JNDI & Connection pooling

Objectives

At the end of this session, you will be able to,

- Describe architecture of JNDI
- Describe Connection Pool
- Demonstrate implementation of DataSource

Agenda

Following points to be covered in the session,

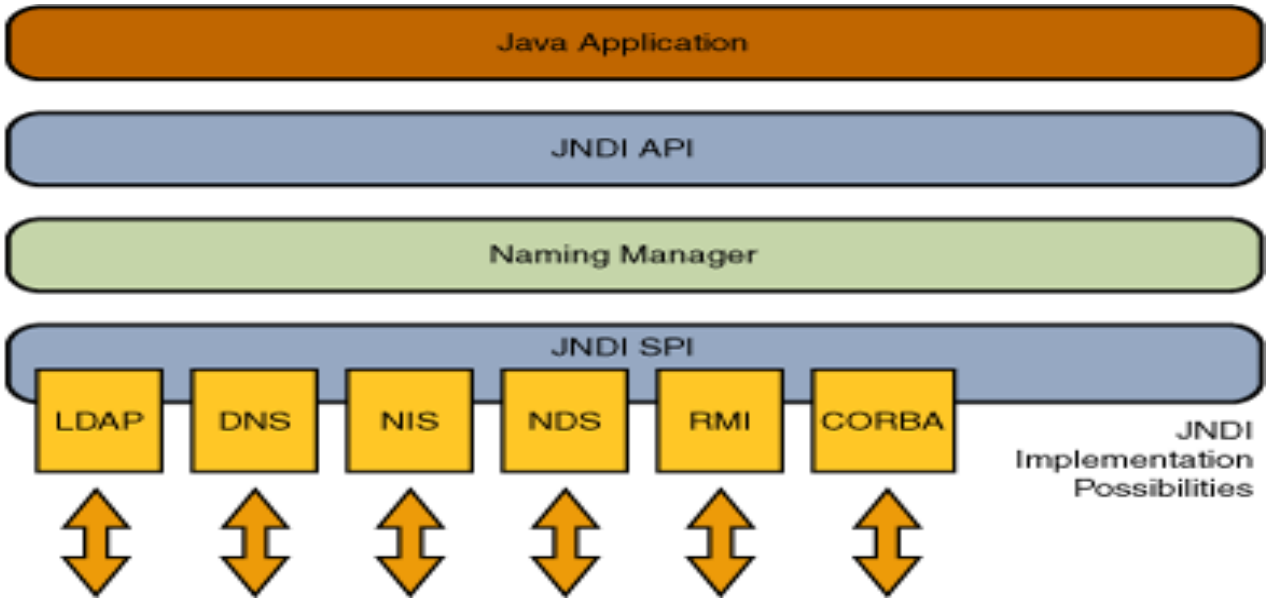
- JNDI Architecture
- Connection Pool
- Data Source implementation in JEE

Overview of JNDI

- The **Java Naming and Directory Interface**™ (JNDI) is an application programming interface (API) that provides naming and directory functionality to applications written using the Java™ programming language.
- It is defined to be independent of any specific directory service implementation. Thus a variety of directories -new, emerging, and already deployed can be accessed in a common way.
- **A naming service maps developer friendly names to objects . So that the applications can access the same object with the bound name.**

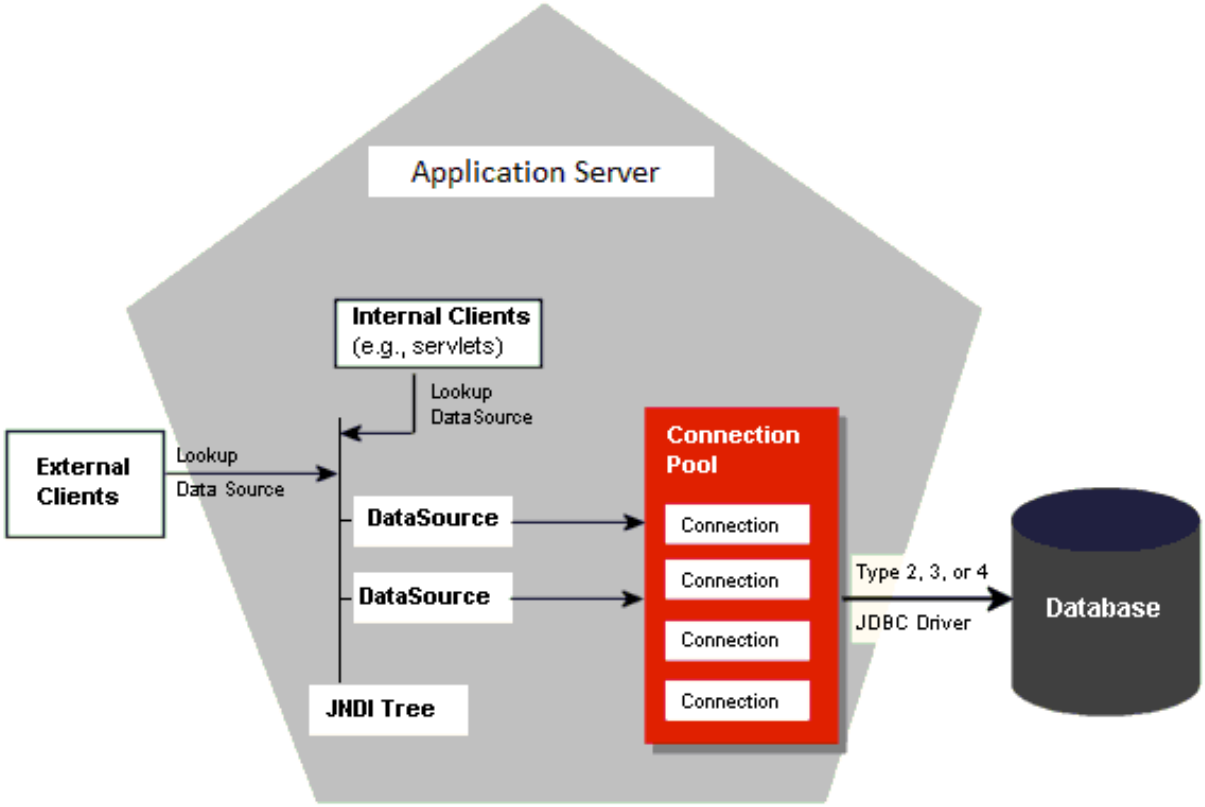
JNDI Architecture

- The JNDI architecture consists of an API and a service provider interface (SPI). Java applications use the JNDI API to access a variety of naming and directory services.
- The SPI enables a variety of naming and directory services to be plugged in transparently, thereby allowing the Java application using the JNDI API to access their services. See the following figure:



Connection Pool

- As we have seen importance and need of connection pool in JDBC , lets see how we can implement it in server.



Connection Pool (Cont..)

- A connection pool operates by performing the work of creating connections ahead of time, In the case of a JDBC connection pool, a pool of **Connection** objects is created at the time the application server (or some other server) starts.
- These objects are then managed by a **pool manager** that disperses connections as they are requested by clients and returns them to the pool when it determines the client is finished with the **Connection** object.

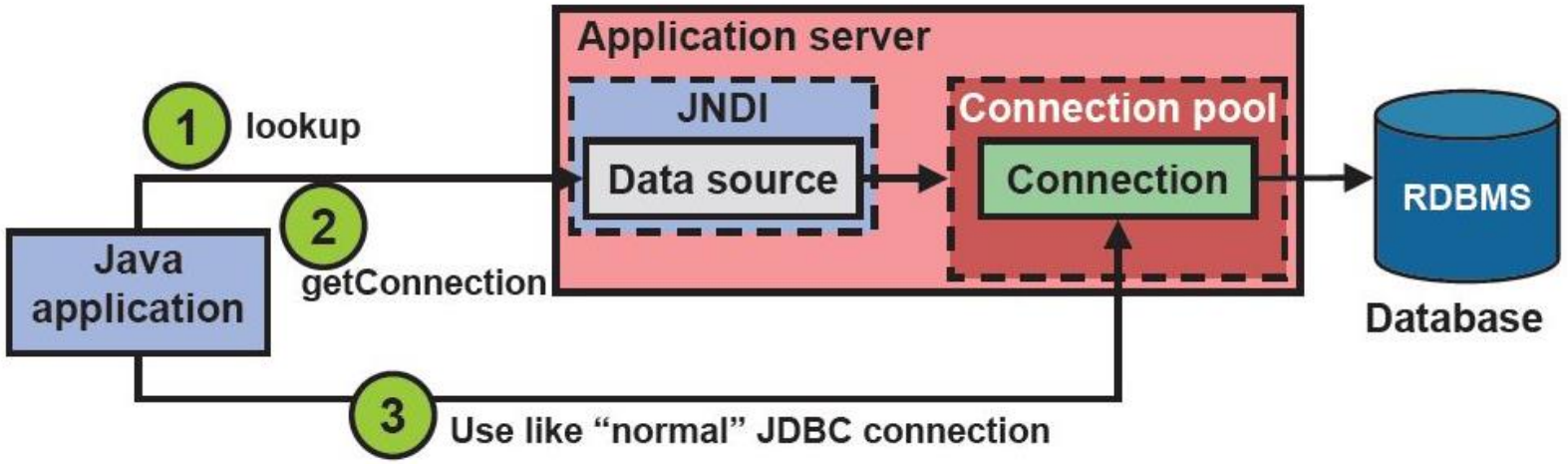
- When the connection pool server starts, it creates a predetermined number of **Connection** objects. A client application would then perform a JNDI lookup to retrieve a reference to a **DataSource** object that implements the **ConnectionPoolDataSource** interface. The client application would not need make any special provisions to use the pooled data source; the code would be no different from code written for a nonpooled **DataSource.**

Connection Pool (Cont..)

- When the client application requests a connection from the **ConnetionPoolDataSource,** the data source implementation would retrieve a physical connection to the client application. The **ConnectionPoolDataSource** would return a **Connection** object that implemented the **PooledConnection** interface.

Data Source

- When a request comes towards server the following way is used to process it.
- Following diagram also shows relation between Data Source, JNDI and Connection Pool.



Data Source coding implementation

- To implement JNDI and get a connection object from connection pool we need to write down following code in servlet instead of normal JDBC code

This is JNDI name for lookup where config. details are stored.

```
Context initContext = new InitialContext();
// OR Context envContext = (Context) initContext.lookup("java:comp/env");
DataSource ds = (DataSource) envContext.lookup("jdbc/UsersDB");
Connection conn = ds.getConnection();
```

- For using these APIs, do import javax.naming.InitialContext and javax.sql.DataSource in java code

Summary

In this session, we have covered,

- JNDI
- Connection Pool
- Data Source Configuration

Thank You

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