Remote Procedure Call

Remote Procedure Call (RPC) is a technique used in distributed systems to enable communication between processes on different machines or networks. It allows a client to invoke a procedure or function on a remote server as if it were a local call, hiding the complexities of the network communication from the client.

The basic steps of an RPC system are:

1. The client sends a request to the server, specifying the name of the remote procedure and its parameters.
2. The RPC middleware on the client side packages the request into a message and sends it to the server.
3. The RPC middleware on the server side receives the message, unpacks the request, and calls the specified procedure or function with the provided parameters.
4. The procedure or function is executed on the server, and the result is returned to the client in a response message.
5. The RPC middleware on the client side receives the response message, unpacks the result, and returns it to the calling program.

RPC systems typically use a specific protocol, such as Remote Procedure Call Protocol (RPCP), to define the structure of the request and response messages and the rules for communication between the client and server. Some popular RPC implementations include gRPC, Apache Thrift, and CORBA.

Remote Method Invocation

Remote Method Invocation (RMI) is a technique used in distributed systems to enable communication between Java objects running on different machines or networks. It allows a client to invoke a method on a remote object as if it were a local method call, hiding the complexities of the network communication from the client.

The basic steps of an RMI system are:

1. The client obtains a reference to a remote object by calling a naming service or registry.
2. The client invokes a method on the remote object using the same syntax as a local method

call.

3. The Java Virtual Machine (JVM) on the client side packages the method invocation into a message and sends it to the remote JVM.
4. The remote JVM receives the message, unpacks the method invocation, and calls the specified method on the remote object.
5. The method is executed on the server, and the result is returned to the client JVM in a response message.
6. The JVM on the client side receives the response message, unpacks the result, and returns it to the calling program.

RMI systems are built on top of Java Remote Method Protocol (JRMP) or Internet Inter-ORB Protocol (IIOP) to define the structure of the request and response messages and the rules for communication between the client and server.