X71300\my_rdbjdccfg.xml"
  />
```



# XML-based configuration file (Cont)

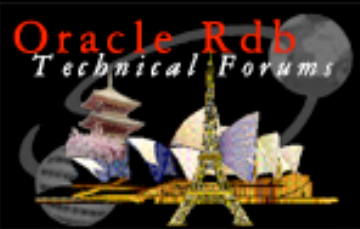
```
<server
  name="rdbthnsrv3"
  type="RdbThinSrv"
  url="//localhost:1706/"
  restrictAccess="true"
  maxClients="10"
  logfile="e:\rdbjdbc\x71300\srv3.log"
  >
  <allowDatabase name="mf_pers"/>
  <allowDatabase name="pers"/>
  <allowDatabase name="e:\regtest\mf_personnel"/>
</server>

<server
  name="rdbpool"
  type="RdbThinSrvPool"
  url="//localhost:1702/"
  autoStart="true"
  tl="-1"
  >
  <pooledServer name="rdbthnsrv1"/>
  <pooledServer name="rdbthnsrv3"/>
  <pooledServer name="rdbthnsrv9"/>
</server>
```



# XML-based configuration file (Cont)

```
<!-- database -->
<databases>
  <database
    name="mf_pers"
    url="//localhost:1701/e:\regtest\mf_personnel"
    driver="oracle.rdb.jdbc.rdbThin.Driver"
    URLPrefix="jdbc:rdbThin:"
  />
  <database
    name="pers"
    url="//localhost:1702/e:\regtest\personnel"
    driver="oracle.rdb.jdbc.rdbThin.Driver"
    URLPrefix="jdbc:rdbThin:"
  />
</databases>
</config>
```

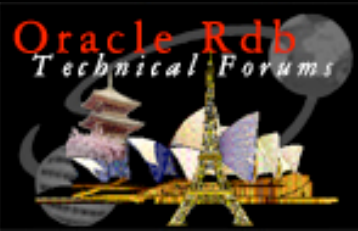


# SQL/Services Manager startup

- Start/Stop server using SQL/Services

```
$ MCR SQLSRV_MANAGE71
SQLSRV> CONNECT SERVER;
SQLSRV> CREATE DISPATCHER
JDBCDISP NETWORK_PORT TCPIP
PORT_ID 1880
        PROTOCOL JDBC;
SQLSRV> START DISPATCHER
JDBCDISP;
```

JDBC :  
New type of  
Protocol



# Oracle JDBC for Rdb Controller features

- Start / Stop / Open /Close / Show server
- Watch server ( Trace log sent to controller console)
- Poll of active servers on network ( using Multicast)
- Stop Client – Stop all Clients – Stop Clients in database



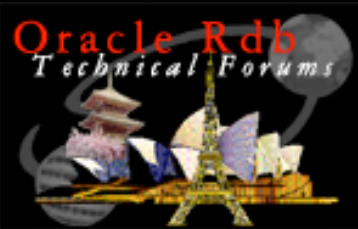
# Controller

```
rdbthincontrol> show active servers
Active server info
RDB$NODE           : 192.168.1.100
RDB$PORT           : 1701
RDB$STATUS         : Idle
RDB$SERVER_NAME    : rdbthnsrv1
RDB$SERVER_TYPE    : RdbThinSrv
RDB$SERVER_VERSION : X7.1-301 20041029 B40S
RDB$SERVER_SHR_VERSION : X7.1-301 20041029 B40S
RDB$SERVER_PID     : 0x0118(280)
RDB$ALLOWS_ANON    : false
RDB$ALLOWS_BYPASS  : false
RDB$NUMBER_OF_CLIENTS : 0
RDB$MAX_CLIENTS    : -1
RDB$TRACE_LEVEL    : 0
RDB$LOG_FILE       : null
RDB$RESTRICT_ACCESS : false
```



# Auto-start & Auto-restart

- Available only in conjunction with pool server
- Thin servers auto-start on Pool server startup
- Also servers close down when Pool server closes
- Auto-restart and keep alive timer



# Asian Character Sets

- Previously a problem as UNICODE/Asian conversion libraries on VMS not compatible with server shared image.
- Now using JAVA to do conversions, more character sets supported by drivers
- Still undergoing testing



# SSL Support

- Client/Server communication may use Secure Socket Layer sockets
- New SSL type servers
  - RdbThinSSL
  - RdbThinMPSSL
  - RdbThinPoolSSL
- Startup may take longer – handshake takes time
- You can choose security aspects of SSL

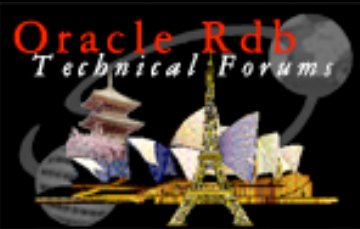


# SSL support ( Cont.)

- Server needs SSL information

```
<!-- DEFAULT Secure socket server -->
<server
  name="DEFAULTSSL"
  type="RdbThinSrvSSL"
  ssl.default="false"
  ssl.context="TLS"
  ssl.keyManagerFactory="SunX509"
  ssl.keyStoreType="jks"
  ssl.keyStore="rdbjdbcsrv.kst"
  ssl.keyStorePassword="CHANGETHIS"
  ssl.trustStore="rdbjdbcsrv.kst"
  ssl.trustStorePassword="CHANGETHIS "
/>
```

RdbThinSrvSSL :  
New type of  
Server



# SSL support ( Cont.)

- Client needs SSL information
- Use Properties block on connection



# SSL support ( Cont.)

```
Properties info = new Properties();
info.put("user", user);
info.put("password", password);
info.put("tracelevel", traceLevel);
info.put("ssl", "true");
info.put("ssl.default", "false");
info.put("ssl.context", "TLS");
info.put("ssl.keyManagerFactory", "SunX509");
info.put("ssl.keyStoreType", "jks");
info.put("ssl.keyStore", "rdbjdbcli.kst");
info.put("ssl.keyStorePassword", "CHANGETHIS");
info.put("ssl.trustStore", "rdbjdbcli.kst");
info.put("ssl.trustStorePassword", "CHANGETHIS");
Connection conn = DriverManager.getConnection(
    "jdbc:rdbThin://bravo:1755/my_db_dir:pers",
    info);
```



# Itanium

- Kit built with Native build of images
- JAVA is JAVA is JAVA. No changes needed for JARs
- NO change needed to Oracle JDBC for Rdb source code
- Thin Server running on IA64
- Thin Client running on IA64

Oracle Rdb  
Technical Forums



# DEMONSTRATIONS

ORACLE



# Sneak Peek





# For More Information

- [www.oracle.com/rdb](http://www.oracle.com/rdb)
- [metalink.oracle.com](http://metalink.oracle.com)
- <http://www.hp.com/products/openvms>
- [Jim.murray@oracle.com](mailto:Jim.murray@oracle.com)

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