MANUAL

DESIGN DECISIONS

BINDER

The binder database is implemented as a map where the key is the function’s signature (name, argTypes) and the value was a list of servers (identified by a hostname/port) that support the signature. This design lends itself nicely to function overloading because the overloaded functions would each have different keys (due to the difference in their argTypes) in the map.

When a REGISTER message is received from a server, the server is added to the database and round-robin queue if it had not existed there before.

When a LOC\_REQUEST message is received from a client, the binder simply gets a list of available servers that support the function signature from the database. Then, a round-robin approach is used to determine which server information to return to the client.

To do round-robin scheduling, a queue is used to maintain a list of active servers. Each time a location request comes in, the binder gets the list of servers that support the requested function from the database. The binder then looks at the server at the front of the round robin queue and if it is able to service the request, the credentials are sent to the client and the server is moved to the back of the queue. If the server at the front cannot service the request, it is pushed to the back of the queue and the next server is evaluated. If the round-robin queue is exhausted, a LOC\_FAILURE message is sent to the client.

If a server is detected to be disconnected, the binder removes the server from the round-robin queue and from the binder database by removing it from the server list for each function signature.

When a termination message is received from a client, the binder sends termination messages to each of the active servers. The binder then periodically polls the servers by trying to connect to establish a connection. If the connection fails for all of the servers, the servers have all closed and therefore the binder can safely close.

ERROR CODES

FAILURE = -1,

FUNCTION\_OVERRIDDEN = 2,

FUNCTION\_NOT\_AVAILABLE = -2,

SOCKET\_SEND\_FAILURE = -3,

SOCKET\_OPEN\_FAILURE = -4,

SOCKET\_UNKNOWN\_HOST = -5,

SOCKET\_CONNECTION\_FAILURE = -6,

SOCKET\_LOCAL\_BIND\_FAILURE = -7,

SOCKET\_ACCEPT\_CLIENT\_FAILURE = -8,

SOCKET\_RECEIVE\_FAILURE = -9,

EXECUTE\_UNKNOWN\_SKELETON = -10,

INIT\_UNSET\_BINDER\_ADDRESS = -11,

INIT\_UNSET\_BINDER\_PORT = -12,

INIT\_BINDER\_SOCKET\_FAILURE = -13,

INIT\_LOCAL\_SOCKET\_FAILURE = -14,

RECEIVE\_INVALID\_MESSAGE\_TYPE = -15,

SELECT\_FAILED = -16,

SELECT\_TIMED\_OUT = -17,

WRONG\_FUNCTION\_NAME\_RETURNED = -18