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# 服务器的百万级并发量

# 大家请自己安装四台虚拟机

The image shows a terminal window with two panes. The left pane displays a series of network-related commands and their outputs, including 'send[fd=937720], [32]Hello Server: client --> 320671', 'new connect [192.168.199.129:44469][time:0], pos[0]', 'C[937721]:Hello Server: client --> 294563', 'send[fd=937721], [32]Hello Server: client --> 294563', 'new connect [192.168.199.133:56086][time:0], pos[0]', 'C[937722]:Hello Server: client --> 320672', and 'send[fd=937722], [32]Hello Server: client --> 320672'. The right pane shows a list of connections with details like 'connections: 281999, sockfd:282002, time\_used:19531' through 'connections: 293999, sockfd:294002, time\_used:9316'. Below the terminal window, a Docker container status window is visible, showing the status of 'MySQL\_Ubuntu', 'Open\_Ubuntu', 'Linux\_kernel', and 'Code\_ubuntu'. The 'MySQL\_Ubuntu' container is in a 'UP' state, and the 'Open\_Ubuntu' container is in a 'DOWN' state. The 'Linux\_kernel' and 'Code\_ubuntu' containers are also in a 'DOWN' state. The status window also shows network statistics for the 'docker0' and 'eth0' interfaces.

```
send[fd=937720], [32]Hello Server: client --> 320671

new connect [192.168.199.129:44469][time:0], pos[0]
C[937721]:Hello Server: client --> 294563

send[fd=937721], [32]Hello Server: client --> 294563

new connect [192.168.199.133:56086][time:0], pos[0]
C[937722]:Hello Server: client --> 320672

send[fd=937722], [32]Hello Server: client --> 320672

connections: 281999, sockfd:282002, time_used:19531
connections: 282999, sockfd:283002, time_used:14314
connections: 283999, sockfd:284002, time_used:3475
connections: 284999, sockfd:285002, time_used:3055
connections: 285999, sockfd:286002, time_used:2934
connections: 286999, sockfd:287002, time_used:4853
connections: 287999, sockfd:288002, time_used:6774
connections: 288999, sockfd:289002, time_used:4794
connections: 289999, sockfd:290002, time_used:3872
connections: 290999, sockfd:291002, time_used:4661
connections: 291999, sockfd:292002, time_used:9250
connections: 292999, sockfd:293002, time_used:12304
connections: 293999, sockfd:294002, time_used:9316

MySQL_Ubuntu x Open_Ubuntu x Linux_kernel x Code_ubuntu x
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:24 errors:0 dropped:0 overruns:0 frame:0
TX packets:24 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:1360 (1.3 KB) TX bytes:1360 (1.3 KB)

wangbo.jing@ubuntu:~$
wangbo.jing@ubuntu:~$
wangbo.jing@ubuntu:~$ ifconfig
docker0  Link encap:Ethernet HWaddr 96:60:57:f6:34:92
          inet addr:172.17.42.1 Bcast:0.0.0.0 Mask:255.255.0.0
          inet6 addr: fe80::9460:57ff:fe6:3492/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:61 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B) TX bytes:9412 (9.4 KB)

eth0      Link encap:Ethernet HWaddr 00:0c:29:32:3c:46
          inet addr:192.168.199.131 Bcast:192.168.199.255 Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe32:3c46/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
          RX packets:857 errors:0 dropped:0 overruns:0 frame:0
          TX packets:273 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:82088 (82.0 KB) TX bytes:24094 (24.0 KB)
```



## 问题思考



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1. 什么是**C10K**， **C10M**？
2. 并发量的瓶颈是什么？
3. 淘宝网站服务器与微信**App** 服务器的并发量？



1. 单线程同步: **NTP**
2. 多线程同步: **Natty**
3. 纯异步: **Redis, HAProxy**
4. 半同步半异步: **Natty**
5. 多进程同步: **fastcgi**
6. 多线程异步: **memcached**
7. 多进程异步: **nginx**
8. 每请求每进程（线程）: **Apache/CGI**
9. 微进程框架: **erlang/go/lua**
10. 协程框架: **libco/nttyco**



## 单机服务模型



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net.ipv4.tcp\_mem = 262144 524288 786432

net.ipv4.tcp\_wmem = 1024 1024 2048

net.ipv4.tcp\_rmem = 1024 1024 2048

fs.file-max = 1048576

net.ipv4.tcp\_max\_orphans = 16384

net.ipv4.tcp\_mem = 252144 524288 786432

net.ipv4.tcp\_wmem = 2048 2048 4096

net.ipv4.tcp\_rmem = 2048 2048 4096

fs.file-max = 1048576

net.nf\_conntrack\_max = 1048576

net.netfilter.nf\_conntrack\_tcp\_timeout\_established = 1200



## 错误信息

Error: /proc/sys/net/nf\_conntrack\_max no such file or directory

```
sudo modprobe ip_conntrack
```



## 单机服务模型

```
C[1004084]:Hello Server: client --> 324016  
send[fd=1004084], [32]Hello Server: client --> 324016  
new connect [192.168.199.129:41143][time:0], pos[0]  
C[1004085]:Hello Server: client --> 324017  
send[fd=1004085], [32]Hello Server: client --> 324017  
new connect [192.168.199.129:37361][time:0], pos[0]  
█
```

```
connections: 314999, sockfd:315002, time_used:17982  
connections: 316999, sockfd:317002, time_used:10201  
connections: 317999, sockfd:318002, time_used:13913  
connections: 318999, sockfd:319002, time_used:8348  
connections: 319999, sockfd:320002, time_used:6084  
connections: 320999, sockfd:321002, time_used:2732  
connections: 321999, sockfd:322002, time_used:3200  
connections: 322999, sockfd:323002, time_used:12373  
connections: 323999, sockfd:324002, time_used:16264  
█
```