

CYBERNET

OpenSkies

Networking Engine

Database Guide



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MMPG
MASSIVE
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ONLINE GAMING

Openskies Database Guide

The *NetmaxOS* distribution contains a directory hierarchy described in the *NetmaxOS Guide*. The `$root/eoe_db` directory (*NetmaxOS* specifies `$root` as `/usr/Openskies`) contains the database code directory.

- `$root/Eoe_db/`
 - `cgi-bin/` - Perl cgi scripts that report information from DB. It was designed to report LobbyManager/FedHost network state from a browser.
 - `eoe/` - Run by *stunnel* to query or update the database from Federates (players/clients), FedHosts, and LobbyManagers.
 - `eoe_edit/` - cgi interface to add users to DB. It is designed to be accessed from a webpage.

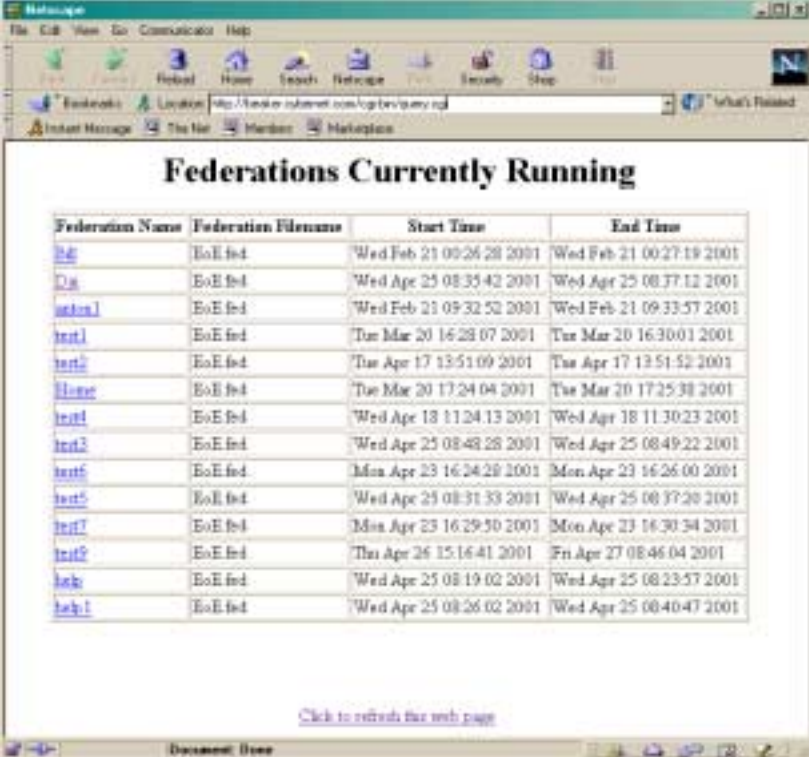
cgi-bin

This directory contains a number of useful scripts.

query.cgi

This script allows the user, typically a network administrator, to remotely browse network status information residing in the EoE database.

`query.cgi` is a cgi program that will connect to the database and display the information in a web page. This script will default to showing you the contents of the table *FED* (Federation – a network game) in a database called *eoe* (See Figure 1).



Federation Name	Federation Filename	Start Time	End Time
Fed	EoE fed	Wed Feb 21 00:26:28 2001	Wed Feb 21 00:27:19 2001
Dn	EoE fed	Wed Apr 25 08:35:42 2001	Wed Apr 25 08:37:12 2001
wdrn1	EoE fed	Wed Feb 21 09:32:52 2001	Wed Feb 21 09:33:57 2001
trn1	EoE fed	Tue Mar 20 16:28:07 2001	Tue Mar 20 16:30:01 2001
trn2	EoE fed	Tue Apr 17 13:51:09 2001	Tue Apr 17 13:51:52 2001
lione	EoE fed	Tue Mar 20 17:24:04 2001	Tue Mar 20 17:25:38 2001
trn4	EoE fed	Wed Apr 18 11:24:13 2001	Wed Apr 18 11:30:23 2001
trn3	EoE fed	Wed Apr 25 08:48:28 2001	Wed Apr 25 08:49:22 2001
trn6	EoE fed	Mon Apr 23 16:24:28 2001	Mon Apr 23 16:26:00 2001
trn5	EoE fed	Wed Apr 25 08:31:33 2001	Wed Apr 25 08:37:28 2001
trn7	EoE fed	Mon Apr 23 16:29:50 2001	Mon Apr 23 16:30:34 2001
trn8	EoE fed	Thu Apr 26 15:16:41 2001	Fri Apr 27 08:46:04 2001
lek	EoE fed	Wed Apr 25 08:19:02 2001	Wed Apr 25 08:23:57 2001
lek1	EoE fed	Wed Apr 25 08:26:02 2001	Wed Apr 25 08:40:47 2001

Figure 1: System Console generated from `query.cgi`

The settings for the database (hostname, database name, user name, password) are set at the beginning of the 'connect' sub (a sub is a perl function). At the web page that initially displays the FED table (Federations/Games), each SRV (FedHost) name will be a link. Clicking this link will

load the SRV table's entries for that particular SRV (FedHost). Each SRV's name will be a link that will show the SRV_STATS for that particular SRV (FedHost). The SRV_STAT's page will show you stats of a particular SRV host's various throughput and client usage.

In each print{SRV,FED,SRV_STATS} sub there is a variable containing the word labels, (i.e. srvlables. ssvrlables, fedlables). These are hashes that map the database's table columns to the visible table labels on the web page.

Also the variable %labels is set with the table name as a key and a colon delimited list of table columns to report of the web page. Each entry in member of this colon delimited list should have a corresponding entry in the labels local to each print sub mentioned above.

query.no.tables.cgi

This is a table-less version of the above. It is necessary if you want to print the CLI (Federate) table, which may very big (Federates are clients, this will list every client/player in the database). A large number of entries with multiple tables will not work well in most web browsers.

oe

oe.c

This bridging program allows clients to communicate with the database. This program runs locally on the database machine and is run by the *stunnel* program whenever communication is initiated from the outside from a Federate (client), FedHost, or LobbyManager.

The Stunnel program gives this mechanism a layer of secure communication over a SSL connection. In oe.c, the macros DB_SERVER, DB_DB, DB_USERID, and DB_PASSWORD must be set according to the databases setup. This program parses statements read from the stunnel network pipe in the form of:

```
Action=Login&Name=Joe&Pass=Blow
```

And generates database queries and update statements like these:

```
SELECT target_kills, deaths, score FROM user WHERE
userid=Joe
UPDATE user SET join_time=1023455403,
update_time=1023455403, state=1 WHERE userid=Joe
```

A description of how a player/client can communicate database information using this cgi, can be found in the *DB_Connection Guide* document. Source code for the *CDB_Connection* class can be found on the client *Openskies SDK* distribution.

eoedriver.sql

This is an SQL script that will initialize the database to allow a replication user for backup, a web user for *query.cgi* and an *eoedriver* that will let the *eoedriver.c* communicate with the database.

zipcode.txt

A text file containing every zipcode in America. It is formatted in a way that allow SQL to load in the data with a 'load data' statement

eoedriver.sql

This sets up the database tables for user, zipcode, FED, SRV, SRV_STATS, and CLI. It also loads in the *zipcode.txt* into the *zipcode* table.

EoE Example Web Server

The NetMAXOS distribution includes webpages and a cgi program called *eoedriver_edit* which queries and updates the database residing on the DB Server. In order to create a web server that allows users to add and view their own account information, simply copy the content of `$root/eoedriver_db/eoedriver_edit` into a cgi-bin capable directory on the machine you designate as your web server.

eoedriver_edit.c

This program resides on your web server machine and is spawned for a web form that has been filled out by a new user. All the information input to this program comes from a HTTP POST. It has #define macros to set up the database information (these must be set to correspond to the database permission discussed below in *Database Permissions*). They macros are:

- DB_SERVER – should point to the database server host's name
- DB_DB – this is the name of the database (e.g. *eoedriver*)
- DB_USERID – this is the database user authorized to communicate from the web server to the DB server. (e.g. *webedit*)

- DB_PASSWORD – password for the DB_USERID (e.g. *editweb*)

It does some simple error checking to insure the passwords match, etc. and will redirect the web browser to *success.shtml* upon success, *error.shtml* upon invalid password, empty username, or error connecting to the database, *entryerror.shtml* if zip code or area code is blank.

Eoe_edit.c must be compiled (the included Makefile compiles to *oe_edit.cgi* which is referenced by the included.shtml webpages by name) and placed in a cgi-bin capable directory your webserver along with the EoE sample webpages included in the *NetmaxOS* distribution:

- \$root/eoe_db/login.shtml
- \$root/eoe_db/error.shtml
- \$root/eoe_db/entryerror.shtml
- \$root/eoe_db/success.shtml
- \$root/eoe_db/noaccount.shtml
- \$root/eoe_db/overloaderror.shtml
- \$root/eoe_db/passworderror.shtml
- \$root/eoe_db/versionerror.shtml

These webpages were created for the *Edge of Extinction* (EoE) example game and are distributed as an example. Feel free to modify these pages to fit your game.

Database Permissions

To allow the example webpages to access the database via the eoe_edit program you must perform the following task.

Logon as root on your Openskies Database Server. Run *mysql* from command line and at the *mysql* prompt enter the following:

```
GRANT SELECT, INSERT, UPDATE,DELETE ON eoe.* TO
webedit@webhostname IDENTIFIED BY 'editweb';
```

Where *webhostname* is the host name of your web server. Eoe is the database name, which must correspond to the DB_SERVER macro above. Webedit is the database user ID which must correspond to the DB_USERID macro above. Editweb is the password for the DB user, which must correspond to the DB_PASSWORD macro above.