How to Diagnose Connection Rejected & Connection Refused Errors

Connection Rejected

The connection rejected error occurs either when the inet daemon cannot find this InterBase executable or when the remote gds_inet_server has accepted the communication packet (i.e., communication between the two nodes is operative), but something is not set up correctly in the environment on the remote server's node. In either case, the communication is rejected.

This error goes both to interbase.log in the /usr/interbase directory on the node on which the server is running, and to stderr.

Here is an example of this error as it is written to /usr/interbase/interbase.log on the node on which the remote server is running:

```
gizmo   Thu Nov 12 12:18:47 1992
SERVER/process_packet: connection rejected for newuser
```

and to stderr:

```
% whoami
newuser
% qli
Welcome to QLI
Query Language Interpreter
QLI>  ready gizmo:/usr/interbase/examples/v3/atlas.gdb
** QLI error from database "gizmo:/usr/interbase/examples/v3/atlas.gdb"
**
connection rejected by remote interface
```

(I caused this error to occur by entering a login, "newuser", in my local /etc/passwd only; this is a node under NIS control.)

In the following points the word "client" refers to the machine on which the communication was initiated; the word "server" refers to the machine which is being communicated with and on which the gds_inet_server runs during the session.

Check the following:

Host Equivalence

The server node needs to be a trusted host. Is the server node listed in the /etc/hosts.equiv file of the client? If not, is there a "+" in the file? If neither, then either the official host name of the server, or a "+", needs to be added. If the user can rlogin to the server but is asked for a password, the server node is not a trusted host. If the user cannot rlogin to the server, refer him or her to the system administrator.

If /etc/hosts lists aliases for a host, then /etc/hosts.equiv must list *all* the various names of that host, or else "+". Also, the full name of the host, including the fully qualified domain name, should be used in the /etc/hosts.equiv file.

The file .rhosts in the user's home directory can also provide host equivalence. The format of this file is different than the /etc/hosts.equiv file. The .rhosts file contains strings of the form "host login". This allows grants of host-equivalence on a per-user or per-host basis. Keep in mind that in InterBase, if the file exists but does not explicitly grant host equivalence to the user, the /etc/hosts.equiv file will not then be consulted. "+" is not a wildcard in a .rhosts file as it is in /etc/hosts.equiv.

NIS Host Equivlance

There are sites which bring /etc/hosts under NIS control (as a non-standard database). If this site has done so, then the server's NIS master's /etc/hosts.equiv and /etc/hosts files must be checked as specified in point 1 above and point 3 below. At one site we found that the ypmake file had been edited incorrectly (a word was mis-spelled) so this non-standard database was not under NIS control, after all. Once the entry in ypmake was corrected and the push done, the error disappeared. (This one took a while to find!)

Local Host and Alias Definitions

Check the server's /etc/hosts for non-standard official host names (the first name listed on each line), and aliases (which are listed afterward, if present). It could be that any aliases, as well as the official host name, need to be listed in the client's /etc/hosts.equiv.

Login Equivalence

Are login names the same on both the client and the server? Make sure there are no case differences. (The gds_proxy files can be used to deal with differences in this area, if you find this to be a problem.)

Unique User Id

If login names are equivalent and the server machine is under NIS control, check the /etc/passwd file on the server's NIS master to see if someone else (another login name) has the same uid and whether it's listed before the user's (or before the "+"). If a change has to be made to the NIS master's /etc/passwd file, remember to do the push (run ypmake).

Conflicting Local User Definition

If login names are equivalent and the server machine is under NIS control, check to see whether the user has a local /etc/passwd file on the server node and if so, whether the login in the local /etc/passwd is different from that user's login in the NIS master's /etc/passwd. If a change has to be made to the NIS master's /etc/passwd file, remember to do the push (run ypmake).

Permissions

Permissions, ownership to check on the server machine:

a. The database to which the connection is attempting to be made must be readable/writable by gds_inet_server and everyone who will access it (preferably 666).

b. /usr/interbase/bin/gds_inet_server must be owned by root, group bin, and have the following permissions:

```
-rwsr-sr-x  1  root  bin  32768  Aug 11 12:02  gds_inet_server*
```

c. /etc/hosts.equiv should be world-readable (444) (this shouldn't be an issue if the gds_inet_server has correct permissions and ownership as specified in 8b above).

d. The /usr/interbase directory must be wide open (777).

Inetd Configuration

The InterBase /etc/inetd.conf entry shows the path and name: /usr/interbase/bin/gds_inet_server. If it cannot find the executable there, or if the executable's name has changed, the daemon will have tried to start something that is not there and this error will occur. Check the server's /etc/inetd.conf and, if necessary, as superuser correct the entry then kill and restart the inet daemon (the HUP, or hangup, signal causes the inet daemon to reread /etc/inetd.conf):

```
# ps | grep inetd
118   ?  IW  0:02  /etc/inetd /etc/inetd.conf
3558  p4  S  0:00  grep inetd
# kill -HUP 118
```

This will work for both BSD and System V varieties of Unix. Use "ps -e" for System V, and "ps -ax" for BSD.

Connection Refused

The connection refused error indicates that an unsuccessful attempt to connect to a remote server was made. The remote server did not start; the communication packet was refused. Here is an example of this error:

```
QLI>  ready server1:/usr/interbase/examples/v3/atlas.gdb
** QLI error from database
"server1:/usr/interbase/examples/v3/atlas.gdb" **
I/O error during "connect" operation for file "server1" -Connection
refused
```

This error, in the above form, goes only to stderr. The error written to interbase.log on the node which initiated the communication is:

```
INET/inet_error: connect errno = 61
```

NOTE that this error cannot be written to the log on the remote (server) node because gds_inet_server is not running there. It can only be written to the local log.

Again, in the following points the word "server" refers to the machine on which the remote server runs; the word "client" refers to the node which initiated the communication.

Check the following:

Make Sure The Remote Node Is Alive.

From the local node, can you ping the remote node?

```
# ping bert
bert is alive
```

If the "*node* is alive" message is not the response to the ping, the network is not set up properly and the user should be referred to his or her system administrator.

Check the */etc/inetd.conf* Entry

Was the server node just installed with InterBase? Is the /usr/etc/inetd.conf entry correct? Check the InterBase entry in the server's /etc/inetd.conf.

The following is what is in the file in /usr/interbase/inetd.conf.isc; this is the entry that should be in /etc/inetd.conf. If you need to edit /etc/inetd.conf you must be superuser.

```
#
# InterBase Software Corporation Database Server
#
gds_db  stream  tcp  nowait  root /usr/interbase/bin/gds_inet_server
gds_inet_server
```

The above is the entry for Unix systems (both BSD and SysV-based); the file containing this entry can be found on all platforms in the main InterBase directory. (Note: on the SCO platform, the entry differs in that the executable is named "gds_inet_srvr" because of short filenames; its /etc/inetd.conf entry is different accordingly.) Be sure to check the inetd.conf.isc file on your platform for the correct entry.

After addition of an entry to /etc/inetd.conf, the inet daemon must be killed and restarted. See A.8. above for instructions as to how to do that.

Check the */etc/services* Entry

Check that the InterBase entry in /etc/services on the server is correct. If it is not, correct it. The following is what is in the file in /usr/interbase/services.isc. This file can be appended to /etc/services. You must be superuser.

```
#
# InterBase Software Corporation Database Remote Protocol
#
gds_db  3050/tcp
```

The above is the entry for Unix systems (both BSD and SysV-based); the file containing this entry can be found on all platforms in the main InterBase directory.

After addition of an entry to /etc/services, the inet daemon must be killed and restarted. See A.8. above for instructions as to how to do that.

If the node is under NIS control, the entry must be added to the NIS master's /etc/services (this is not done during the InterBase installation). If you need to add this to an NIS master's file, be sure to do the push (ypmake) after adding it.

To check whether /etc/services is under NIS control:

```
# ypcat services | fgrep gds_db
gds_db  3050/tcp
```

NOTE: be sure there is no empty line in /etc/services. Problems have been reported with inetd parsing its configuration file when there are blank lines in it.

C. Sometimes "connection rejected" and sometimes "connection refused"

If everything above is in order, check to see if the site is making use of the netgroup capability, defined as follows:

Netgroup defines network wide groups, used for permission checking when doing remote mounts, remote logins, and remote shells. For remote mounts, the information in netgroup is used to classify machines; for remote logins and remote shells, it is used to classify users. Each line of the netgroup file defines a group and has the format

```
groupname list-of-members
```

where members is either another group name, or a triple:

```
(hostname, username, domainname)
......
```

See "man netgroup" for further description.

If there's an incorrect entry (misspelled, incorrect syntax) in the /etc/netgroup file, either of these errors can occur. To complicate matters, if the nodes are also under NIS control, "ypcat -x" will not show the netgroup map. Execution of "ypcat netgroup" on any node will show if entries have been set up. Also, the file /etc/netgroup will not show up locally, since NIS only inspects the NIS netgroup map (/etc/netgroup on the NIS master). Possible entries in /etc/hosts.equiv (on the local nodes as well as the NIS master) could be a lone "+" or something like "+*@nodename*".