

NETDRONE CLUSTER USER GUIDE

Table of contents

1. Packages List.....	2
2. Preparing Platforms.....	3
2.1. VirtualBox Installation.....	3
2.2. CentOS Installation.....	4
2.3. OS Configurations.....	5
2.4. NTP Settings.....	6
2.5. APM Settings.....	7
2.6. BOOT Settings.....	8
3. Preparing Environments.....	9
3.1. Development Tools.....	9
3.2. Initializing Client.....	10
3.3. SSH auto login.....	11
3.4. SVN Configurations.....	12
3.5. Server Configurations.....	13
3.6. Initializing Server.....	16
3.7. Server Build.....	18
3.8. Running Server.....	19
4. Support Programs.....	20
4.1. Essential Kit.....	20
4.2. Application Kit.....	21
5. How to use.....	22
5.1. Packages.....	22
5.2. Game Objects.....	23
5.3. Auto Framework.....	24
5.4. Logs and Messages.....	25
5.5. Detached Unity Engine.....	25
6. Cheat Keys List.....	26
7. Game Test.....	28



1. Packages List

Sort	Kind1	Kind2	Comments
SDK	Engine	NetDroneUnity	Cross-platform
			Full sources
	Tools	DataConverter	CSV to Binary CSV converter
		DummyClient	RTCP, RUDP tester
		ReuseMemory	Virtual memory pools tester
	CryptTester	RSA RC5/RC6 tester	
Cluster	.NET Template	NetCommon	Client/Server shared sources
		UnityClient	Cheat keys client for full test of solution
		AuthServer	Load-balancing server from authentication and main-server connection counts
		LinkServer	Server-to-Server communication and connection management server
		MainServer	Game logic server
		Essentials	DB schema
	Build scripts		
			Remote control for server
	Web Template	RegiServer	Account registration module for load-balancing DB

2. Preparing Platforms

2.1. VirtualBox Installation

Oracle VirtualBox is software that provides virtual machines to easily test the Linux in Windows. If you are familiar with VMware, Hyper-V, it is okay to use that software.



VirtualBox



Oracle VirtualBox

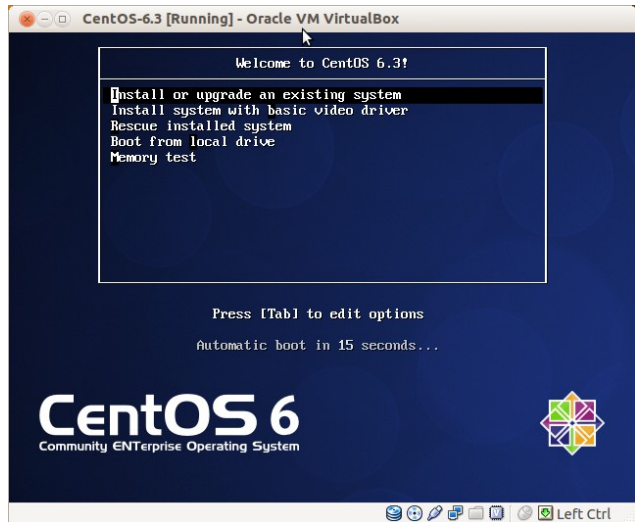
Download

<https://www.virtualbox.org>

- The Game Server examples is stable on Windows, Linux, and OSX, and this article is based on Linux.

2.2. CentOS Installation

One of the Linux distributions, CentOS is a free enterprise platform that is fully compatible with the upstream source, Red Hat Enterprise Linux. If you are familiar with Ubuntu, Gentoo, it is okay to use that distribution.



CentOS (The Community ENTERprise Operating System)

다운로드

<https://www.centos.org>

- The Game Server examples works well on Windows, Linux, and OSX, but this article only guides you through CentOS 6.
- Install only the basic packages for CentOS server.

Update all packages

```
root # yum -y update
```

Install required packages

```
root # yum -y install policycoreutils-python gcc gdb cmake mono mono-devel subversion rpmbuild createrepo unzip
```

2.3. OS Configurations

The first time CentOS is installed, kernel parameters, unlimited IO, SELinux, firewalls, hostname must be set up.

Sort	Reference	Comments
sysctl	essentials/share/etc/sysctl.conf	Kernel parameters
ulimit	essentials/share/etc/security/limits.conf	Unlimited IO
selinux	essentials/share/etc/selinux/config	SELinux Mode
	essentials/utils/init_make_sebool.sh	Turn off SELinux restrictions
firewall	essentials/share/etc/sysconfig/iptables	Firewall
hosts	essentials/share/etc/hosts	Host names

- Kernel parameter settings are required for efficient processing of system resources.
- Cluster servers can handle from 4000 concurrent connections up to maximum of 8000. (check with `ulimit -a` command to make sure open files are free up to 65535)
- In actual service operation, SELinux must be 'enforced' to be safe.
- When you run `init_make_sebool.sh` included in essentials, `init_allow_sebool.sh` is created. this will handle all of the restrictions on SELinux. (in enforcing state it must be executed)
- The iptables configuration is required to allow external access to the cluster server. after modifying relevant settings, run `/etc/init.d/iptables restart`. (you can check rules with `iptables -L -n`)
- The cluster server performs server-to-server connections based on the host name.

Edit host name

```
root # vi /etc/hosts
```

- You can edit alias name.
- You can freely edit it.

2.4. NTP Settings

Windows, Linux, and OSX are GPOS(Normal General Purpose Operating System), not Real-Time Operating System(RTOS). This means that the operating system has a slight error in system time. accurate time synchronization is very important.

It is also good to use ntpdate to synchronize time with external time server, but if update is denied, an error may occur. NTPD settings are required to compensate for this.

NTPDATE Installation

```
root # yum install ntpdate
```

NTPD Installation

```
root # yum install ntp
```

Sort	Reference	Comments
ntpd	essentials/share/etc/ntp.conf	Network time synchronization settings
sync	essentials/utis/timesync.sh	Run ntpdate and hwclock

- Place NTPD in one place and configure other servers to update via ntpdate.
- On server with NTPD, timesync.sh should look to the external time server.
- On servers without NTPD, timesync.sh should look to the NTPD server.

2.5. APM Settings

To install latest APM packages, be sure to add following repositories in advance.

EPEL Repository

```
root # yum install epel-release
```

REMI Repository

```
root # wget http://rpms.famillecollet.com/enterprise/remi-release-6.rpm
```

```
root # rpm -Uvh remi-release-6.rpm
```

Sort	Ver.	Packages		
Apache HTTP Server	2.2	httpd	httpd-tools	httpd-devel
PHP	7.0	php70w-process	php70w-gd	php70w-mysqlnd
		php70w-xmllrpc	php70w-imag	php70w-pgsql
		php70w-tidy	php70w-bcmath	php70w-xml
		php70w	php70w-pdo	php70w-soap
		php70w-snmp	php70w-mcrypt	php70w-cli
		php70w-common	php70w-mbstring	php70w-intl
		php70w-ldap		
MySQL	5.1	mysql-server	mysql-devel	mysql-libs
		mysql		

- List of packages required for APM installation.

Apache HTTP Server Installation

```
root # yum -y install httpd httpd-tools httpd-devel
```

PHP Installation

```
root # yum -y install php70w-process php70w-gd php70w-mysqlnd php70w-xmllrpc php70w-imag  
php70w-pgsql php70w-tidy php70w-bcmath php70w-xml php70w php70w-pdo php70w-soap php70w-snmp  
php70w-mcrypt php70w-cli php70w-common php70w-mbstring php70w-intl php70w-ldap
```

MySQL Installation

```
root # yum -y install mysql-server mysql-devel mysql-libs mysql  
root # mkdir -p /home/data/mysql  
root # mkdir -p /var/lib/mysql  
root # mkdir -p /var/run/mysqld  
root # chown -R mysql:mysql /home/data/mysql  
root # chown -R mysql:mysql /var/lib/mysql  
root # chown -R mysql:mysql /var/run/mysqld
```

Sort	Reference	Comments	
MySQL	essentials/share/etc/my.cnf	datadir	/home/data/mysql
		socket	/var/lib/mysql/mysql.sock
		log-slow-queries	/var/log/mysql/slow.log
		log-error	/var/log/mysql.log
		pid-file	/var/run/mysql/mysql.pid

- This is list of paths in MySQL configurations. when modifying path, the directory must be granted the mysql permissions.
- After completing installation and editing my.cnf, execute mysql_install_db.
- After running MySQL with '/etc/init.d/mysqld restart', you need to add system account to mysqladmin.

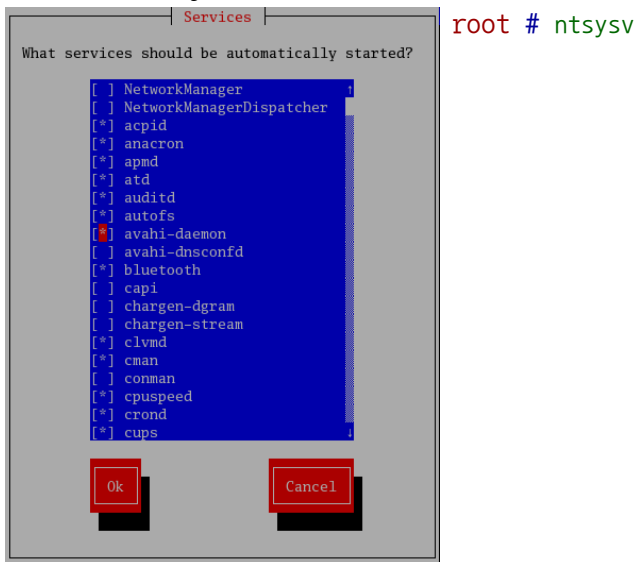
Verify installation

- Create a test.php in your web root and add <?php echo phpinfo(); ?>.
- Run web server with '/etc/init.d/httpd restart' command.
- Run chrome-browser and enter http://localhost/test.php to see PHP installation details.

2.6. BOOT Settings

CentOS be based on System V init-scripts. The managing commands are chkconfig and ntsysv, setup.

Automatically services



- Make sure that httpd, mysqld, ntpd, ntpdate are checked.

3. Preparing Environments

3.1. Development Tools



The Game Server examples can be developed with MonoDevelop. Please download and install the latest version.

Download

<http://www.monodevelop.com>



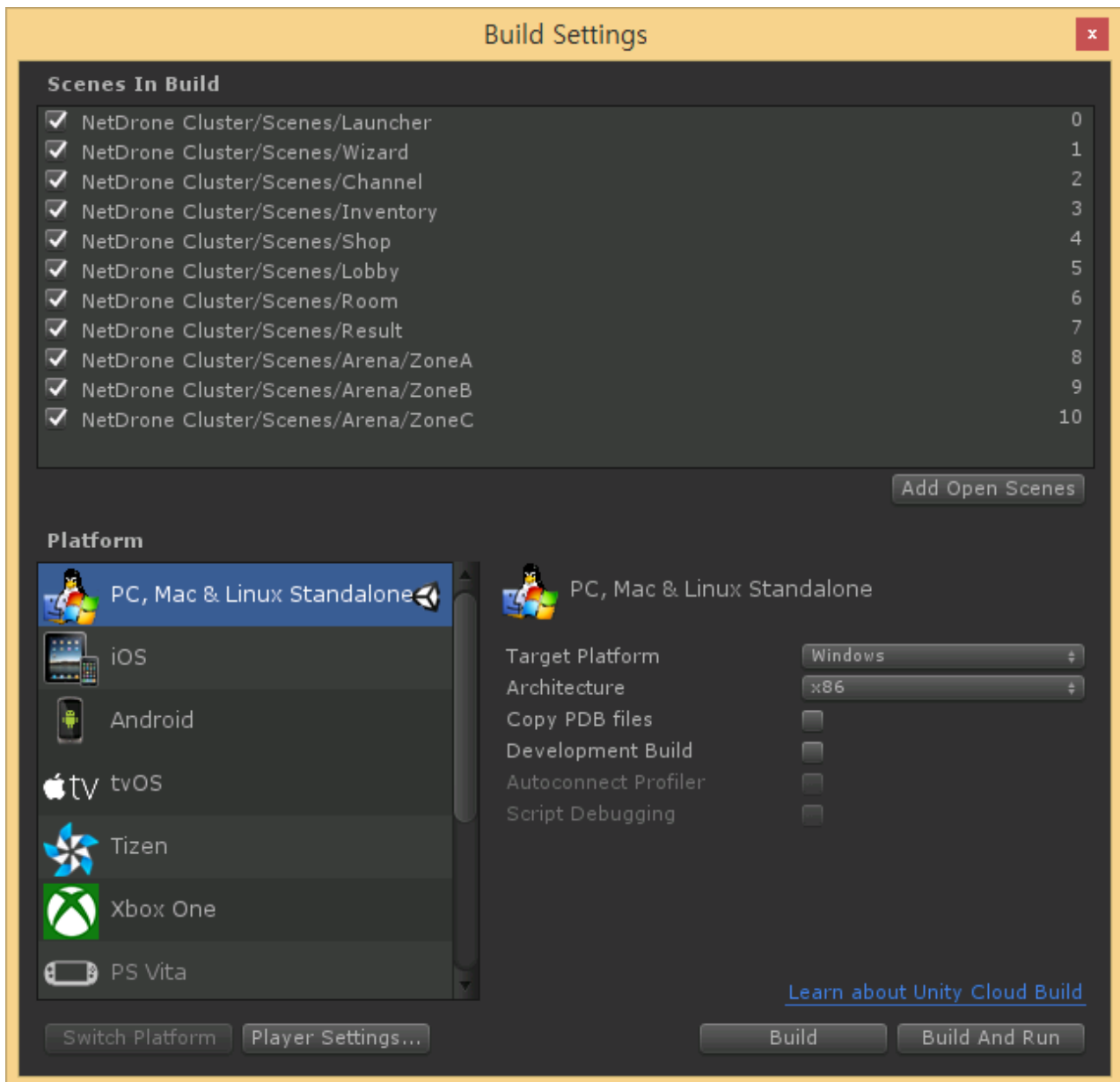
The Game Server examples can be developed with Visual Studio. Please download and install the latest version.

Download

<https://imagine.microsoft.com/ko-KR/Catalog/Product/101>

- It is possible to install each IDE in Windows environment and develop it with VirtualBox/CentOS as a server.

3.2. Initializing Client



NetDrone Cluster

- The above order is very important because it uses defined 'Enum' same as the scene order.
- After build you can run several clients and test them.

3.3. SSH auto login

The cluster template configures processes that will run on remote nodes to control center through the SSH service. This requires authentication between remote nodes and control center without password.

Create private and public key

```
root # ssh-keygen
```

- The private and public key are generated from target nodes for auto login.
- Please create keys from default path.
- Keep blank passphrase.

Register public key

```
root # cd ~/.ssh  
root # vi authorized_keys
```

- Create authorized_keys in ~/.ssh of control center and register public key of each node.
- The public key is id_rsa.pub at ~/.ssh.
- If you need to run the cluster template from localhost, please register id_rsa.pub on localhost in authorized_keys.

Check auto login

```
root # ssh root@[hostname]
```

- You must be logged in without asking for password.

3.4. SVN Configurations

The cluster template is running svn commit/update command in auto build script. This makes it easy to work with Jenkins and Etc, and requires SVN server.

Web server interworks

```
root # yum -y install mod_dav_svn
```

- It does not describe to how to install Subversion.

Sort	Kind1	Kind2	External path
netcommon	include	netdroneunity	
	lib	mysql	
	src		
authserver	include	netdroneunity	netcommon/include/netdroneunity
		netcommoncl	netcommon/src
	lib	mysql	netcommon/lib/mysql
linkserver	include	netdroneunity	netcommon/include/netdroneunity
		netcommoncl	netcommon/src
	lib	mysql	netcommon/lib/mysql
mainserver	include	netdroneunity	netcommon/include/netdroneunity
		netcommoncl	netcommon/src
	lib	mysql	netcommon/lib/mysql
unityclient	Assets SDK	NetDroneUnity	netcommon/include/netdroneunity
		NetCommon	netcommon/src

Cluster repository

- If you set up external path reference for each projects, all projects will be synchronized when executing svn commit/update.
- If you don't use auto build script, you can skip SVN configuration.

3.5. Server Configurations

Basically, NDCF classifies the setting option about one or each files to several processes by the name of process and the 'server id'.

```
[process_name_1:server_id_100]
...
[process_name_1:server_id_101]
...
[process_name_2:server_id_100]
...
[process_name_2:server_id_101]
...
```

It is possible to use annotation with '#' and load it from 'CfgMgr' function after adding new 'key' in 'Defines.h'.

Sort	Path	Key	Value	Comments
gameclient-unity.txt	Assets /Resources/Config	HeaderCrypt	true, false	Header encryption
		BinaryDB	true, false	Using Binary CSV
		SkipChannel	true, false	Skipping channel

NDCF for Client

Sort	Path	Key	Value	Comments
serverinfo.txt	Assets /Resources/Text	si_option1	IP, DNS	IP or DNS option
		si_ip	IPv4	IP or DNS address
		si_port	0-65535	

Info DB for Client

- AUTH, MAIN server enter DNS in si_option1 and domain in si_ip if you need to connect to domain.
- Please enter correctly URL of WEB server.

Sort	Path	Key	Value
cl_authserver-linux.txt	DefaultInterface	iface	Default net iface
	DefaultPort	0-65535	Default port
	BackboneInterface	iface	Backbone net iface
	BackbonePort	0-65535	Backbone port
	MaxConnection	10-60000	Max connections
	HeaderCrypt	true, false	Header encryption
	SecureAuth	true, false	MySQL secure auth
	AuthHost	localhost	Auth host name
	AuthDB	CL_game_auth	Auth DB name
	AuthUser	test	Auth account name
	AuthPassword	passw0rd	Auth account pwd
	LogPath	/home/data/games/cl/log	Record game log
	InfoPath	/home/data/games/cl/info	Record output proc
cl_linkserver-linux.txt	BackboneInterface	iface	Backbone net iface
	MaxConnection	10-60000	Max connections
	HeaderCrypt	true, false	Header encryption
	SecureAuth	true, false	MySQL secure auth
	AuthHost	localhost	Auth host name
	AuthDB	CL_game_auth	Auth DB name
	AuthUser	test	Auth account name
	AuthPassword	passw0rd	Auth account pwd
	LogPath	/home/data/games/cl/log	Record game log
	InfoPath	/home/data/games/cl/info	Record output proc
cl_mainserver-linux.txt	DefaultInterface	iface	Default net iface
	DefaultPort	0-65535	Default port
	BackboneInterface	iface	Backbone net iface
	BackbonePort	0-65535	Backbone port
	MaxConnection	10-60000	Max connections
	HeaderCrypt	true, false	Header encryption
	SecureAuth	true, false	MySQL secure auth
	AuthHost	localhost	Auth host name
	AuthDB	CL_game_auth	Auth DB name
AuthUser	test	Auth account name	

	AuthPassword	passw0rd	Auth account pwd
	LogPath	/home/data/games/cl/log	Record game log
	InfoPath	/home/data/games/cl/info	Record output proc

NDCF for Server

Sort	Path	Key	Value
cl_remote.txt	Version	1.1.0	Process version
	SecureShell	localhost:22	SSH path
	ModeType	TEST, CLEANUP, RESCUE	Execution type
	ConfPath	/etc/games/ cl_authserver-linux.txt	NDCF path
	ExecPath	/opt/local/bin	Executable file path
	MsgPath	/home/data/games/cl/msg	Record output info
	InfoPath	/home/data/games/cl/info	Record output proc

Remote control for Server

- If you set up cl_remote.txt, you can handling process of the entire node by entering short command at console.
- cl_control.sh works command parameters without cl_remote.txt.

3.6. Initializing Server

Create DB and insert accounts

```
mysql> create database CL_client_info_1_1_0
mysql> create database CL_game_info_1_1_0
mysql> create database CL_game_auth
mysql> create database CL_game_player_1
mysql> create database CL_game_player_2
mysql> create database CL_game_server
mysql> create user 'test'@'%' identified by 'passw0rd'
mysql> grant usage on *.* to 'test'@'%' identified by 'passw0rd'
mysql> grant SELECT, INSERT, UPDATE, DELETE, EVENT, TRIGGER, SHOW VIEW, EXECUTE ON `CL_%`.* to
'test'@'%'
mysql> flush privileges
```

Install default DB schema

```
root # mysql -uroot -p CL_client_info_1_1_0 < essentials/dbms/CL_client_info_1_1_0
root # mysql -uroot -p CL_game_info_1_1_0 < essentials/dbms/CL_game_info_1_1_0
root # mysql -uroot -p CL_game_auth < essentials/dbms/CL_game_auth
root # mysql -uroot -p CL_game_player_1 < essentials/dbms/CL_game_player_1
root # mysql -uroot -p CL_game_player_2 < essentials/dbms/CL_game_player_2
root # mysql -uroot -p CL_game_server < essentials/dbms/CL_game_server
```


Install service configurations

```
root # mkdir -p /etc/games
root # cp -a essentials/config/cl_authserver-linux.txt /etc/games/
root # cp -a essentials/config/cl_linkserver-linux.txt /etc/games/
root # cp -a essentials/config/cl_mainserver-linux.txt /etc/games/
```

Linux System

Create log path

```
root # mkdir -p /home/data/games/cl/info
root # mkdir -p /home/data/games/cl/log
root # mkdir -p /home/data/games/cl/msg
```

Linux System

```
C:\> mkdir C:\data\games\cl\info
C:\> mkdir C:\data\games\cl\log
C:\> mkdir C:\data\games\cl\msg
```

Windows System

- The 'info path' records GID, PPID, PID informations.
- The 'log path' records game logs of NDLF.
- The 'msg path' records server informations from stdout.

Install control scripts

```
root # mkdir -p /opt/local/bin
root # cp -a essentials/utils/cl_remote.txt /etc/games/
root # cp -a essentials/utils/cl_control.sh /opt/local/bin/
root # cp -a essentials/utils/cl_command.sh /opt/local/bin/
```

Linux System

- cl_remote.txt is configurations used by cl_control.sh.
- cl_command.sh is remote-call script that is installed in /opt/local/bin.
- cl_control.sh is remote controller for service processes through cl_command.sh installed on remote node.
- If cl_control.sh applies GMTTool, it becomes possible to many service processes in GMTTool.

3.7. Server Build

Cluster templates can open MonoDevelop or Visual Studio. Also, If you have bash and mono-devel, you can build it from the console via make.sh.

Manual Build (xbuild)

```
root # ./make.sh
root # ./make.sh Debug
root # ./make.sh Release
```

- If you only run make.sh, both Debug and Release will be built.

Auto Build (xbuild+svn)

```
root # ./autobuilder.sh Debug
root # ./autobuilder.sh Debug install
root # ./autobuilder.sh Debug install /opt/local
root # ./autobuilder.sh Release
root # ./autobuilder.sh Release install
root # ./autobuilder.sh Release install /opt/local
```

- To use auto build, SVN repository structure must be set up.
- Update your cluster projects with SVN checkout.
- autobuilder.sh must be above project paths.
- Enter your account info in SVN_USER, SVN_PASSWD of autobuilder.sh.

3.8. Running Server

The cluster template run multiple nodes through SSH service from control-center management system.

Sort	Commands	Feature
BOOT	/opt/local/bin/cl_control.sh -u root -b	Boot server
KILL	/opt/local/bin/cl_control.sh -u root -k	Kill from GID, PPID, PID
TEST	/opt/local/bin/cl_control.sh -u root -t	Check PID
CLEANUP	/opt/local/bin/cl_control.sh -u root -C	After shutdown and remove info
RESCUE	/opt/local/bin/cl_control.sh -u root -R	Kill proc from name
FORCED BOOT	/opt/local/bin/cl_control.sh -u root -bf	Forced boot
FORCED KILL	/opt/local/bin/cl_control.sh -u root -kf	Forced kill

Command List

- SSH auto login after works normally.

Manual Execution

```
root # mono --debug ./cl_linkserver.exe -s 201 -c /etc/games/cl_linkserver-linux.txt
root # mono --debug ./cl_authserver.exe -s 1 -c /etc/games/cl_authserver-linux.txt
root # mono --debug ./cl_mainserver.exe -s 101 -c /etc/games/cl_mainserver-linux.txt
root # mono --debug ./cl_mainserver.exe -s 102 -c /etc/games/cl_mainserver-linux.txt
```

Linux System

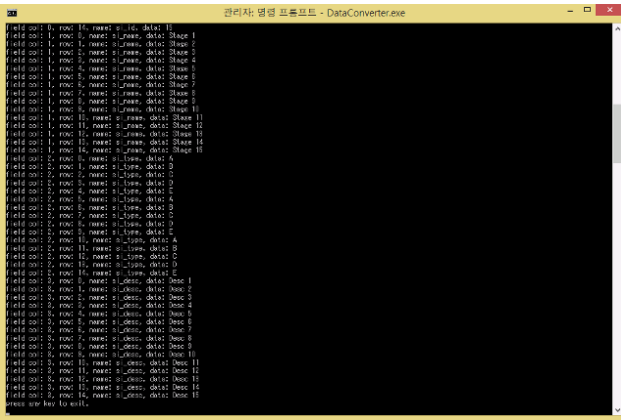
```
C:\> cl_linkserver.exe -s 201 -c cl_linkserver-windows.txt
C:\> cl_authserver.exe -s 1 -c cl_authserver-windows.txt
C:\> cl_mainserver.exe -s 101 -c cl_mainserver-windows.txt
C:\> cl_mainserver.exe -s 102 -c cl_mainserver-windows.txt
```

Windows System

- If you want to output TRACE information, use --debug option.

4. Support Programs

4.1. Essential Kit



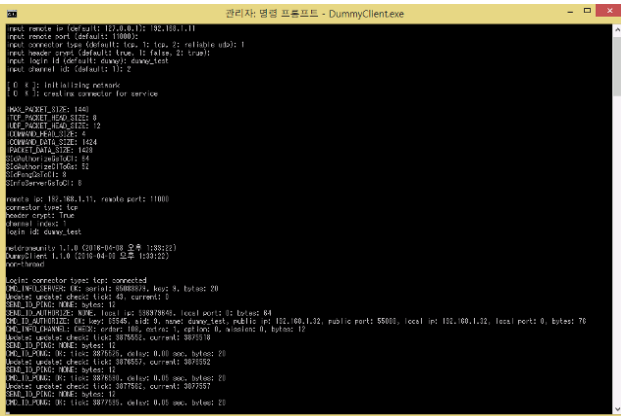
NetDrone Engine for Unity Package includes data transfer tool to change from 'csv' to 'bytes' format.

As below, copy 'DataConverter.zip' file and install under Assets/./Tools path.

Path: Tools/DataConverter.zip

DataConverter

- Dataconverter/temp/*' includes 'csv' file for test.
- When you run 'DataConverter.exe', all located 'csv' files will be changed and saved as 'bytes' format.
- Copy the created 'bytes' files under 'Assets/NetDrone Cluster/Client/Resources/Binary'.
- CDBM of AutoFramework supports CSV and Bytes format.
- The CSV delimiter must be comma, and column name is required on first line.



This client is available for TCP and Reliable UDP test.

As below, copy 'DummyClient.zip' file and install under Assets/./Tools path.

Path: Tools/DummyClient.zip

DummyClient

- Can be used as a remote command execution tool.
- Can be used as a load runner tool.

5. How to use

5.1. Packages

Sort	Kind1	Kind2
Resources	Animation	
	Audio	
	Binary	
	Config	
	Material	
	Model	
	Prefabs	
	Text	
	Texture	
Scenes		Scene for examples
Scripts	Audio	
	Camera	
	DB	
	Item	
	Net	'Packet' processing for each protocol
	State	'State' processing for client
	UI	
	Unit	Player and Units processing manager
	Util	Config processing
	World	'Channel/Room' processing
SDK	NetDroneUnity	
	NetCommon	Client/Server shared sources
	Plugins	
	Standard Assets	
Server		regiserver, authserver, linkserver, mainserver, essentials
Tools		DataConverter, DummyClient, ReuseMemory, CryptTester

- After downloading, folder structures from packages.

5.2. Game Objects

Sort	Kind1	Kind2	Comments
UI			
Channels	User List		
	Room List		
Main Room			
Networks	Engine	Queue (Native:Count)	Packet and List informations output
		Connector (Main:TCP)	
		Connector (Sub:TCP)	
Main Player			
Main State (STATE)	Scene		
Audios	Music Audio		
	Sfx Audio		

- When run as Unity Editor, it appears in DontDestroyOnLoad area.
- Please test included functions in the several examples and see how they are indicated on the Hierarchy tab.

5.3. Auto Framework

AutoFramework is the subset of 'partial class' for applying 'global class/method' in C# as C++. The GameFramework in 'UnityEngine' namespace does not need any extra declaration if it add 'using UnityEngine'.

How to use 'GameFramework' is as follows.

How to replace formal class which uses 'MonoBehaviour'

Refer to 'client/Defines.cs', 'GameFramework' inherits 'MonoBehaviour'. When you write script for Unity Editor, inherit 'GameFramework' instead 'MonoBehaviour'.

```
public class Example : GameFramework {  
  
    ...  
  
}
```

Now, all classes and functions in 'partial class GameFramework' can be approached comprehensively without namespace access.

How to write class in global access structures

The 'partial class GameFramework' includes all 'NetDroneUnity' sources and examples of client. Please follow the examples below if you want to write new global class and functions.

```
namespace UnityEngine {  
    public partial class GameFramework {  
        public class CExample {  
            public CExample() {}  
            ~CExample() {}  
  
            ...  
  
        }  
    }  
}  
  
namespace UnityEngine {  
    public partial class GameFramework {  
        public static CExample g_kExample { get { return CExample.GetInstance(); } }  
  
        public class CExample : CSingleton<CExample> {  
            public CExample() {}  
            ~CExample() {}  
  
            public void Test() {}  
  
            ...  
  
        }  
    }  
}
```

Now, it will be called without namespace access in anywhere that is included in 'partial class GameFramework' or inherited like 'public class Example : GameFramework' when you enter `g_kExample.Test()`.

5.4. Logs and Messages

NetDrone engine for Unity indicates standard output by defining 'TRACE', 'OUTPUT', 'PRINT', 'ERROR' functions.

TRACE	'DISABLE_UNITY' is defined, it is connected to 'Console.WriteLine(FILE, LINE, FUNCTION)' function. Otherwise, it is connectd to 'UnityEngine.Debug.Log' function.
OUTPUT	'DISABLE_UNITY' is defined, it is connected to 'Console.WriteLine(FILE, LINE, FUNCTION)' function. Otherwise, it is connectd to 'UnityEngine.Debug.Log' function.
PRINT	'DISABLE_UNITY' is defined, it is connected to 'Console.WriteLine' function. Otherwise, it is connectd to 'UnityEngine.Debug.Log' function.
ERROR	'DISABLE_UNITY' is defined, it is connected to 'System.Diagnostics.Debug.WriteLine' function. Otherwise, it is connectd to 'UnityEngine.Debug.LogError' function.

- If you need to use 'TRACE' command, create 'gmcs.rsp/smcs.rsp (-define:DEBUG)' file under Assets folder.
- 'TRACE' code will be removed if you clear 'DEBUG' declaration.

5.5. Detached Unity Engine

NetDrone Engine for Unity applies to all projects based on C# as well as Unity Editor. Add the declaration of 'DISABLE_UNITY' if you use standalone.

Defines disabled in MonoDevelop

- Project Options: Build > Compiler > Define Symbols
- Please refer to the gameserver project.

6. Cheat Keys List

	Command	Options	Value1	Value2	Value3	Value4	Value5	Comments	
L O C A L	/register		[id]	[password]	[email]			Sign up	
			[check id]					Check duplicates	
	/login		[id]	[password]				Login	
	/state		[empty login follow wizard channel inventory shop lobby room arena]					Switch scenes	
	/show		[status state room]					Show status	
	/list		[user inven equip char room member]					List info	
S E R V E R	/item	buy	[id]					Buy item	
		create	[id]					Create item	
		sell	[serial id]						Sell item
			[serial id]	[count]					Sell items
		delete	[serial id]						Delete item
			[id]	[count]					Delete items
		use	[serial id]						Use item
		equip	[serial id]						Equip item
	[serial id]		[slot]					Equip slot	
	[offset]						Unequip		
	/point		[+ -]	[point]				Point minus	
	/cash		[+ -]	[cash]				Cash minus	
	/grade		[1-3]					Change grade	
	/reload		[inven char user room]					Reload data	
	/char	create	[class]	[grade]	[name]			Create char	
			[class]	[name]				Create char	
		delete	[all cid]					Delete char	
aname		[name]					Account name		
cname		[name]					Char name		
inven		[size]					Inven size		
default		[cid]					Default char		
/conn		[server id]	[channel index]				Change server		
		[channel index]					Change ch		

	break				Break to net	
	quit				Quit	
/room	create	[name]	[password]	[duel tdm ffa]	[map id]	Create room
		[name]	[duel tdm ffa]	[map id]		Create room
	join	[id]	[password]			Join room
		[id]				Join room
	match	[duel tdm ffa name]				Auto match
		[ready waiting host]				Change status
		[start stop end leave]				Room controls
/option	map	[map id]				Change map
	mod	[duel tdm ffa]	[map id]			Change mod
	team	[red blue]				Change team

- Even if you don't create an account with /register, test1, test2, test3, test4, test5 already initialized. (password: test)
 - /register test10 test test@test.com
 - /login test1 test
- Run UnityClients and cheat keys test, one by one.

7. Game Test

Client 1	Client 2	Client 3
Step 1: /login test1 test Step 2: /conn 101 0 Step 3: /state lobby Step 4: /room create test ffa 1 Now Waiting ... Step 5: /list member Step 6: /option team blue Step 7: /room start Now loading ... Step 8: /room end Step 9: /state room	Step 1: /login test2 test Step 2: /conn 101 0 Step 3: /state lobby Now Waiting ... Step 4: /list room Step 5: /room join 1024 Step 6: /option team red Now loading ... Step 7: /state room	Step 1: /login test3 test Step 2: /conn 101 0 Step 3: /state lobby Now Waiting ... Step 4: /list room Step 5: /room join 1024 Step 6: /option team blue Now loading ... Step 7: /state room