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ANSA Phase III

Trader Implementation with Orbix & ALLBASE (TC talk, June 1994)

Gomer Thomas

Abstract

The ANSA federation task group is developing a prototype for an enhanced trading service, or “Properties Repository,” using Orbix for the underlying distributed computing platform and ALLBASE/SQL for data management. Among other features, this prototype will support a transactional dialog interface for trading operations. In order to implement this, each client of the trading service must be able to establish a logical connection with its own private instance of the interface.

This presents two challenges: (1) Connection management: if a client becomes unexpectedly unavailable, how can the server discover this so that it can terminate any active transaction (releasing locks, etc.) and shut down the client’s instance of the interface? (2) Access control: how can unauthorized clients be prevented from invoking operations on another client’s instance of the interface?

This talk describes the approaches being taken to address these challenges, in both shared server (multiple clients per server process) and unshared server (single client per server process) configurations.

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Request for Comments (confidential to ANSA consortium for 2 years)

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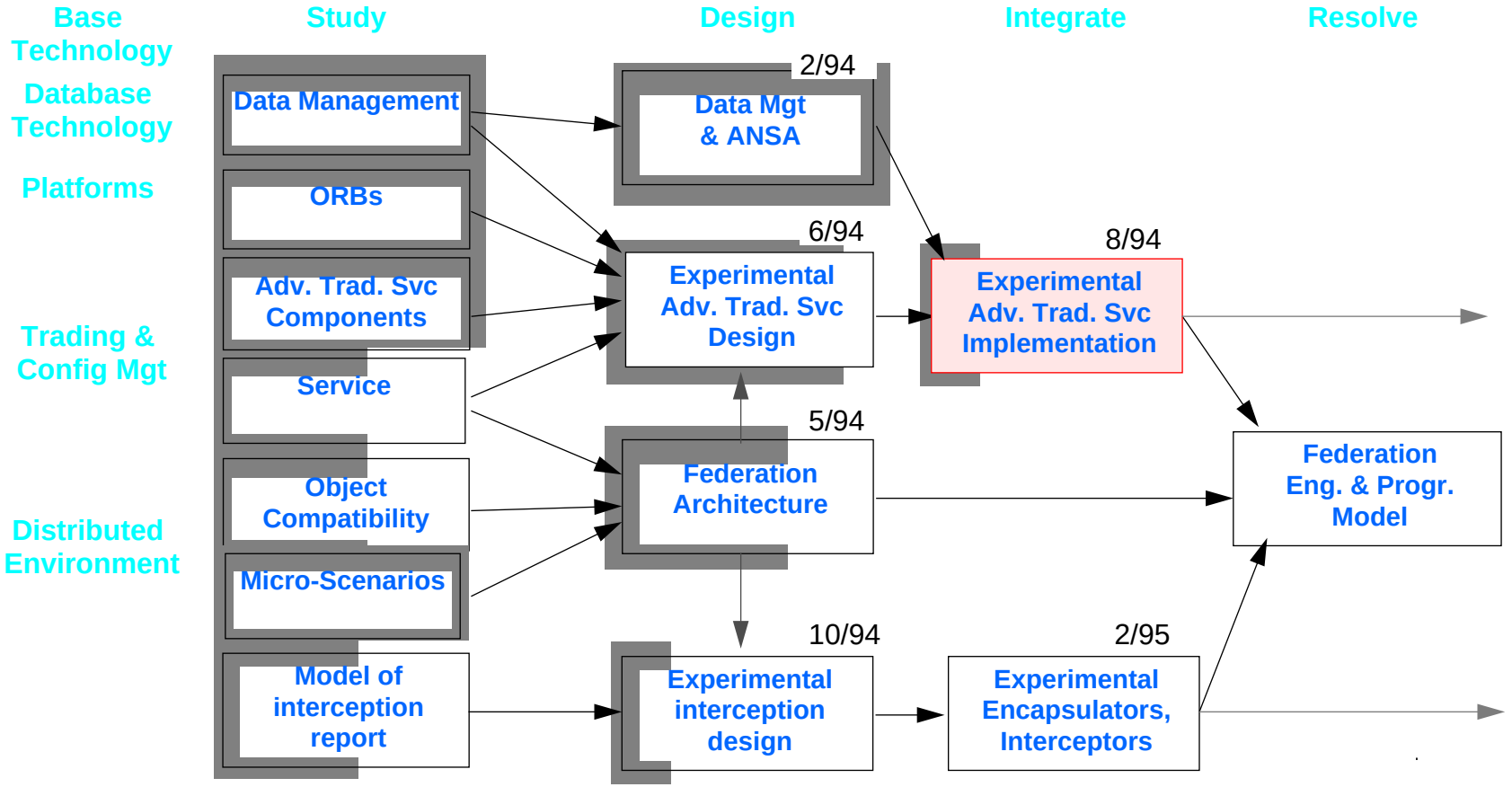
Trader Implementation with Orbix & ALLBASE

Work in Progress

Gomer Thomas
Federation Group

ANSA TC Meeting, 7-8 June, 1994

Federation Plan

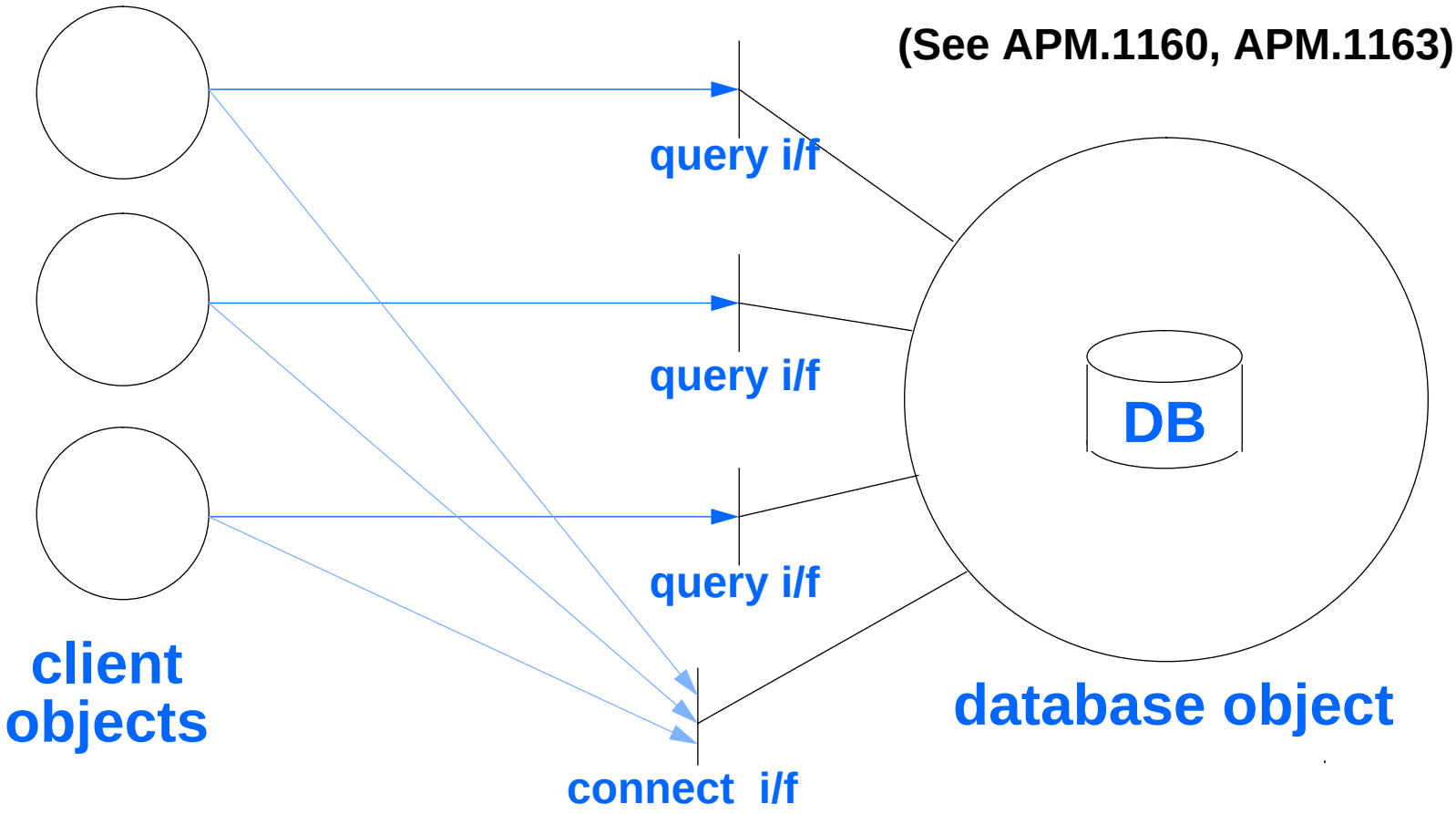


Objective of Talk

- **Illuminate desirable infrastructure features in ODP/CORBA environments to support data access applications.**

Conceptual Model of Query Access

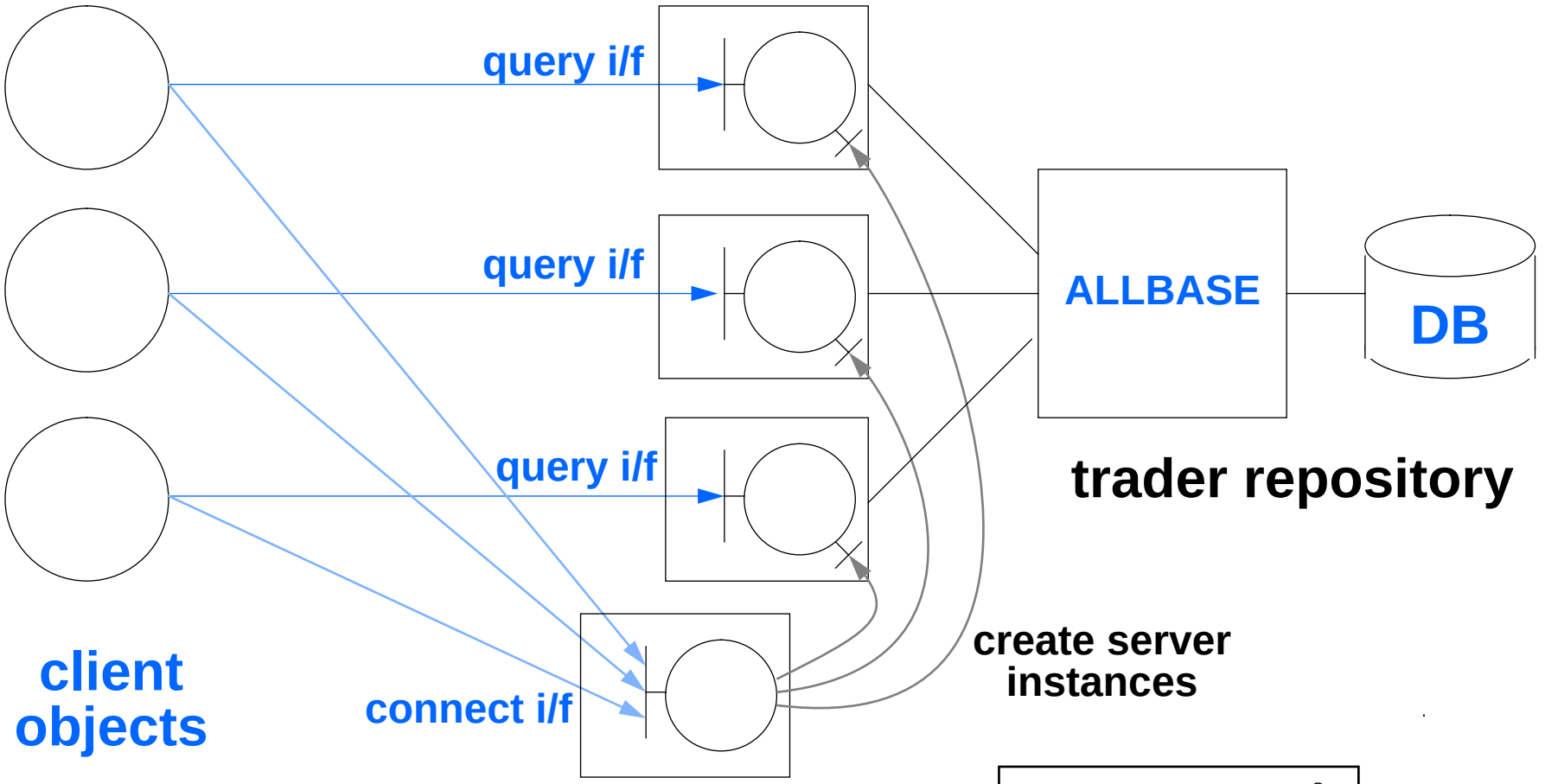
(See APM.1160, APM.1163)

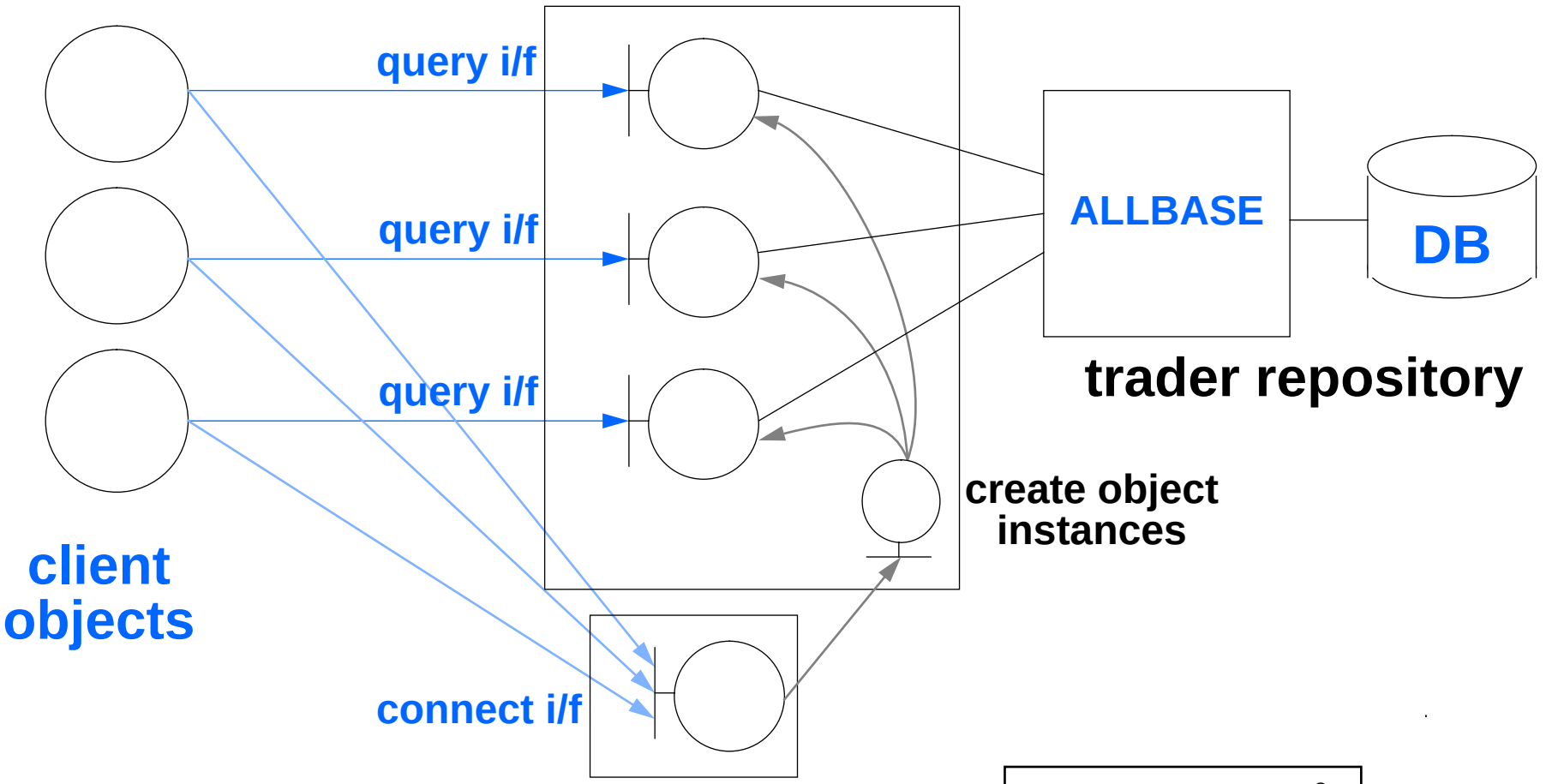


Implementation Setting

- **Orbix & ALLBASE**
- **Need connection-oriented query interface, with access control**
- **Two possible process models for query server(s):**
  - **Unshared: Each connected client has its own server (process).**
  - **Shared: Server (process) is shared among multiple clients.**
- **Challenges:**
  - **Connection: notifying query server if client no longer available**
  - **Access control: preventing unauthorized access to query server**
- **Relevant Orbix features:**
  - **All servers must be registered.**
  - **“Connection” is not supported.**
    (I.e., server is not notified if underlying TCP connection breaks off.)

Unshared Query Servers

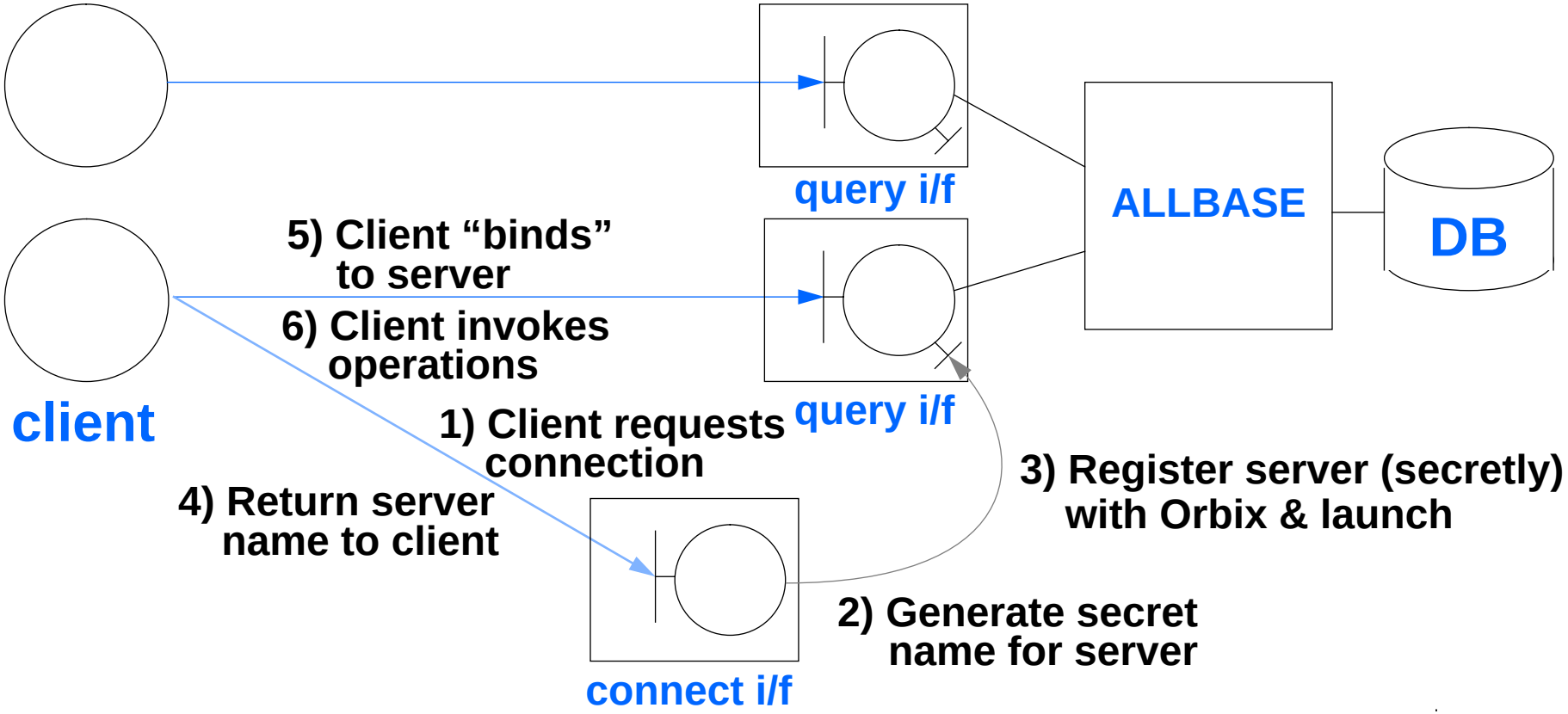



Shared Query Server
query i/f
query i/f
query i/f
ALLBASE
DB
trader repository
create object instances
client objects
connect i/f

Connection Solutions

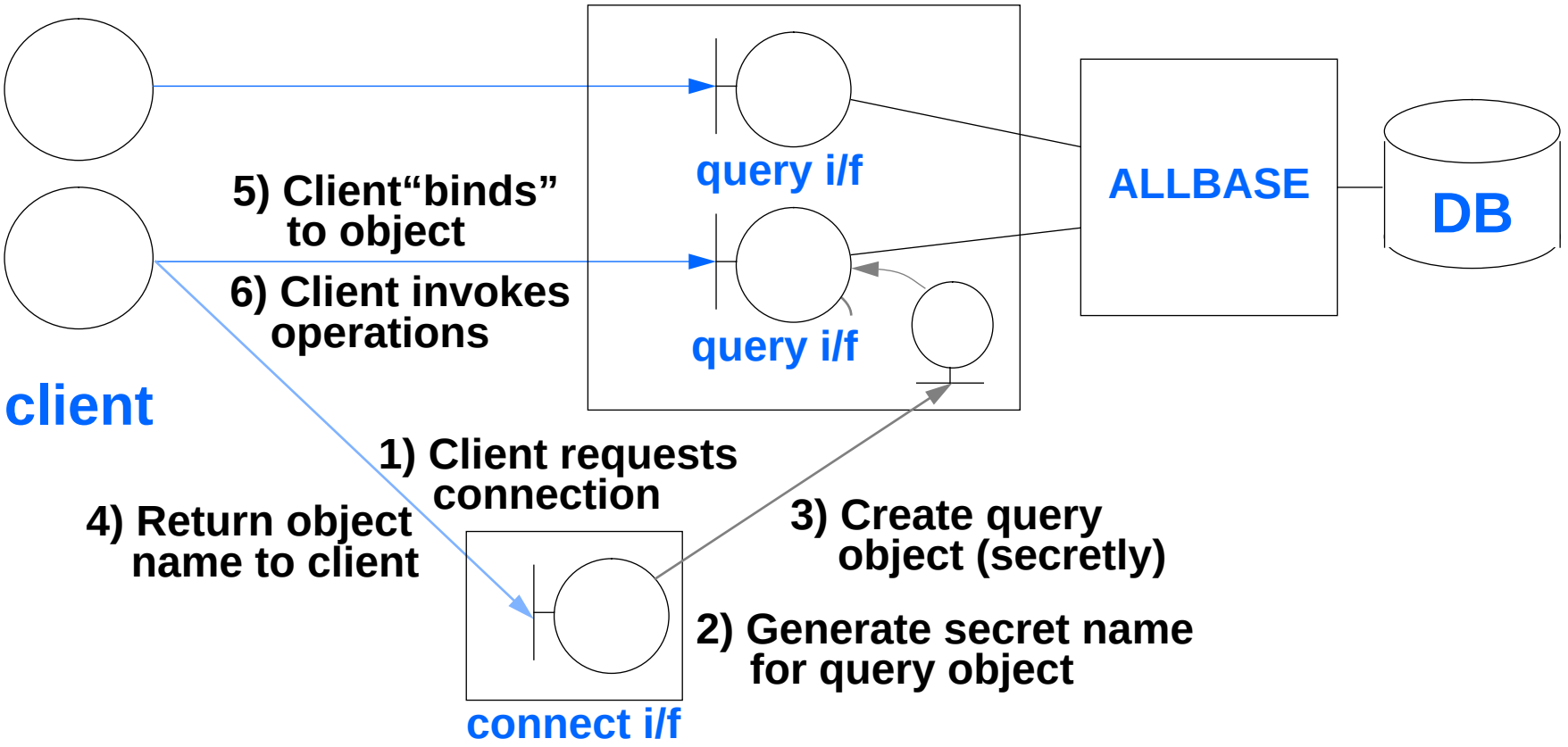
- **Client pings server -- works OK**
  - Server provides ping interface.
  - Client forks process to generate regular pings.
  - Very easy for unshared server; slightly more complex for shared server.
- **Server pings client -- not very good**
  - All clients would have to register as servers.

Access Control: Unshared Servers



Minor problem: Garbage collection for registrations

Access Control: Shared Server(s)



Minor problem: Intercepting unauthorized “binds”

Summary

- **Solutions exist, but not always as convenient as we would like.**
- **Desirable features in ODP/CORBA infrastructure:**
  - **Convenient dynamic creation of interface (object) instances.**
  - **Access control on invocations, at individual object level.**
  - **Virtual connections.**
  - **(Support for dynamic operations: discussed in APM.1160, APM.1163).**