

PROUNDET INTRODUCTION

www.nettnetion.com



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Overview

ProudNet is a game server and network engine for PC & Mobile online game developers. It seems to be easy to develop online & mobile games at the first glance.

However, there are many game developer companies who suffer from unstable game service. ProudNet is the very solution for them.

Performance of ProudNet has been proven with heavy network traffic and a great amount of simultaneous connected users as well as many robust internet conditions. There are 159 game development projects where ProudNet license have been purchased.



ProudNet

Application

PC & Mobile online games that will be launched worldwide

Game developers who hardly recruit highly experienced server developers

PC & Mobile online games that are sensitive to latency & network bandwidth

Game projects that need to be completed in a short period of time

Operating System

- Over Windows Server 2003
- Over Windows XP
- In case of using Unity 3D – PC, Mac OS, Web Browser, i-Phone, i Pad, Android Phone
- Multi-play between other clients

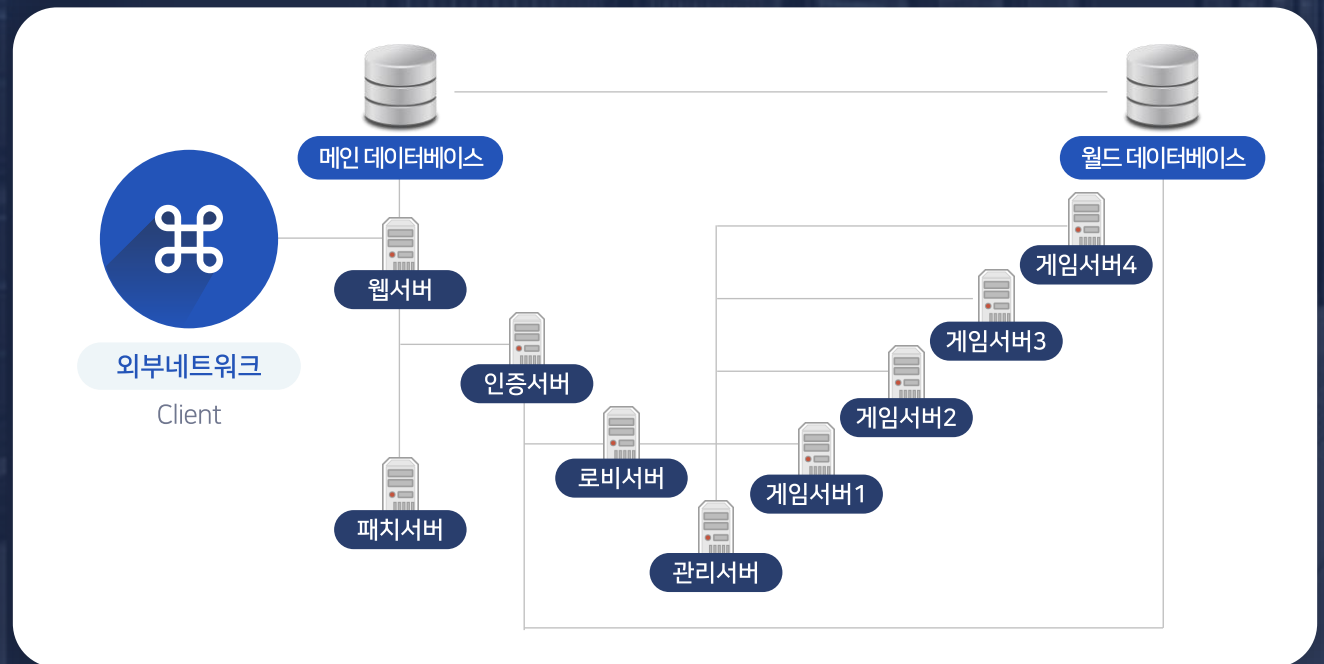
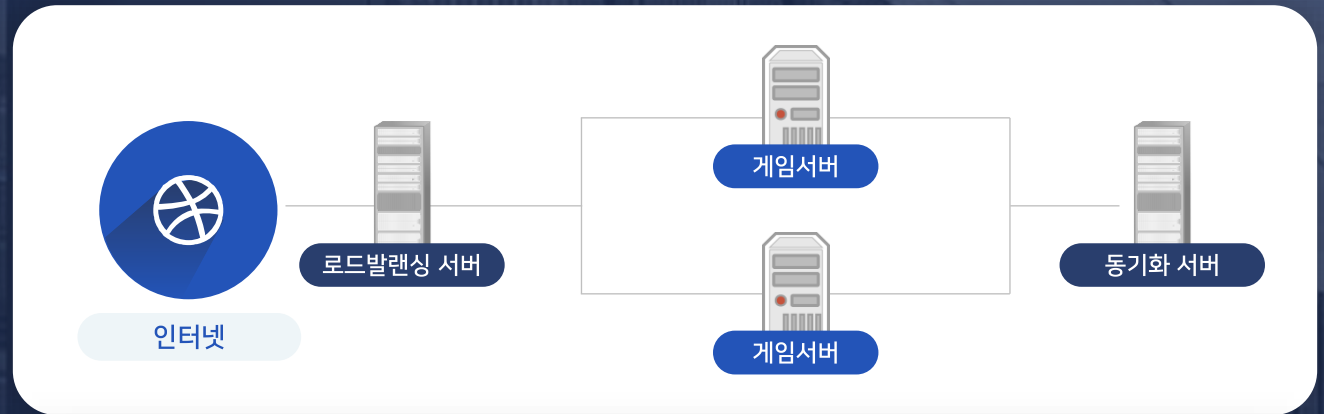
Support Environment

- Over Visual C++ 2005, 2008, 2010
- Over Unity 3.5



What is Server?

A game server (also sometimes referred to as a host) is a computer which is the authoritative source of events in a multiplayer video game. It serves variously according to the game type.





Why the server is important?

When the server does not operate appropriately, Users can not enjoy the game for a while. Publisher's revenue will be decreased. Publisher should spend another marketing budget to recall customers.



WoW Classic DOWN: Blizzard confirm new WoW DDoS attack ...

Express.co.uk - Sep 8, 2019

The first wave of server crashes struck yesterday and were predicted by a Twitter account, which has now been shut down. This was followed ...

World Of Warcraft Classic hit by several DDoS attacks

Metro - Sep 9, 2019

Twitter suspends account claiming responsibility for WoW ...
eSports News UK (press release) (blog) - Sep 8, 2019

WoW Classic DOWN as Blizzard confirm new attack on World ...

Daily Star - Sep 8, 2019

Yesterday's WoW Classic DDoS Made For A Very Strange ...

TheGamer - Sep 8, 2019

[View all](#)



Game Revolution

League of Legends EUW servers appear to be down

Dot Esports - Feb 20, 2020

A number of players are reporting difficulties connecting to EUW servers. Riot Games updated the Service Status page, claiming that ranked ...

League of Legends Waiting in Queue Fix

Game Revolution - Feb 20, 2020

[View all](#)

Lower Sales, Customer Churn



Why is it so difficult to develop a server?

Servers should be working 24hrs defending attacks from hackers. Servers should let all the customer enjoy the game contents under all environment with fast speed. When the users increase rapidly, server should operate stably.

Designing servers considering all the conditions above would always be very difficult.

Speed



To be fast

Security



To be safe to hack

Cost



To be cheap

Flexibility



To be expandable



But experienced server developer fall short.

Full experienced developer is rare on the market and expensive.

Backend server salary

About 5,990,000 results (0.52 seconds)

\$128,333

The average **back-end** developer **salary** in the United States is \$128,333. Mar 26, 2019

www.softermii.com

What Is The Cost of Back-End In 2019? [Updated Back-End ...





What is the alternative? Hiring engine!

When applying engines which offers features by modules, game companies can develop faster with less developers.



Direct Programming

- Time : Very long
- Cost : Depends on the programmer's salary
- Difficulty : Hard because developer should develop from the scratch
- Stability : Non-secured.
- Flexibility : No limit.



Engines

- Time : Saved
- Cost : Cheaper
- Difficulty : Easier
- Stability : Secured, depending on engine's reference
- Flexibility : Limited



The Case of Battlegrounds - Buy and develop!

Battle ground was developed within 1 year, with only 30 developers, buying various engines.



스팀

- 유효 고객 1억+, 동접 천만+의 글로벌 게임 유통 채널
- 퍼블리셔가 필요 없음. ('올' 퍼블리셔 역할)
- 대인배
- 연쇄환인다



아마존 웹서비스 (EC2)

- 세계 어디에서나 쉽게 서버를 올리고 내릴 수 있음
 - "서버 데 놀려주세요"
- 나름 합리적인 가격



언리얼 엔진4

- 강력한 성능의 범용 게임 엔진, 데드케이프 서버 제공
- 초기비용 없음, 지속적인 업데이트, 풍부한-레퍼런스
- 블루프린트로 게임플레이를 직접 개발
 - 성능 문제로 결국 대부분 코드화



...애셋 사서 쓰자

- 총기 리스팅업 후 애셋 찾아 삼만리
- 쓸만한 애셋이 없으면 비슷한 컨셉의 다른 총으로 변경...
- PBR ready는 찾기 어려워서 우리가 폴리싱
- 결국 EA출시 까지는 애셋팩에 있는 총들만 사용
 - 지금은 자체 제작! 외주!





Why Proudnet?

It satisfies your company's reduced game development costs, shortened game development periods, reduced server operating costs, and improved game operation stability.



Reduced game development costs

Developable without high-cost server engineer
Can be applicable for MORPG, MMORPG, Asynchronous Game, etc



Shortend game development periods

Easily develop with developer-oriented help/example
Quick Technical Support (Annually over 320 events)



Improved game operation stability

Server reliability validated in 159 paid projects
Building a secure server structure for hacking



Competitive Analysis of Game Engine Market

The Proudnet is both price/performance/technical support competitive.

Category	내용	ProudNet	Company A	Company B	
Multi Platform	C++	0	0	0	
	c#	0	X	0	
	UnrealScript	0	X	X	
	Java	0	X	0	
	Unity3D	0	0	0	
	Cocos2D-X	0	0	X	
	Unreal Engine	0	0	X	
	Windows	0	0	0	
	iOS Native	0	0	0	
	Android Java	0	X	0	
	Android NDK	0	0	0	
	Playstation 4	0	X	0	
	Windows Server	0	X	0	
	Linux	0	0	0	
	RDBMS	0	0	X	
	Support for improved database throughput	0	X	X	
	PC Online + Mobile	0	PC/Mobile	0	PC/Mobile
	Others	3G/LTE connection integrity	0	0	0
recovery from server crash		0	X	0	
Server Processing Logic Optimization and Multisession		0	X	0	
Multicore server processing		0	X	X	
Response to Hacking Attack		0	X	X	
Message Encryption		0	X	0	
P2P Communication Functions Support		0	X	X	
High NAT Transmissions and Zero-time Hall Punching		0	X	X	
Communication volume and congestion control function	0	X	X		
Optimize performance on Cloud Server	0	0	0		
REFERENCE	MMO,MORPG concurrent connection	0		~7,000	
	Concurrent chat/a server for mobile games	~15,000			
Price	Price for 20 servers	~60,000	\$30,000	\$60,000	
		\$45,000			



Reference 1.

ProudNet has been used in 159 projects & the number of projects continues to increase





Reference 2.

The ProudNet-powered mobile RPG game, "Touch Monsters", its chatting server (per 1 server process) has hit 50,000 concurrent users.



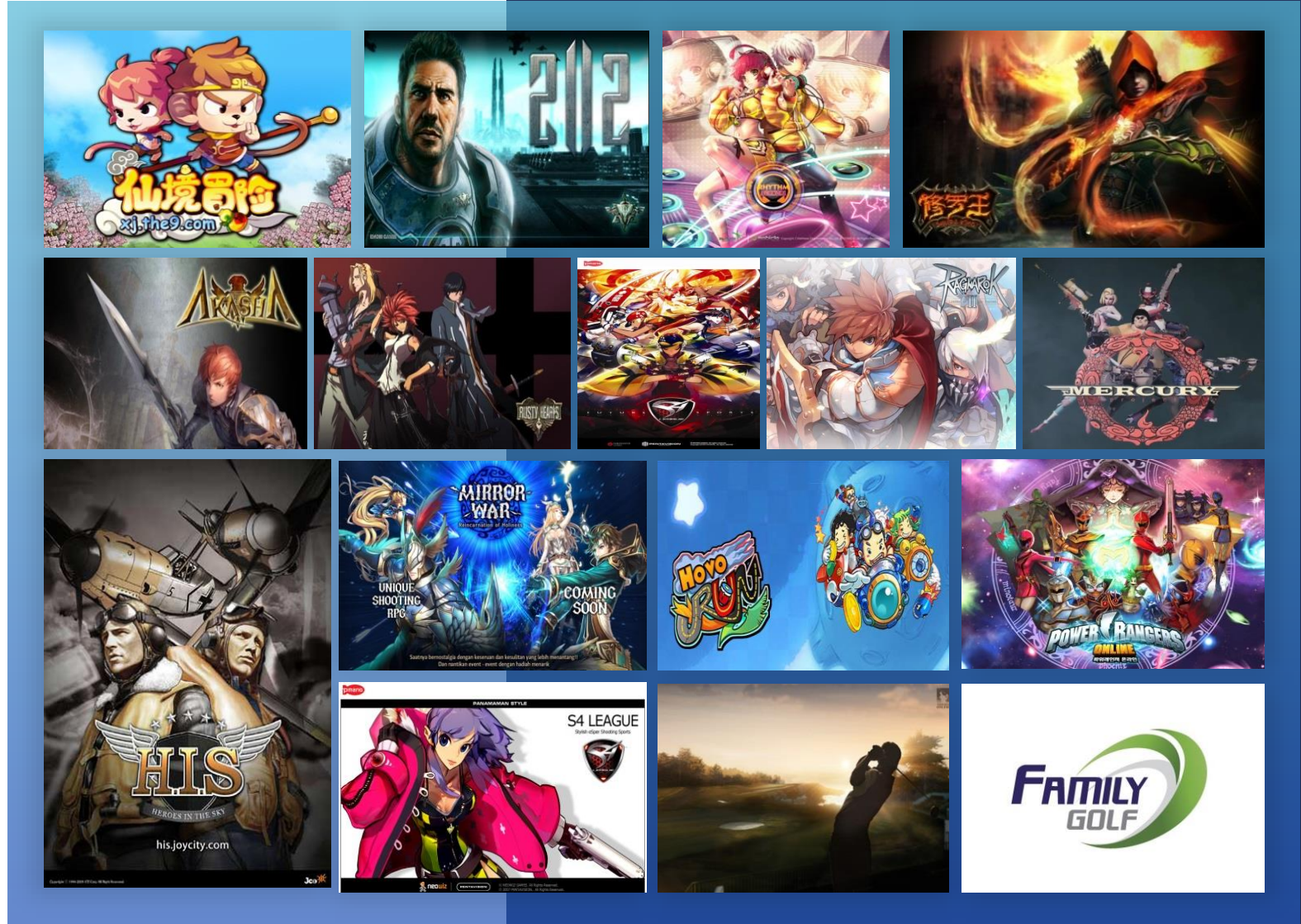
Touch Monsters >





Reference 3.

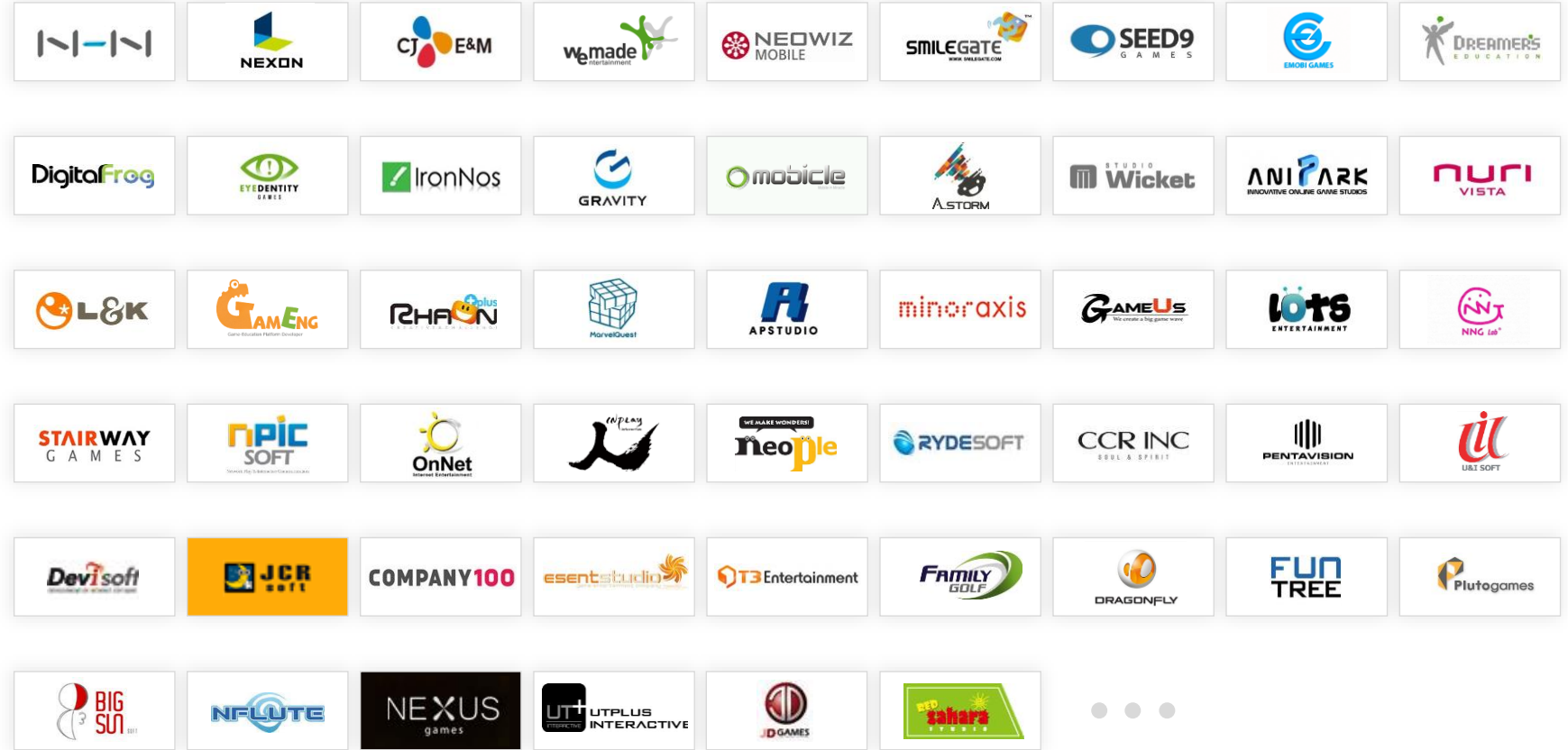
Games (PC & Mobile Online) can remain stable (after service launching) by "ProudNet", its high performance & stability





Reference 4.

More than 140 game companies has introduced ProudNet to their projects.





Published Titles

- PC Online Game (31)
- Mobile Game (21)

PC Online Game (31)

APSTUDIO	Bolts and Blip online
LOTS ENTERTAINMENT	Hovorun Online
GameOn Studios	S4 League
Nexon	Vindictus
ActozSoft	OZFestival
FAMILYGOLF	FAMILYGOLF
STAIRWAY GAMES	RUSTY HEARTS
ONNET	TOUR GOLF ONLINE
INPLAY INFERACTIVE	F.E.A.R. ORIGIN ONLINE
GRAVITY	Ragnarok Online II
PLUTOGAMES	MERCURY RED
T3ENTERTAINMENT	Warcry
STUDIO Wicket	Relic Online
IRONNOS	POWER RANGERS ONLINE
L&K LOGIC KOREA	MIRROR WAR_Reincarnation of Holiness
SEED9 GAMES	Ghosts 'n goblins online
JCR SOFT	Dark Blood
Dreamers Education	Talkish
Marvelquest	Mini fighter
ONNET	TANKACE
GameUs	HEROES IN THE SKY
NNG Lab	Seoyugi
Funtree	BORN TO FIRE
ANI PARK	Chagu Chagu
Identity Games	Project D
A.STORM	Herowarz
Emobi Games (Vietnam)	"2112"
Nuri Star Ducks	WILD BUSTER
NEOVIAN	FOOTBALL LEGEND
GamEng	PlayEng
SGTY (China)	Shura King

Mobile Game (21)

DigitalFrog	Delphinia Chronicle
Pocket Joy	CocoFamily
Npic Mobile	Magic Masters Online
Wemade Entertainment	Touch Fighter
Nexon Korea	Nexon All-stars
Black Pearl Studio	Black Sun
Minoraxis	Reign of Conquerors
Wemade Entertainment	Moon Wolf
SEED9	Touch Monsters
KNETP	Akasha
Banana Fish	Shooting King
Zigzagsoft	Dual Masters
Company 100	Metal Breaker
Snow Family	Guardians League
Nexus Games	Seven Knights
Ikinagames	Here We Go
Pure Games	Vendetta
Phoenix Games	BOWLING KING
Isac Entertainment	snowbro for kakao
Buffstone	Montowers
Howling Soft	Sand Storm



Feature 1.

Verified Performance and Stability

- 159 PC & mobile online game projects used ProudNet.
- Server is currently running over different countries and continents. (Korea, China, Japan, USA, Hong Kong, Singapore, Malaysia, Germany, Netherlands, Taiwan, Vietnam, Italy and France)
- Capable of supporting wide range of game genres - MMORPG, FPG, Action games, Racings, and etc.
- Titles published includes Vindictus, S4 League, Ragnarok Online 2, Touch Monsters, Seven Knights and many other PC & mobile online games

High-Powered Server

- ProudNet running servers are capable of handling large number of simultaneous users and processing high traffic.

Multi-core CPU utilization

- Multi-core programming is essential in developing a game server. Many older generations of servers do not efficiently utilize multi-core CPU power. One of the techniques suggested was to run as many server processes as CPU supports, but this too has limitations in handling large number of users at the same time, as in MMORPG game world.
- ProudNet runs on a multi-thread enabled server instance and all called back events to the instance and RMI functions utilize multi-thread for maximum performance. ProudNet also supports single core mode.

Minimum kernel-user mode Conversion

- In a server OS, kernel-user mode conversion is needed for handling TCP and UDP packets. This is a high cost process and causes a negative effect in server performance. ProudNet makes a conscious effort in minimizing this to maximize performance.



Feature 2.

Selective Thread Pool modes

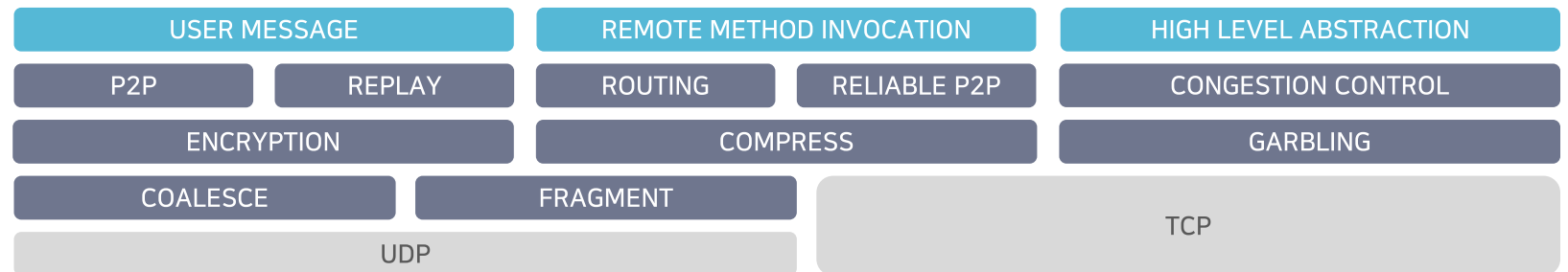
- In a server OS, kernel-user mode conversion is needed for handling TCP and UDP packets.
- This is a high cost process and causes a negative effect in server performance.
- ProudNet makes a conscious effort in minimizing this to maximize performance.

Freedom in Thread Pool relationship formation

- Prolonged game logic routine might cause connection issues for clients.
- It is highly likely that this could be a game logic design problem.
- To prevent this from happening, ProudNet can run user routines and network I/O routines in a different thread pool.

Adaptive Network Protocol

- Although ProudNet uses a low network protocol level, IP packet header reduction & optimization is used to raise efficiency in processing network traffic.
- ProudNet's adaptive network protocol is designed to handle different network conditions and use cases seamlessly.





Feature 3.

Stable 'unreliable' message protocol

It is widely known that in gaming, UDP is unreliable but it is light on traffic and fast, making it a good candidate to be used for rapid event transmissions such as a character move or machine gun firing. For other messages, TCP is used since it is a reliable protocol. In other words, using UDP in socket API for messaging is simple but does not guarantee reliability as in using TCP. It also means that UDP is more vulnerable to hacking and can be less stable in diverse network environment. However, it has distinctive advantages in high action gaming due to its speed and simplicity.

| **Unreliable** : No guarantee that the message or packets sent would reach at all.

| **Reliable** : Guarantee that the data transferred remains intact and arrives in same order in which it was sent.

ProudNet's unreliable messaging protocol provides much better stability than a simple UDP.

- 1 Many gamers use a form of security device or a software to prevent hacking such as DDoS. However, these could detect ICMP packets that were created in UDP transmission as a threat, and raise a false positive in malware detection. As a result, connection becomes unstable between a gamer and a server. ProudNet's protocol has a built-in mechanism to prevent this from happening.
- 2 Some countries, including China, does not handle a high volume of rapid UDP transmissions and internet itself becomes unstable. To prevent this, ProudNet includes traffic control feature and packet header compression as well as other technologies applied in its protocol.
- 3 In some countries, including China, data could be tethered in passing an internet gateway. ProudNet has a feature to prevent this from happening.

QoS function in engine strata

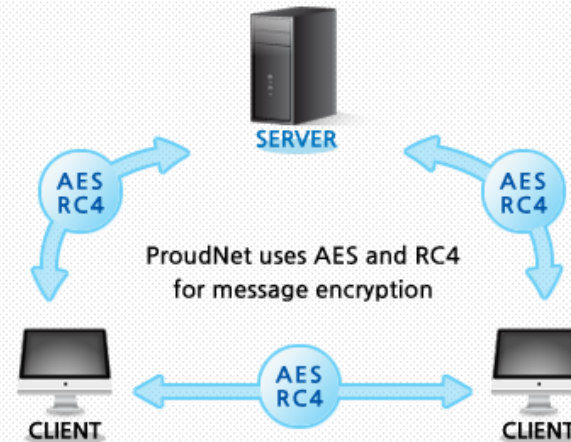
- PC games could cause a high volume of network traffic and cause latency and connection issues. For example, in an MMORPG game, healer's actions are time sensitive and could have a huge impact in how the game is played in case of high latency.
- ProudNet uses QoS(Quality of Service) technology, so called a throttling technique, in its networking to prevent his to provide the best experience for its users. This technology is also highly useful in voice chatting in gaming.



Feature 4.

Messages Encryption

- Hacking is a common threat to online gaming and in some situations, it is essential that the message is encrypted and kept safe. For example, key exchange and message encryption is a must-have in handling sensitive data such as user account information.
- ProudNet provides this.
 - | Highly protected encryption in client-server and client-client(P2P) messaging.
 - | Packet sniffing, copying, and manipulation prevention mechanism.



Key exchange happens internally in ProudNet, and developers can simply and immediately use this for protected messaging



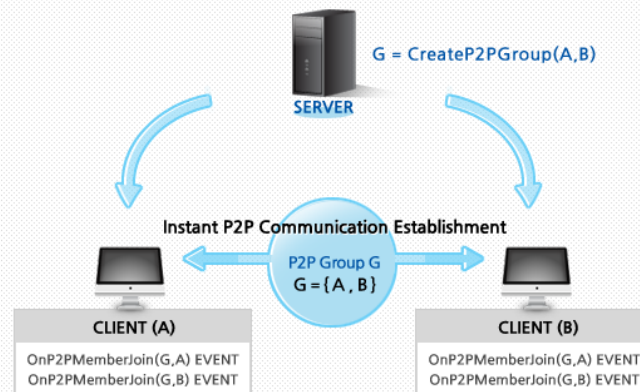
Feature 5.

Powerful P2P Networking

P2P communication is used for voice chatting and character movement synchronization with its natural ability of being able to lower server loads and raising response times. However, setting up a stable P2P connection is a challenging task for a game server developer. There are simply too many variables that could affect the quality of communication, and need for good process handling for connection, disconnection, and server relays is hard to satisfy.

- ProudNet allows developers to use simplified APIs for Client-to-Server and Client-to-Client connections. There is no need to complicate a program source in handling various P2P connection states such as connection waiting, or checking disconnection in unstable network.
- ProudNet is equipped with Hole-punching and relay feature - server relay related operations take place only inside ProudNet internally. This frees developers from having to implement hole-punching and relays themselves.
- ProudNet's P2P communication has no wait time in connection.

This allows games with lobby could start a game immediately without delays, and MMORPG games to use both C2C and C2S communications in world synchronization. ProudNet also allows servers to use clients as a router and have them relay the message in case of multicast. This could save S2C traffic and some of the traffic is propagated as a C2C relay of the message.





Feature 6.

Traffic Control

- P2P faces no problem in areas where there is good broadband Internet in place. This could be hardly the case in countries and regions like China, Southeast Asia, etc where there are ADSL2+ or lines under the speed. It is because the speed of P2P communications is low. If you don't handle it well, many problems occur in P2P communications. Even NAT routers would stop working.

To prevent the problem, ProudNet has a function that uses server relay for more than a certain amount of transmission, and a function of reducing packets

P2P supporting both Unreliable and Reliable messaging

It is easier to send P2P messages across computers using UDP compared to TCP. However, UDP by nature is not reliable - does not guarantee delivery and delivery in order. In case of chatting between clients, some messages could be lost.

Developing a connectionless protocol that is reliable like a TCP is a challenging and a cumbersome task, especially when there are a lot of traffic since it would require complex algorithms to be applied in order to avoid issues such as silly window syndrome.

ProudNet solves this problem by including ARQ(Automatic Repeat-reQuest) mechanism which to that is similar to TCP method.

Hole punching ratio upkeep

Hole punching is just a start in providing a stable P2P communication. It is more important that the ratio is maintained over an extended period time in a network with lots of P2P connections and high volume of traffic. This would not be an issue if only a handful of computers are connected to a router, but in case of internet cafes and some places in China, there are hundreds of computers connected to a single router. In this case, large amount of P2P traffic could fill up router's port mapping entry list and cause disconnections. ProudNet provides one of the best technologies to prevent this from happening.

- ProudNet uses port mapping reuse and Just-in-time hole punching to solve this issue.
- ProudNet is equipped with a technology to avoid duplicate port mapping entries.
- It is known for symmetric NAT routers to use predictive port mapping, but when used inappropriately, this could lead to excessive amount of port mapping and causes disconnections. ProudNet is able to avoid this issue.



Feature 7.

Automatic Switch between Hole punching & Relaying

- Hole punching for P2P can evaporate any time with traffic and certain status of NAT routers. If not handled properly, it could cause issues to players, such as co-player(s) suddenly not moving.

ProudNet detects good and bad P2P connections and switches hole punching and relays to avoid this issue. When hole punching is suddenly cleared for whatever reason, small latency would happen instead of a disconnection. So, developers using ProudNet can safely assume P2P connection is always stable in developing a game.

Customer Evidence

ProudNet has been used and tested on various servers in many countries.

- Single MMORPG server successfully accommodating 13,000 simultaneously logged-on players.
- Direct P2P Upkeep (China: 82%, Europe:80%, Southeast Asia:84%, Korea:96%)
- Direct and relayed P2P Upkeep of 100% in China.
- MMORPG Siege warfare stability 98% (Server: Shanghai, Client: Szechuan)

PC / Mobile / Browser Support

ProudNet supports multi-play of authentic multiplatform. Game server that uses ProudNet, can allow multi-play between people logged on PC client, smartphone client and browser client.

After developing ProudNet based PC game from C++, C#, Java, ActionScript, the game can be inter-played on Unity based browser & smartphone, Flash based browser and Windows based PC.

Further on, the official version of native Android and iOS is going to be launched. Marmalade is planned to be supported.



Feature 8.

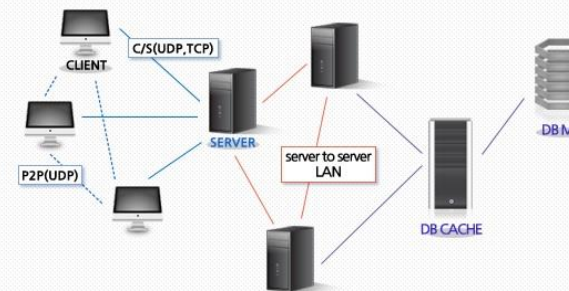
Others

ProudNet provides other useful functions for game server developers.

- Easy to collect & analyze game program crash, however, crash dump function cannot be supported for Mobile
- Super-peering(Host) selection is useful in various game genres such as FPS.
- Hosts synchronization is used for accuracy in action games.

Easy Development

- An example of client-server communications using ProudNet (similar codes and exceptionally handling omitted) ProudNet provides Remote Method Invocation(RMI) feature. Using this, network communication routines are created automatically without developers having to write them, and all this is without degrading performance. Considering PC games typically have hundreds and thousands of different message types, this feature significantly reduces development times and prevents human errors and mistakes. ProudNet also provides client-server communication module, distributed server communication module, and database caching module to setup a custom server setup easily



- ProudNet's manual consists of 500 pages and is updated regularly to better help developers using and understanding the product.



Feature 9.

Mobile Game Specialization

Mobile games have become quite popular enough these days, security against hacking & real time multi-play are major issues for mobile game development. In case of creating & dealing with game logic at client only, you will be at risk for hacking, especially illegal sales will occur by hacking into the game at the black market to purchase apps & hacking into purchase in apps (IAP).


These issues can be solved by ProudNet.


- Hacking issues can be solved by server-side game logic and low reactivity of web server can be overcome.
- At various mobile games, ProudNet provides stable real-time multi-play and guarantees high reactivity when the game logic is moved to the server.
- ProudNet is suitable for dealing with issues sensitive to latency at a cloud server by means of P2P.





Patents





- 
Patent ▶ Multiplayer online game service system and method


- 
Patent ▶ Channel Change System and Method of Reliability Assurance Communication


- 
Patent ▶ Multicasting method through direct communication between terminals connected to game server

- 
Patent ▶ NAT Port Mapping Reuse to Communicate Between Terminals

- 
Patent ▶ User Datagram Protocol Networking Method for Improving Reliability

- 
Patent ▶ Session transfer method of network communication with multiple distributed servers

- 
PCT ▶ User Datagram Protocol Networking Method for Improving Reliability

- 
PCT ▶ Network communication method with restore function of terminal session



Trademarks



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USA



VITNAM



Certificates



프로그램등록증



벤처기업확인서



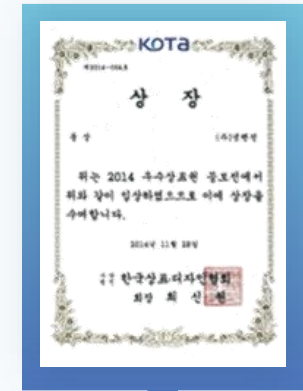
기업부설연구소인정서



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Q&A



ProudNet

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